

ORIGINAL TO GENERAL FILES

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

**OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE**

FILE P.I. # 0006823
CSSTP-0006-00(823)
Gwinnett County
GDOT District 1 - Gainesville

OFFICE Design Policy & Support

DATE March 5, 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
Paul Tanner, Asst. State Transportation Data Administrator
Attn: Systems & Classification Branch
Ken Thompson, Statewide Location Bureau Chief
Bayne Smith, District Engineer
Brent Cook, District Preconstruction Engineer
Neal Kantner, District Utilities Engineer
Cynthia Burney, Project Manager
BOARD MEMBER - 7th Congressional District

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT**

Project Type: <u>ATMS /ITS</u>	P.I. Number: <u>0006823</u>
GDOT District: <u>1</u>	County: <u>Gwinnett</u>
Federal Route Number: <u>N/A</u>	State Route Number: <u>N/A</u>

Project Number: CSSTP-0006-00(823)

The proposed project is located in Gwinnett County, Georgia. The project consists of Advanced Traffic Management System Design along 2.85 mile segment of Pleasant Hill Rd, from Buford Hwy (US 23/SR 13) to the Fulton County line.

Submitted for approval:

<u><i>[Signature]</i></u> Douglas Tilt & ARCADIS U.S., Inc.	<u>10/16/12</u> DATE
<u><i>[Signature]</i></u> Gwinnett County Department of Transportation	<u>10-16-12</u> DATE
<u><i>[Signature]</i></u> State Program Delivery Engineer	<u>11/5/2012</u> DATE
<u><i>[Signature]</i></u> GDOT Project Manager	<u>29 Oct 12</u> DATE

Recommendation for approval:

<u>Program Control Administrator</u>	DATE
<u>* Glenn Bowman /mas</u>	<u>11-21-2012</u>
<u>State Environmental Administrator</u>	DATE
<u>* Kathy Zahul /mas</u>	<u>01-02-2013</u>
<u>State Traffic Engineer</u>	DATE
<u>* Lisa Myers /mas</u>	<u>11-06-2012</u>
<u>Project Review Engineer</u>	DATE
<u>* Patrick Allen /mas</u>	<u>11-16-2012</u>
<u>State Utilities Engineer</u>	DATE
<u>District Engineer</u>	DATE
<u>State Transportation Financial Management Administrator</u>	DATE

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).

<u>* Cynthia L. Vanduyke /mas</u>	<u>11-09-2012</u>
State Transportation Planning Administrator (recommendation required)	DATE

** Recommendation on file.*

County: Gwinnett County

PLANNING & BACKGROUND DATA

Project Justification Statement: Pleasant Hill Rd corridor between Fulton County line (Chattahoochee River) and Buford Hwy Interchange and is an important corridor for travel between Gwinnett and Fulton Counties. Pleasant Hill Rd also serves as an important east-west connector to distribute traffic between several major roadways such as Medlock Bridge Rd, Buford Highway (US 23/SR 13), Peachtree St (SR 141) and Peachtree Industrial Blvd.

Secondly, the section of the Pleasant Hill Rd between Fulton County line and Buford Highway currently consists of nine signalized intersections, several unsignalized intersections and has limited Intelligent Transportation System (ITS) communications infrastructure capable of handling Advanced Traffic Management System (ATMS).

It is pertinent that a project be considered to install ITS devices such as Closed Circuit Television (CCTV) camera units, detection units, and communication systems to be able to perform the functionalities of an ATMS. This project is identified in the Gwinnett County ITS Master Plan, which includes the Concept of Operations for the Gwinnett County ITS. The Concept of Operations provides consistency between Gwinnett County projects and the Atlanta Regional ITS Architecture and is included as attachment #4.

Description of the proposed project:

The purpose of this project is to install ITS devices such as CCTV cameras, detector units and ITS communication network to perform the following functionalities of ATMS along the project corridor:

- Monitoring and early detection of arterial incidents
- Monitoring of accident “hot spots” to identify potential remedies
- Signal timing monitoring and fine tuning
- Signal trouble call verification allowing timely and proper dispatch of required resources
- Detour routes monitoring and implementation

The project consists of installing the following primary ITS Components:

- 48 single mode(SM), fiber optic trunk
- Ethernet capable communication devices, such as BBS controllers, conflict monitors and intersection video detection system (IVDS) remote management hardware
- CCTV cameras for monitoring of signalized intersections
- Corridor detection system

Communication Design

For the purpose of setting up a communication network backbone, this project seeks to use 48 SM fiber optic trunk that is proposed under the ongoing construction Gwinnett County projects M-0677 and F-0830, between the intersections of Howell Ferry Rd and Sunset St. For the section of Pleasant Hill Rd between

the intersections of River Chase Trail and Howell Ferry Rd, the project seeks to install a 48 SM fiber optic trunk as the communication backbone.

Project Redundancy

The project also seeks to provide a robust design by integrating the proposed ITS system to existing network with sufficient built-in redundancy. This project proposes to achieve this redundancy by integrating the system to the existing ITS network at the following locations:

- To the 72 SM fiber optic trunk that runs north-south along Buford Highway.
- To the 72 SM fiber optic trunk that runs north-south along Peachtree Industrial Blvd.

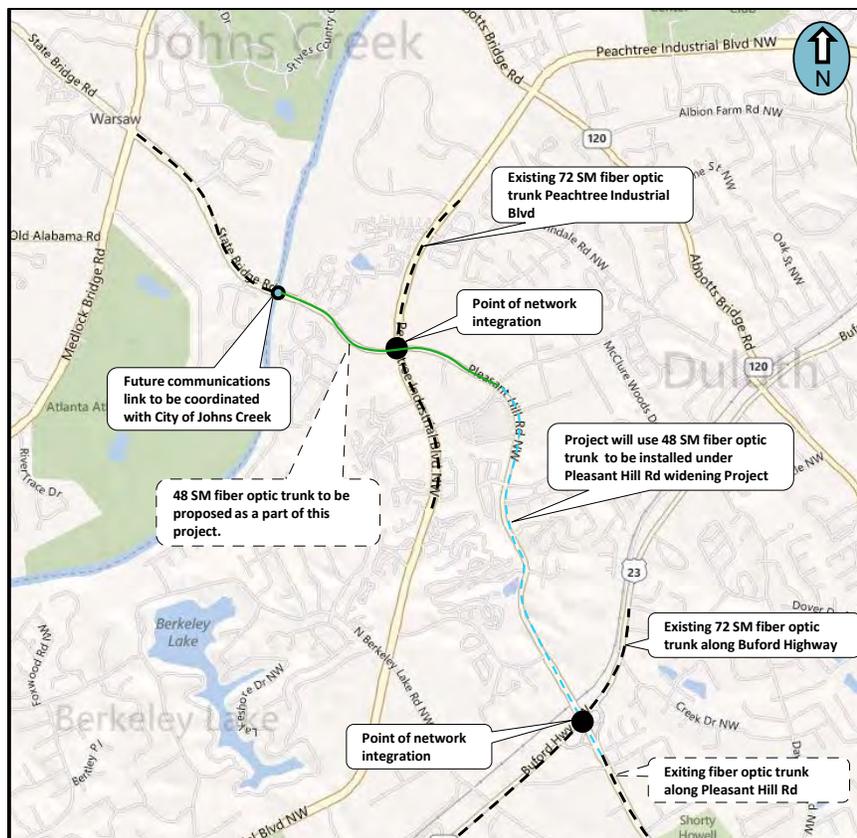
Anticipated Interconnect Projects

It is proposed that the design of this ATMS project shall be based on in coordination with the three ongoing Gwinnett County projects.

- Active construction projects along Pleasant Hill Rd (Gwinnett County Projects # M-0677 & F-0830) for widening between the intersections of Peachtree Industrial Blvd and Summit Ridge Pkwy and also for installation of fiber interconnect between Howell Ferry Dr and Sunset St.
- Active Design project along Pleasant Hill Rd for roadway widening and interconnect design between the intersection of River Chase Trail and Howell Ferry Dr (Gwinnett County Project #F-0035).

Figure 2 shows the overview of the proposed project network.

Figure 2. Proposed Network Overview



County: Gwinnett County

CCTV Cameras/Video Surveillance

One of the main goals of the project is to provide coverage of surveillance for all major signalized intersection within the project corridor. The major signalized intersections along the project corridor are listed below.

1. Pleasant Hill Rd @ River Chase Trail/Sweet Bottom Dr
2. Pleasant Hill Rd @ Shopping Plaza Driveway
3. Pleasant Hill Rd @ Peachtree Industrial Blvd
4. Pleasant Hill Rd @ Savannah Pl (Proposed under Gwinnet County Project #F-0035))
5. Pleasant Hill Rd @ Howell Ferry Rd/McClure Bridge Rd
6. Pleasant Hill Rd @ Duluth Park Ln
7. Pleasant Hill Rd @ Park Bluff Ln/Ashley Ln
8. Pleasant Hill Rd @ Tree Summit Pkwy/Palisade Park Dr
9. Pleasant Hill Rd @ Summit Ridge Pkwy
10. Pleasant Hill Rd @ May Rd/ Sunset St

Several potential CCTV camera deployment sites were discussed during the project-status meeting on August 1, 2012. On August 13, 2012, ARCADIS carried out a camera line-of-sight study to verify the CCTV deployment sites. Based on this initial field assessment, the project team recommends installing CCTV cameras at seven locations within the project corridor. The proposed deployment sites are the following:

CCTV Location

1. Southeast corner of Pleasant Hill Rd @ River Chase Trail/Sweet Bottom Dr.
2. On existing Signal-timber pole, in the southeast corner of the Pleasant Hill Rd @ shopping plaza driveway
3. Southwest corner of Pleasant Hill Rd @ Duluth Park Ln
4. Southeast corner of Pleasant Hill Rd @ Ashley Ln
5. Northeast corner of Pleasant Hill Rd @ Palisade Park Dr
6. Northeast corner of Pleasant Hill Rd @ Summit Ridge Pkwy
7. Southeast corner of Pleasant Hill Rd @ Buford Hwy Interchange

There is an existing CCTV camera at the southeast corner of Pleasant Hill Rd @ Peachtree Industrial Blvd intersection; therefore, installation of a CCTV unit near this intersection will not be necessary.

Detector Units

The project also proposes deployment of detection systems within the project corridor that would provide capabilities for measuring real-time performance parameters along the corridor. The actual deployment sites of the detection systems will be decided during design phase of the project.

County: Gwinnett County

Federal Oversight: Full Oversight Exempt State Funded Other

MPO: Atlanta Regional Commission (ARC)

MPO Project ID GW-326

Regional Commission: Atlanta Regional Commission

RC Project ID GW-326

Congressional District(s): 7

Projected Traffic: AADT

Current Year (2012): 37,100 Open Year (2016): 38,000 Design Year (2036): 42,400

Traffic Projections Performed by: *ARCADIS U.S., Inc.*

Functional Classification (Mainline): Urban Principal Arterial

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

Is this project on a designated Bike Route, Pedestrian Plan, or Transit Network?

None Bike Route Pedestrian Plan Transit Network

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: N/A

Context Sensitive Solutions: N/A

DESIGN AND STRUCTURAL DATA

Mainline Design Features: *Pleasant Hill Rd*

Currently Pleasant Hill Rd between the intersections of River Chase Trail and Summit Ridge Pkwy is a four lane highway with a two-way left turn lane, and between the intersections of Summit Ridge Pkwy and Sunset St, Pleasant Hill Rd is a four lane divided highway with a 20 foot raised median. The lane widths within these two segments vary between eleven to twelve foot lanes.

Per ongoing Gwinnett County construction projects # M-0677 & F-0830, Pleasant Hill Rd between the intersections of Summit Ridge Pkwy and Howell Ferry Rd is proposed to be widened to a six lane divided highway with a 20 foot raised median and twelve foot lanes.

County: Gwinnett County

Similarly, per the active Gwinnett County design project# F-0035, Pleasant Hill Rd between the intersections of River Chase Trail and Howell Ferry Rd is proposed to be widened to a six lane divided highway with a 20 foot raised median and twelve foot lanes.

The posted speed limit within the subject corridor of Pleasant Hill Rd is 45 mph.

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	4		N/A
- Lane Width(s)	12		N/A
- Median Width & Type	20 foot Raised & TWLTL		N/A
- Outside Shoulder or Border Area Width	N/A		N/A
- Outside Shoulder Slope	N/A		N/A
- Inside Shoulder Width	N/A		N/A
- Sidewalks	N/A		N/A
- Auxiliary Lanes	N/A		N/A
- Bike Lanes	N/A		N/A
Posted Speed	45 mph		N/A
Design Speed	N/A		N/A
Min Horizontal Curve Radius	N/A		N/A
Superelevation Rate	N/A		N/A
Grade	N/A		N/A
Access Control	N/A		N/A
Right-of-Way Width	N/A		N/A
Maximum Grade – Crossroad	N/A		N/A
Design Vehicle	N/A		N/A
<i>Additional Items as needed</i>	N/A		N/A

*According to current GDOT design policy if applicable

Major Structures: N/A

Major Interchanges/Intersections: N/A

Utility Involvements:

Gas Line:

- i) Atlanta Gas Light Co.

Power:

- ii) Comcast Communications
- iii) Gwinnett Co. Department of Water Resources

County: Gwinnett County

- iv) Jackson EMC
- v) GA Power Co./DOT & Joint Use Section
- vi) Georgia Power Transmission

Telecommunication:

- i) AT&T Telecommunications
- ii) Level 3 Communications
- iii) AT&T Teleport
- iv) Zayo Fiber Solutions
- v) TW Telecom
- vi) Verizon Business
- vii) Fiberlight, LLC.
- viii) Qwest Networks

Water:

- i) Department of Water Resource (Gwinnett County Department of Water)

Railroad:

- i) Norfolk Southern Corp.

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

SUE Required: No Yes

Railroad Involvement: There is Norfolk Southern Corp. Railroad line just northwest of Buford Hwy Interchange, but it is anticipated that the Norfolk Southern Corp. railroad will not be impacted as a result of this project.

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

Right-of-Way:

Required Right-of-Way anticipated: No Yes Undetermined
 Easements anticipated: None Temporary Permanent Utility Other

Location and Design approval: Not Required Required

Off-site Detours Anticipated: No Undetermined Yes

Transportation Management Plan [TMP] Required: No Yes

TMP consists of Temporary Traffic Control (TTC) Refer to Special Provision 150. TMP

County: Gwinnett County

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

FHWA/AASHTO Controlling Criteria	No	Undeter- -mined	Yes	Appvl Date (if applicable)
1. Design Speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Lane Width	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Shoulder Width	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Bridge Width	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Horizontal Alignment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Superelevation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. Vertical Alignment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Grade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. Stopping Sight Distance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Cross Slope	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. Vertical Clearance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. Lateral Offset to Obstruction	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13. Bridge Structural Capacity	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Design Variances to GDOT Standard Criteria anticipated:

GDOT Standard Criteria	Reviewing Office	No	Undeter- -mined	Yes	Appvl Date (if applicable)
1. Access Control - Median Opening Spacing	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2. Median Usage & Width	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3. Intersection Skew Angle	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4. Lateral Offset to Obstruction	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5. Intersection Sight Distance	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6. Bike, Pedestrian & Transit Accommodations	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7. GDOT Drainage Manual	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8. Georgia Standard Drawings	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9. GDOT Bridge & Structural Manual	Bridge Design	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Roundabout Illumination	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11. Rumble Strips	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12. Safety Edge	DP&S	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

VE Study anticipated:

No

Yes

Completed – Date:

County: Gwinnett County

ENVIRONMENTAL DATA

Anticipated Environmental Document:

GEPA: NEPA: Categorical Exclusion EA/FONSI EIS

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

This project is an exempt project, since it does not add capacity or change roadway conditions.

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

This project involves installation of conduits and fiber optic trunk, strain poles, and ITS equipment. This project requires less than 1 acre of land disturbance, therefore is exempt from compliance with MS4 permit as described in Section 4.2.5.1(a) of the permit.

Environmental Permits/Variations/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Forest Service/Corps Land	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. CWA Section 404 Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Tennessee Valley Authority Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5. Buffer Variance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6. Coastal Zone Management Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7. NPDES	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Less than 1 disturbed acre
8. FEMA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9. Cemetery Permit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10. Other Permits	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
11. Other Commitments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
12. Other Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Is a PAR required? No Yes Completed – Date:

NEPA/GEPA: A programmatic Categorical Exclusion (PCE) will be required and is in process.

Ecology: Ecology resource report will be required.

County: Gwinnett County

History: No Historic Properties Affected (NHPA) report will be required and approved by Georgia's state historic preservation office (SHPO).

Archeology: Archeology Short form will be required.

Air & Noise: Interagency coordination for PM 2.5 exemption will be required as part of the PCE.

Public Involvement: *N/A*

Major stakeholders:

- Gwinnett County Department of Transportation
- Georgia Department of Transportation
- Travelling Public
- First Responders/Public Safety

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: *N/A*

Early Completion Incentives recommended for consideration: No Yes

PROJECT RESPONSIBILITIES

Project Activities:

Project Activity	Party Responsible for Performing Task(s)
Concept Development	<ul style="list-style-type: none"> • <i>GDOT Office of Program Delivery</i> • <i>Gwinnett County Department of Transportation</i> • <i>Moreland Altobelli Associates, Inc.</i> • <i>ARCADIS U.S. Inc.</i>
Design	<i>Gwinnett County Department of Transportation</i>
Right-of-Way Acquisition	Not Anticipated
Utility Relocation	<i>Utility Owners</i>
Letting to Contract	<i>Gwinnett County Department of Transportation</i>
Construction Supervision	<i>Gwinnett County Department of Transportation</i>
Providing Material Pits	<i>Gwinnett County Department of Transportation</i>
Providing Detours	<i>Gwinnett County Department of Transportation</i>
Environmental Studies, Documents, and Permits	<i>Gwinnett County Department of Transportation</i>
Environmental Mitigation	<i>Gwinnett County Department of Transportation</i>
Construction Inspection & Materials Testing	<i>Gwinnett County Department of Transportation</i>

Lighting required: No Yes

County: Gwinnett County

Initial Concept Meeting: N/A**Concept Meeting: N/A****Other projects in the area:****Gwinnett County Project # M-0677 & F-0830**

Per ongoing construction projects # M-0677 & F-0830, Pleasant Hill Rd between the intersections of Summit Ridge Pkwy and Howell Ferry Rd is proposed to be widened to a six lane divided highway with 20 foot raised median and twelve foot lanes.

Gwinnett County Project # F-0035

Per the active design project# F-0035, Pleasant Hill Rd between the intersections of River Chase Trail and Howell Ferry Rd is proposed to be widened to a six lane divided highway with 20 foot raised median and twelve foot lanes.

Other coordination to date: N/A**Project Cost Estimate and Funding Responsibilities:**

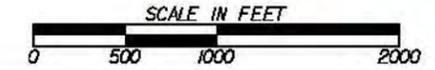
	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
By Whom	Gwinnett County DOT	Gwinnett County DOT	Gwinnett County DOT	GDOT (80%) & Gwinnett County DOT (20%)	Gwinnett County DOT	
\$ Amount	\$175,000.0	\$0.00	\$0.00	\$508,438.00	\$0.00	\$683,438.00
Date of Estimate	12/31/2011	N/A	N/A	12/10/2012	N/A	

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

ALTERNATIVES DISCUSSION

Preferred Alternative: The purpose of this project is to install ITS devices such as CCTV cameras, detector units and ITS communication network to perform the functionalities of ATMS along the project corridor.			
Estimated Property Impacts:	0	Estimated Total Cost:	\$683,438.00
Estimated ROW Cost:	\$0.00	Estimated CST Time:	August 2014
Rationale: The project would provide capabilities to perform the following functionalities of an ATMS along the corridor:			
<ul style="list-style-type: none"> • Monitoring and early detection of arterial incidents • Monitoring of accident “hot spots” to identify potential remedies • Signal timing monitoring and fine tuning 			

CONCEPT LAYOUT
PLEASANT HILL RD ATMS
(CSSTP-0006-00(823))



SIGNALIZED INTERSECTION PROPOSED UNDER GWINNETT COUNTY PROJECT *F-0035. CCTV SYSTEM REQUIRED TO PROVIDE SURVILLANCE AROUND THIS INTERSECTION SHALL BE PROPOSED AND COORDINATED UNDER PROJECT *F-0035.

RETAIN EXISTING CCTV SYSTEM IN THE SE QUADRANT.

EXISTING FIBER OPTIC TRUNK CABLE, SM 72 FIBER

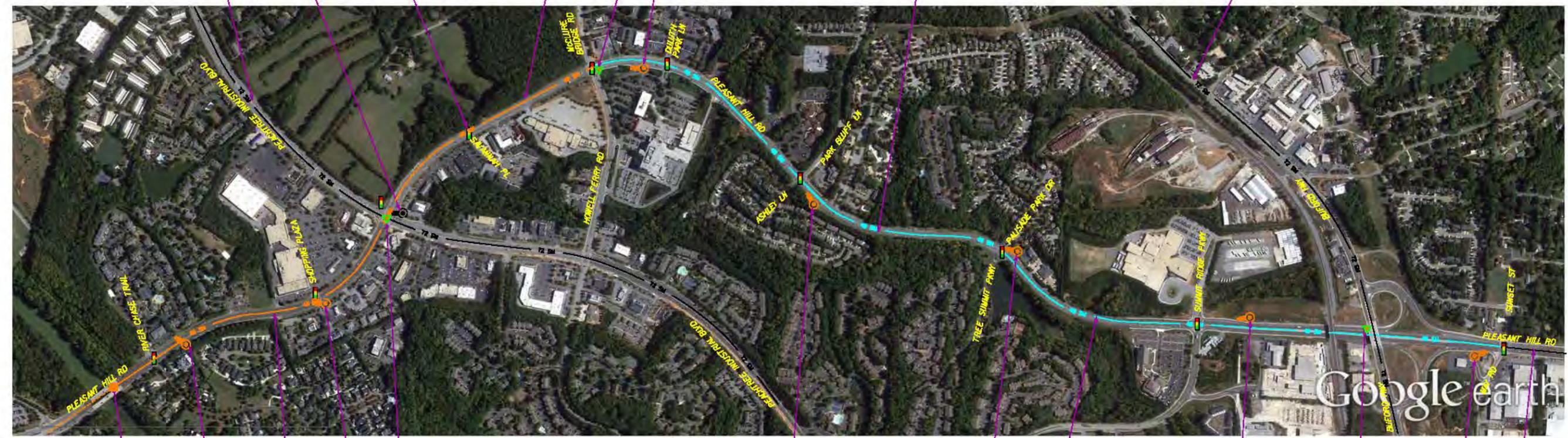
INSTALL FO TRUNK, 48 SM FIBER, IN CONDUIT, NONMETL, TP 3, 3/8" IN.

SPLICE THE PROPOSED 48 SM FIBER OPTIC TRUNK TO 48 SM FO TRUNK TO BE INSTALLED UNDER GWINNETT COUNTY PROJECT *M-0677 & *F-0830. FO SPLICE, FUSION (48)

INSTALL CCTV SYSTEM *3

USE FO TRUNK, SM 48 FIBER, TO BE INSTALLED UNDER GWINNETT COUNTY PROJECT *M-0677 & *F-0830.

EXISTING FIBER OPTIC TRUNK CABLE, SM 72 FIBER



INSTALL CCTV SYSTEM *4

INSTALL CCTV SYSTEM *5

INSTALL CCTV SYSTEM *6

TIE EXISTING 72 SM FO TRUNK ALONG PEACHTREE INDUSTRIAL BLVD TO 48 SM FO TRUNK PROPOSED ALONG PLEASANT HILL RD. FO SPLICE, FUSION (8)

USE FO TRUNK, SM 48 FIBER, TO BE INSTALLED UNDER GWINNETT COUNTY PROJECT *M-0677 & *F-0830.

TIE EXISTING 72 SM FO TRUNK ALONG BUFORD HWY AND 48 SM FO TRUNK ALONG PLEASANT HILL RD INSIDE THE PROPOSED TYPE C HUB CABINET. FO SPLICE, FUSION (8)

INSTALL CCTV SYSTEM *7

INSTALL CCTV SYSTEM *2 ON EXISTING SIGNAL TIMBER POLE. CCTV SYSTEM TO BE RELOCATED UNDER PROJECT *F-0035.

INSTALL FO TRUNK, 48 SM FIBER, IN CONDUIT, NONMETL, TP 3, 3/8" IN.

EXISTING FO TRUNK, 48 SM FIBER

INSTALL CCTV SYSTEM *1

FUTURE COMMUNICATIONS LINK TO BE COORDINATED WITH CITY OF JOHNS CREEK.

LEGENDS:

	Signalized Intersection		Proposed FO Fiber Optic Trunk
	Proposed CCTV System		Existing FO Trunk
	Existing CCTV System		FO Trunk to be installed under a different project
	Point Trunk Fiber Integration		Future Wireless Communication

DATE : 12/10/2012
PAGE : 1

JOB DETAIL ESTIMATE

JOB NUMBER : 0006823 SPEC YEAR: 01
DESCRIPTION: CR 3273/PLEASANT HILL RD FM BUFORD HWY TO FULTON CO LINE

ITEMS FOR JOB 0006823

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	150-1000		LS	TRAFFIC CONTROL - CSSTP-0006-00(823)	1.000	60000.00	60000.00
0010	615-1200		LF	DIRECTIONAL BORE - BORE SIZE 5" AND 7"	2500.000	10.43	26082.08
0015	639-4004		EA	STRAIN POLE, TP IV	10.000	6102.01	61020.18
0020	647-2160		EA	PULL BOX, PB-6	30.000	923.79	27713.82
0025	647-2170		EA	PULL BOX, PB-7	9.000	1277.74	11499.75
0030	682-6120		LF	CONDUIT, RIGID, 2 IN	500.000	10.61	5306.93
0035	682-6222		LF	CONDUIT, NONMETL, TP 2, 2 IN	2500.000	6.06	15164.53
0040	682-6233		LF	CONDUIT, NONMETL, TP 3, 2 IN	30000.000	3.00	90000.00
0045	935-1112		LF	OUT PLANT FBR OPTC CBL, LOOSE TB, SM, 12 FB	2500.000	2.50	6250.00
0048	935-3105		EA	FIBER OPTIC CLOSURE, UNDRGRD, 48 FIBER	9.000	450.00	4050.00
0049	935-3106		EA	FIBER OPTIC CLOSURE, UNDRGRD, 72 FIBER	2.000	620.00	1240.00
0050	935-3402		EA	FBR OPTIC CLOSURE, FDC(RACK MTD), 12 FBR	7.000	354.00	2478.00
0059	935-3405		EA	FBR OPTIC CLOSURE, FDC(RACK MTD), 48 FBR	1.000	940.00	940.00
0065	935-4010		EA	FIBER OPTIC SPLICE, FUSION	112.000	32.92	3687.85
0070	935-8000		LS	TESTING	1.000	1750.00	1750.00
0075	935-8500		LS	TRAINING	1.000	2000.00	2000.00
0080	936-1001		EA	CCTV SYSTEM, TYPE B	9.000	5100.00	45900.00
0085	936-8000		LS	TESTING	1.000	1750.00	1750.00
0090	936-8500		LS	TRAINING	1.000	2000.00	2000.00
0095	939-1191		EA	VIDEO ENCODER, TYPE B	9.000	3200.00	28800.00
0100	939-2305		EA	FIELD SWITCH, TYPE C	10.000	1565.19	15652.00
0105	939-4030		EA	TYPE C CABINET	1.000	5000.00	5000.00
0109	939-4040		EA	TYPE D CABINET	7.000	4690.00	32830.00
0125	999-5800		LS	SPEED DETECTION AND WARNING SYSTEM	1.000	18000.00	18000.00
0130	939-5010		EA	ELEC PWR SVC ASSEMBLY, AERIAL SVC POINT	7.000	1730.11	12110.83
0135	939-6000		EA	HUB UNINTERRUPTIBLE POWER SUPPLY	1.000	3000.00	3000.00
ITEM TOTAL							484225.94
INFLATED ITEM TOTAL							484225.94
TOTALS FOR JOB 0006823							
ESTIMATED COST:							484225.97
E&I Cost (5.0):							24211.30
ESTIMATED TOTAL:							508437.27



September 26, 2012

The Honorable Charlotte Nash
Commission Chairman, Gwinnett County
75 Langley Drive
Lawrenceville, GA 30046

Dear Chairman Nash:

I am returning for your files an executed agreement between the Georgia Department of Transportation and Gwinnett County for the following project:

Gwinnett County, PI# 0006823

We look forward to working with you on the successful completion of the joint project.
Should you have any questions, please contact the Project Manager Cynthia Burney at (404) 631-1851.

Sincerely,

Angela Robinson,
Financial Management Administrator

AR:kp

Enclosure

c: Bob Rogers
Bayne Smith – District 1 Engineer
Kim Coley – District 1 Planning & Programming Engineer
Neil Kantner – District 1 Utilities Engineer
Jeff Baker – State Utilities Engineer

AGREEMENT

DO NOT OBLIGATE

BETWEEN

DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

AND

GWINNETT COUNTY

FOR

TRANSPORTATION FACILITY IMPROVEMENTS

This Framework Agreement is made and entered into this 16th day of

September, 2012, by and between the DEPARTMENT OF TRANSPORTATION,

an agency of the State of Georgia, hereinafter called the "DEPARTMENT", and

Gwinnett County, acting by and through its Mayor and City Council or Board of

Commissioners, 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 reimburseable utility relocations, all non-reimburseable 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%. Attached 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 represents 100% 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

revised : 12/2011

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 plans 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' existing 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 conflicts 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 cause these presents to be executed under seal by their duly authorized representatives.

DEPARTMENT OF TRANSPORTATION

LOCAL GOVERNMENT NAME

BY: [Signature]
Commissioner

BY: [Signature]
Charlotte J. Nash, Chairman

ATTEST: [Signature]
Treasurer

Signed, sealed and delivered this 29th day of June, 2012, in the presence of:



[Signature]
Witness



[Signature]
Notary Public

This Agreement approved by Local Government, the 19th day of June, 2012.

Attest

[Signature]
Name and Title



FEIN: 58-6000835

Approved as to form:

[Signature]
Assistant County Attorney

Attachment "A" Funding Sources and Distribution

Project No.: 6823 Gwinnett

Attach "Project Manager" Project Charging Form for Approval

Preliminary Engineering Phase I	Preliminary Engineering - Phase I					GDOT Oversight for PE (Phase I) ²			Preliminary Engineering Grand Total (Phase I) ⁴	
	Percentage	PE Amount	Maximum PE Participation Amount (\$)	Participant	PE Activity Sponsor	Percentage	Amount	Participant	Percentage	Amount
	1	0%	\$0.00	\$0.00	Federal	Local Government	0%	\$0.00	Federal	0%
2	0%	\$0.00	\$0.00	State	0%		\$0.00	State	0%	\$0.00
3	100%	\$156,000.00	N/A	Local	100%		\$19,000.00	Local	100%	\$175,000.00
4	0%	\$0.00	\$0.00	Other	0%		\$0.00	Other	0%	\$0.00
Total	100%	\$156,000.00				100%	\$19,000.00		100%	\$175,000.00

Right of Way Phase II	Right of Way - Phase II						
	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	\$0.00	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:
	Locals	Locals
Total	100%	100%

Construction Phase III	Construction - Phase III				
	Percentage	CST Amount	Maximum CST Participation Amount (\$)	Participant	Letting By:
	1	80%	\$880,356.80	\$880,356.80	Federal
2	0%	\$0.00	\$0.00	State	
3	20%	\$220,089.20	N/A	Local	
4	0%	\$0.00	\$0.00	Other	
Total	100%	\$1,100,446.00			

Construction Oversight Phases V & VI	GDOT Oversight for CST (Phase III) ²	
	Testing (Phase V) Funding By:	Inspection (Phase VI) Funding By:
	Locals	Locals
Total	100%	100%

Summary of Phases II Through III	Grand Total Phases II through III			
	Percentage	CST Amount	Maximum ROW Participation Amount (\$)	Participant
	1	80%	\$880,356.80	\$0.00
2	0%	\$0.00	\$0.00	State
3	20%	\$220,089.20	N/A	Local
4	0%	\$0.00	\$0.00	Other
Total	100%	\$1,100,446.00		

The funding portion identified in Attachment "A" only applies to PE. The Right of Way and Construction funding estimates are provided for planning purposes and do not constitute a funding commitment for right of way and construction.

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

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

³The GDOT Oversight costs shall be returned to the original financing and procuring agency along with the signed Project Performance Agreement (PPA).

⁴Right of Way and Construction amounts shown are for budget planning purposes only.

ATTACHMENT "B" Project Timeline

PI # 0006823 – Gwinnett County

Proposed Project Timeline

Environmental Phase					
Concept Phase					
Preliminary Plan Phase					
Right of Way Phase					

Deadlines for Responsible Parties	Execute Agreement	September/2012 (Approve Concept)	August/2013 (Approve Env. Document)	Month/Year (Authorize Right of Way funds)	June/2014 (Authorize Const. funds)
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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

revised : 12/2011

be received by the Department no later than the first day of February of every calendar year until all phases have been completed.

ATTACHMENT "C"

Project# 0006823, Gwinnett County

D.O.T. 66

**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.

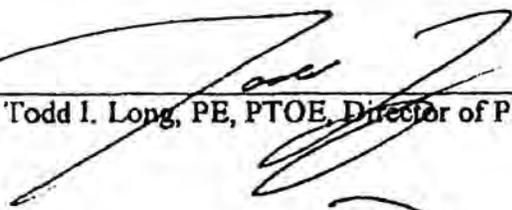
GDOT Requests Local Government/Project Sponsor to Fund PE Oversight:

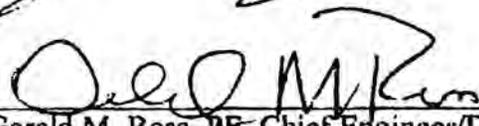
The Department will request that the local government fund PE oversight with 100% local funds under the following conditions:

- 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:  _____ 7/27/10
 Todd I. Long, PE, PTOE, Director of Planning Date

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

ATTACHMENT D

GDOT Oversight Estimate for Consultant Project

PI Number **Project Number**
County **Project Length** Miles
Project Manager **Project Cost**
Project Type
Project Description
Expected Life of Project Years

Project Phase	Oversight Hours	Oversight Cost
1. Procurement	0	\$ -
2. Concept Development	0	\$ -
3. Database Preparation	0	\$ -
4. Preliminary Design	0	\$ -
5. Environmental	0	\$ -
6. Final Design	0	\$ -
Travel Expenses	0	\$ -
Total Oversight Estimate	0	\$ -
Percentage of Project Cost	0.00 %	

GDOT Oversight Estimate for Consultant and Locally Administered Projects - Version 2.0 - July 2011

ATTACHMENT E

APPENDIX E—GEORGIA SECURITY AND IMMIGRATION COMPLIANCE ACT AFFIDAVIT

Name of Contracting Entity: Gwinnett County, GA

Contract No. and Name: Pleasant Hill Rd ATMS/ITS project
M-0685-17

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.G.A. § 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.

43321
E-Verify / Company Identification Number

[Signature]
Signature of Authorized Officer or Agent

10/10/11
Date of Authorization

J. Brooke Savage
Printed Name of Authorized Officer or Agent

Sr. Asst. G. Atty
Title of Authorized Officer or Agent

6/26/12
Date

SUBSCRIBED AND SWORN *for*
27th June, 2012.
Barbara J. Garceau

Barbara J Garceau
Notary Public
Newton Co., GA
Comm. Expires May 25, 2015

BEFORE ME ON THIS THE

27th DAY OF June, 2012

Barbara J. Garceau
Notary Public
Barbara J Garceau
Notary Public
Newton Co., GA

[NOTARY SEAL]

My Commission Expires: ~~Comm. Expires~~ May 25, 2015

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.

TITLE VI ACKNOWLEDGEMENT FORM

The Gwinnett County 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 Gwinnett County 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.

J. Brooke Savage
Sr. Asst. Co. Mgr.
Official Name and Title

10/26/12
Date

Citations:

Title VI of the Civil Rights Act of 1964; 42 USC 2000d to 2000d-4; 42 USC 4601 to 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)



**Concept of Operations
for the Gwinnett County ITS Master Plan**

Contract No: RP025-0704

Prepared for:

GWINNETT COUNTY DEPARTMENT OF TRANSPORTATION
75 LANGLEY DRIVE.
LAWRENCEVILLE, GA 30045-6900

Prepared by:



400 NORTHPARK TOWN CENTER
1000 ABERNATHY ROAD, NE
SUITE 900
ATLANTA, GA 30328

In conjunction with:



1830 WATER PLACE
SUITE 290
ATLANTA, GA 30339

October 22, 2007

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1 INTRODUCTION

Intelligent transportation systems (ITS) can be defined as “the integrated application of sensor, computer, electronic, and communication **technologies and management strategies** to provide traveler information to improve **safety, mobility, efficiency, reliability and sustainability** of the surface transportation system.” Or, simply put, *People using technology in transportation to save time, lives, and money.*

This Concept of Operations document describes the manner in which the Gwinnett County Department of Transportation (GCDOT) and other Gwinnett County stakeholders interact to provide transportation, emergency and other services, and how ITS tools can be applied to improve these services. This document is a visionary document that provides high level description of what the major system capabilities may be in both the short-term and long-term timeframes – and attempts to answer the following questions:

- What – What are the high-level capabilities of the system?
- Where – What are the geographical and physical extents of the system?
- How – What resources do we need to design, build, or retrofit the system?
- When – What is the time-sequence of activities that will be performed?
- Who – Who are the stakeholders involved with the system?
- Why – What does your organization lack that the system will provide?

The Concept of Operations represents the first steps in the systems engineering process, depicted below in Figure 1 and is consistent with Federal Highway Administration (FHWA) guidelines for preparation of Operational Concept documents.

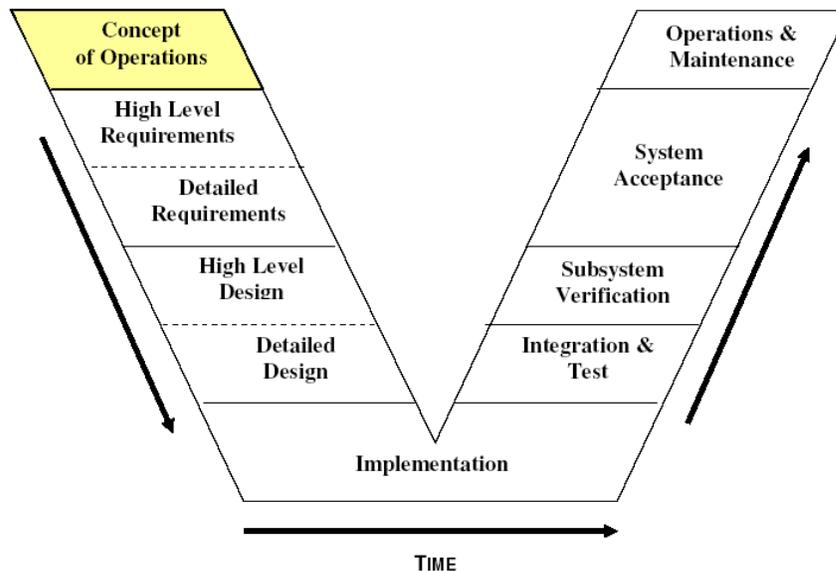


Figure 1: “V” Diagram of Systems Engineering

The goals of this Concept of Operations for the Gwinnett County ITS include:

- *Stakeholder Identification and Communication.* Stakeholders are identified and engaged to determine the needs, goals and objectives of the system.
- *High-level System Definition.* All stakeholders must understand, at a high-level, what the system is being designed to do and how the Gwinnett County TCC will support the system operations.
- *Foundation for Lower-level System Description.* The Concept of Operations is a starting point for development and the lower-level description of the system, beginning with a requirements document.
- *Definition of Major User Classes and User Activities.* All stakeholders are made aware of the different types of users of the system and activities those users will perform. This allows everyone who uses the document to get an idea of who is performing what task and in what order they are performing those tasks.

1.1 Data Collection Process

Information contained in this document was obtained through a methodical data collection process consisting of GCDOT and stakeholder workshops and interviews, and the review of additional sources of data and information including Internet websites, etc. The documentation and website sources reviewed include the following:

- Guide to Preparation of Operational Concept Documents (ANSI/AIAA G-043-1992)
- FHWA TMC Pooled-Fund Study – TMC Concept of Operations, Implementation Guide (<http://tmcops.ops.fhwa.dot.gov>)
- Transportation Management Center: Concept of Operations. Report No. FHWA-OP-99-029 (<http://www.itsdocs.fhwa.dot.gov/jpodocs/reptmis/8v@01!.pdf>)
- ARC's Atlanta Regional ITS Architecture (<http://www.dot.state.ga.us/dot/operations/trafficops/grits/index.shtml>)
- Gwinnett County Comprehensive Transportation Plan
- Gwinnett County Strategic Deployment Plan
- GDOT Systems Engineering Process
- Gwinnett County-wide WIFI Project (www.co.gwinnett.ga.us)
- Gwinnett County Website (<http://www.co.gwinnett.ga.us/cgi-bin/gwincity/egov/ep/home.do?tabId=3>)
- Georgia Emergency Management Agency (GEMA) Website <http://www.gema.state.ga.us/>



- Clayton County Concept of Operations
- Gwinnett County TCC Migration and Upgrade Project Specifications, dated March 2007.
- Traffic Incident Management Enhancement Task Force (TIME) Website <http://www.dot.state.ga.us/specialsubjects/time/index.shtml>

Identifying and involving stakeholders is an important task in ITS development since effective ITS's involve the integration of multiple stakeholders and their systems. Table 1 lists the ITS stakeholders identified and contacted for this project.

Contact information for each stakeholder is included in the Atlanta regional ITS architecture database and can be viewed on the website.

• Gwinnett County Department of Transportation	• Gwinnett Village CID
• Gwinnett County Fire & Emergency Services	• Evermore CID
• Gwinnett County Police	• City of Dacula
• Gwinnett County Sheriff	• City of Duluth
• Gwinnett County Airport – Briscoe Field	• City of Grayson
• Gwinnett County Communications Manager	• City of Lawrenceville
• Gwinnett County Technical Operations Manager	• City of Lilburn
• Gwinnett County Transit	• City of Loganville
• City of Auburn	• City of Norcross
• City of Berkeley lake	• City of Snellville
• City of Braselton	• City of Sugar Hill
• City of Buford	• City of Suwanee
• Gwinnett Place CID	

Table 1: Gwinnett County ITS Stakeholders

2 SCOPE OF PROJECT

2.1 Document Content and Organization

This document outlines the Concept of Operations of the Gwinnett County ITS and corresponding Transportation Control Center (TCC). It attempts to describe how the system will look and feel to a variety of users of the system. While different sections of this document will describe the same system, each section is intended to describe it from a different point of view, or for a different user. Thus, each section of the document will be of value to a different audience.

- Section 1.0 provides the purpose and goals of the document and describes the data collection process for this project.
- Section 2.0 provides an overview of the entire Concept of Operations. This section also provides the purpose for implementing the system, the intended audience, the project boundaries, and introduces the overall vision, mission and goals of the system.
- Section 3.0 provides a description of the system by describing the activities of the various users of the system. It describes the essential functions, activities, and processes that need to be performed by the ITS and TCC.
- Section 4.0 describes the user and personnel operational needs that will drive the overall ITS and TCC design requirements, in effect, why the ITS is needed.
- Section 5.0 provides an overview for both the near-term and long-term deployment plans of the Gwinnett ITS and TCC and how it fits in with the rest of the region.
- Section 6.0 provides a view of the environment in which the TCC exists. This section defines the types of equipment, communications, and personnel required to operate and maintain the TCC as well as the outside resources required to make ITS a success.
- Section 7.0 provides a narrative view of a day in the life of the Gwinnett County ITS and TCC.

2.2 Purpose for Implementing the System

The purpose of this section is to provide a brief description of the current system, how it is used currently, its limitations, and the reasons for the proposed deployment, upgrade and expansion plans for additional capabilities and improving the system operations.

Prior to the 1996 Olympic Games in Atlanta, the Georgia Department of Transportation (GDOT) deployed a series of Transportation Control Centers (TCC) throughout the

metropolitan Atlanta area. These TCCs are connected with the GDOT Traffic Management Center (TMC) located on Confederate Avenue in Atlanta. This collection of local TCCs, the GDOT TMC, and the systems controlled through the centers is known as the NaviGator system as shown in Figure 2.

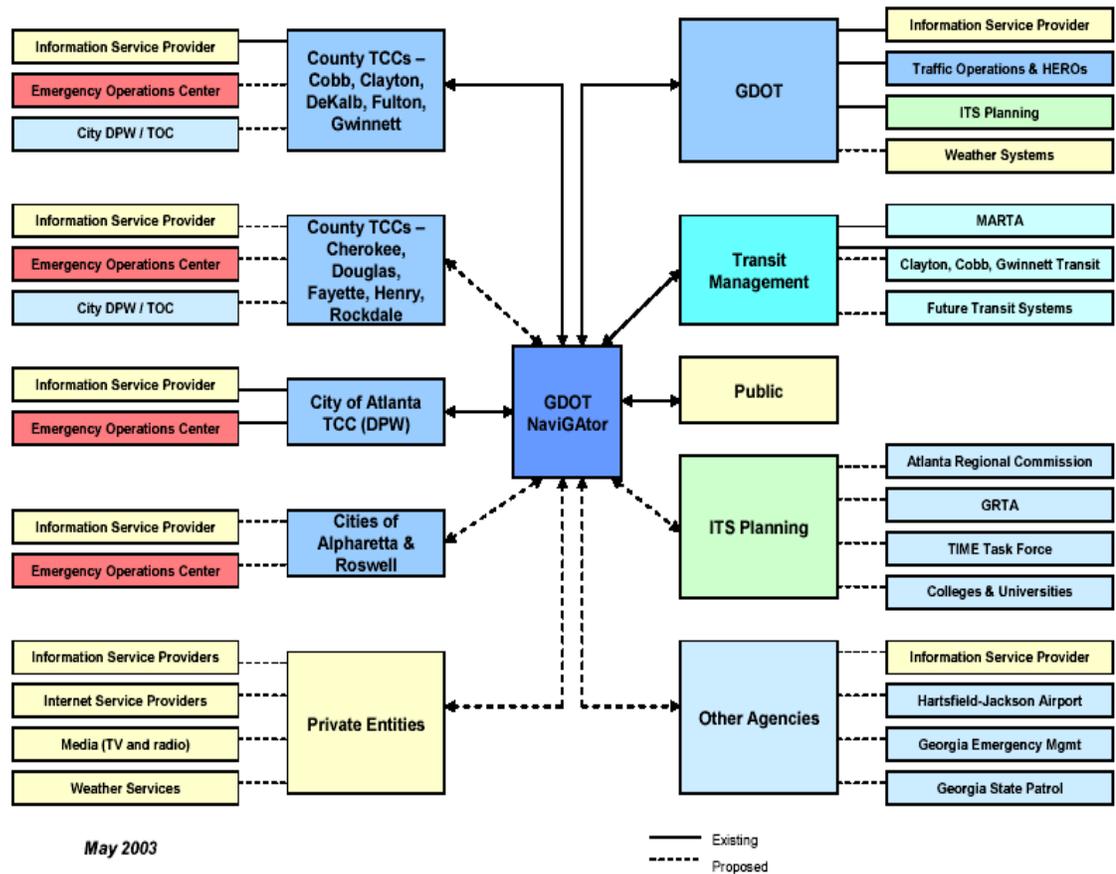


Figure 2: Atlanta Regional ITS Concept of Operations for Traffic
(from: Atlanta Regional ITS Architecture 2003)

The existing Gwinnett TCC is located in a small room in the Gwinnett County Justice and Administration Center on Langley Drive. Most of the components in the Gwinnett County TCC (GC TCC) are the original equipment that was provided by GDOT in 1995. As such, the GC TCC, like many of the other TCCs in the Atlanta area, has reached a state where major upgrades and enhancements are needed to bring it back to full functionality. Many of the components are obsolete as the technology and systems required to operate modern TCCs has changed drastically in the past 12 years.

The Gwinnett County DOT seized the opportunity to update the TCC as part of the construction of the Gwinnett County DOT Central Maintenance Facility that is scheduled to open in 2007. The new TCC will be constructed in this facility and will connect to the



legacy systems in the existing TCC in the Gwinnett County Justice and Administration Center.

The new TCC is envisioned to perform all of the current functions of the existing TCC while upgrading operations to the current state of the art, supporting existing as well as future ITS services including: Emergency/Incident Management, Arterial Management, Freeway Management, Traveler Information, Transit Management, Airport Management, and Maintenance and Construction Management. All existing and future ITS services will be managed and operated from the new TCC.

For example, the legacy NaviGator systems transmitted video images using analog data transmission, while the current NaviGator standards depend on digital transmission of all data, including video. The TCC and all future Gwinnett ITS deployments will operate with digital communications networks, yet should still support legacy equipment operating with analog data.

The new TCC and infrastructure will allow Gwinnett County to pursue the enhancement and expansion of ITS services within the County. These enhancements and expansion in functionality will include the connection to other Departments, such as Gwinnett County 911 Dispatch, GEMA Area 7 Center, and more capabilities to provide information to the public, such as traveler information broadcasts over cable TV networks or Dynamic Message Signs. These future enhancements and capabilities are further identified and defined in Section 4.0 of this document.

2.3 Major Goals and Objectives

The purpose of a TCC is to create an environment within Gwinnett County that will allow for immediate and real-time transportation system operations. These operations will allow for safer roads, faster response to emergencies and incidents, and provide better quality of life to the locals of Gwinnett County.

Based on the stakeholder workshops and GCDOT meetings, Gwinnett County transportation and communications problems and needs were identified. From these problems and needs, system goals and objectives were developed and prioritized.

The following goals and objectives were developed during the stakeholder meeting workshops. Goals are categorized into the following categories, which are listed in the priority order determined by the stakeholders.

1. Safety
2. Mobility
3. Efficiency

- 4. Reliability
- 5. Sustainability

Objectives were identified for each of the goals and each objective has strategies or performance measures. The following tables document the goals, objectives and strategies for the system.

Table 2: Goal # 1: Safety

Objectives	Strategies/Measures
<ul style="list-style-type: none"> • Coordinate response on major incidents • Reduce incident duration time 	<ul style="list-style-type: none"> • Clear all incidents in 30 minutes or less • Clear all incidents in 30 minutes or less • Implement emergency preemption • Staff TCC for incident detection and management during peak traffic hours • Implement procedures to collect public safety data on the duration of incidents on major arterials
<ul style="list-style-type: none"> • Coordinate incident response with other local and regional agencies 	<ul style="list-style-type: none"> • Monthly briefings with local agencies on major incidents • Establish formal methods of communication about detected incidents between local agencies • Participate and coordinate with the TIME Task Force. • Examine ways to enhance use of ITS for incident management
<ul style="list-style-type: none"> • Maintain safe working environment for GCDOT responder's/technicians 	<ul style="list-style-type: none"> • Conduct monthly safety reviews • Include equipment maintenance in design phase
<ul style="list-style-type: none"> • Reduce fatality rate 	<ul style="list-style-type: none"> • Implement emergency pre-emption • Provide CCTV coverage on major arterials • Identify hot spots and conduct operational improvement studies • Monitor construction roadway closures • Provide real-time roadway performance
<ul style="list-style-type: none"> • Reduce secondary crashes 	<ul style="list-style-type: none"> • Educate drivers on safety, rubber-necking, "steer it, clear it" law • Provide accident information using DMS displays on major arterials • Provide alternate route information to motorists

Table 3: Goal # 2: Mobility

Objectives	Strategies/Measures
<ul style="list-style-type: none"> Develop more corridors (arterials/collectors) that are interconnected 	<ul style="list-style-type: none"> Work projects through GDOT and the MPO planning process (LRTP and TIP)
<ul style="list-style-type: none"> Accommodate anticipated changes in traffic volumes resulting from future land development 	<ul style="list-style-type: none"> Conduct planning studies before the onset of design and construction
<ul style="list-style-type: none"> Reduce peak period demand in areas of recurring congestion 	<ul style="list-style-type: none"> Provide incentive programs for carpool riders and transit riders Begin installing signals that automatically adjust for congestion (adaptive signal control) on selected corridors Implement reversible flow lanes where applicable
<ul style="list-style-type: none"> Reduce peak period congestion 	<ul style="list-style-type: none"> Maintain LOS at key intersections and major corridors at D or better Reduce or hold peak period travel times to less than one percent annual increases on major corridors
<ul style="list-style-type: none"> Increase use of alternate transportation modes 	<ul style="list-style-type: none"> Increase route coverage and service level of transit Implement transit signal priority Implement methods to locate, dispatch and geographically display transit vehicles in real time Provide expected and actual transit vehicle arrival times
<ul style="list-style-type: none"> Encourage use of alternate routes 	<ul style="list-style-type: none"> Provide alternate route information on website Provide alternate route information directly to motorists
<ul style="list-style-type: none"> Provide accurate and reliable traveler information 	<ul style="list-style-type: none"> Provide traveler information using radio, GCTV, website, DMSs, cell phones, and kiosks Educate/outreach about existing and future traveler information tools
<ul style="list-style-type: none"> Disseminate arterial/incident management data and information regarding major incidents 	<ul style="list-style-type: none"> Make information accessible through a variety of means including radio, GCTV, website, cell phones, DMS displays Integrate with Georgia 511 system

Table 4: Goal # 3: Efficiency

Objectives	Strategies/Measures
<ul style="list-style-type: none"> Maintain efficient traffic signal operations 	<ul style="list-style-type: none"> Retime signals every 24 months Respond to citizen complaints within 3 days
<ul style="list-style-type: none"> Improve efficiency of existing surface transportation 	<ul style="list-style-type: none"> Retime arterials and corridors on a 24-month cycle Conduct 10 operational improvement studies every fiscal year
<ul style="list-style-type: none"> Identify and implement new technologies 	<ul style="list-style-type: none"> Develop an active research program for the transportation group at GCDOT Conduct training programs on upcoming technologies every fiscal year
<ul style="list-style-type: none"> Determine where mobility and throughput should be emphasized corridor by corridor 	<ul style="list-style-type: none"> Retime arterials and corridors on a 24-month cycle
<ul style="list-style-type: none"> Create a level of service for maintenance 	<ul style="list-style-type: none"> Maintain monthly briefings to review progress on maintenance issues Implement a preventive maintenance program for ITS devices
<ul style="list-style-type: none"> Improve closed loop signal operations (WIFI) 	<ul style="list-style-type: none"> Use County wide WiFi network for communications
<ul style="list-style-type: none"> Adjust signal timing based on real-time travel data and accident/incident data 	<ul style="list-style-type: none"> Implement collection of real-time travel data and accident/incident data Implement adaptive signal control
<ul style="list-style-type: none"> Improve efficiency of transit operations 	<ul style="list-style-type: none"> Implement transit signal preemption Increase route coverage and service level of transit
<ul style="list-style-type: none"> Improve interagency/inter-jurisdictional communications and coordination 	<ul style="list-style-type: none"> Schedule regular meetings between GCDOT and local agencies Establish formal methods of communication about traffic conditions and detected incidents between local agencies

Table 5: Goal # 4: Reliability

Objectives	Strategies/Measures
<ul style="list-style-type: none"> • Reduce daily travel time variance 	<ul style="list-style-type: none"> • Provide alternate route information during special events and accidents using website, GCTV, DMS displays etc.
<ul style="list-style-type: none"> • Provide accurate timely travel information 	<ul style="list-style-type: none"> • Make information accessible through a variety of means including radio, GCTV, website, cell phones, DMS displays
<ul style="list-style-type: none"> • Improve maintenance of equipment 	<ul style="list-style-type: none"> • Deploy maintenance programs of field equipment every fiscal year • Implement a preventive maintenance program for ITS devices

Table 6: Goal # 5: Sustainability

Objectives	Strategies/Measures
<ul style="list-style-type: none"> • Support economic development 	<ul style="list-style-type: none"> • Reduce or hold peak period travel times to less than one percent annual increases on major corridors • Clear all incidents in 30 minutes or less • Develop real-time dissemination of transit, traffic, incident and special event information in a manner that allows the public to make informed decisions regarding their travel options
<ul style="list-style-type: none"> • Improve interagency/inter-jurisdictional communications and coordination 	<ul style="list-style-type: none"> • Schedule regular meetings between GCDOT and local agencies
<ul style="list-style-type: none"> • Ensure long term viability of ITS 	<ul style="list-style-type: none"> • Conduct training programs on upcoming technologies every fiscal year

2.4 Intended Audience

This document was developed so decision makers (both technical and non-technical), managers, administrators, system operators, planners, and maintenance technicians can fully understand the system requirements, functions, and purpose.

By fully understanding the goals, objectives, needs, and operational scenarios developed for Gwinnett County ITS, each member of the audience can more fully appreciate their role and responsibility for the operation, maintenance and funding of the Gwinnett County ITS and TCC.

The Gwinnett County ITS Mission Statement is as follows:

The primary mission of Gwinnett County ITS is to minimize delays on the roadway system by providing peak hour and special event surveillance of county roadways to identify incident locations and areas of congestion, allowing remote signal coordination and maintenance, and enabling local (government, business and citizen) access to traffic conditions.

Before ITS can be effectively deployed, ITS stakeholders should come together to develop a common vision for ITS. This vision statement is a key component of the Gwinnett County ITS Master Plan because it provides overall direction for the identification of stakeholder needs, operational concepts, potential ITS strategies, technologies, and ultimately the final project recommendations.

It is the vision of the Atlanta region to take full advantage of the existing GDOT NaviGator communications network and expand it to provide an information sharing system with any regional stakeholder that desires to participate. Currently, the NaviGator system has fiber optic cable and transmission equipment in place that enables TCCs in Clayton, Cobb, DeKalb, Fulton and Gwinnett; two city TCCs (City of Atlanta and Cities of Alpharetta/Roswell); and one transit operator (Metropolitan Atlanta Rapid Transit Authority) to communicate electronically with GDOT and one another. The regions' stakeholders expressed that many additional agencies within these six jurisdictions need to be connected electronically with the local TCCs, and then to the NaviGator center. These agencies include other local traffic centers, transit operations centers, incident response centers (911, police, fire, and emergency management), and transit operations centers.

During the various stakeholder workshops conducted as part of this project, key transportation and public safety representatives worked together building upon this existing ITS regional framework, to develop a specific vision for Gwinnett County ITS.

The Gwinnett County ITS Vision statement is as follows:

The Gwinnett County ITS vision builds on local, regional, statewide and national efforts to implement ITS tools, techniques and partnerships to improve safety, mobility, transportation efficiency and emergency response in support of economic development and quality of life.

2.7 System Architecture and Center Interface Requirements

Based on the Atlanta Regional ITS Architecture and the stakeholder workshops conducted for this project, the following 27 ITS Services have been identified as



appropriate for addressing the ultimate goals and objectives of the County and for application in this Concept of Operations document. These ITS services represented by market packages cover both short-term and long-term deployment timeframes. The recommended Gwinnett County ITS Services are as follows:

Transit / Public Transportation Management

- APTS02 – GC Transit Fixed-Route Operations
- APTS03 – GC Demand Response Transit Operations
- APTS05 – Transit Security
- APTS07 – Statewide Multi-modal Coordination

Traveler Information

- ATIS01 – Broadcast Traveler Information
- ATIS02 – 511 Interactive Traveler Information

Arterial / Freeway / Airport Management

- ATMS01 – Gwinnett Network Surveillance
- ATMS02 – Transit Vehicle Probe Surveillance
- ATMS03 – Gwinnett Surface Street Control
- ATMS06 – Gwinnett Traffic Information Dissemination
- ATMS07 – Statewide Coordinated Traffic Management
- ATMS08 – Atlanta Area Incident Management
- ATMS13 – Atlanta Area Railroad Grade Crossing
- ATMS14 – Atlanta Area Advanced Railroad Grade Crossing
- ATMS15 – Traffic Control and Railroad Operations Coordination
- ATMS16 – Parking Facility Management

Emergency/Incident Management

- EM01 – GA Emergency Call-Taking and Dispatch
- EM06 – GA Wide-Area Alert
- EM07 – GA Early Warning System
- EM08 – GEMA Area 7 Disaster Response and Recovery
- EM08 – Statewide Disaster Response and Recovery
- EM09 – Evacuation and Reentry Management
- EM10 – Disaster Traveler Information

Maintenance and Construction Management

- MC03 – Road Weather Data Collection
- MC04 – GDOT Weather Information Distribution
- MC08 – Work Zone Management
- MC09 – Maintenance and Construction Coordination

Center Interconnection Requirements

Based on the Atlanta Regional ITS Architecture the following centers/systems are currently interconnected with the Gwinnett County TCC through various communications media and methods:

- County Sheriff Dispatch
- GSP Troop C Dispatch
- Local Police Dispatch
- Local Fire Dispatch
- Local EMS Dispatch
- Local (City) TCCs
- Gwinnett County Field Equipment
- GDOT TMC – NaviGator

The following interconnects are identified in the ITS Architecture for future system deployment:

- 911 Centers
- Gwinnett County Transit Center
- Gwinnett County Airport
- Gwinnett County Construction and Maintenance
- Gwinnett County Website
- Gwinnett Local Cable Television channel
- Event Locations
- GDOT Statewide Construction and Maintenance System
- GEMA Area 7 Center
- Local EOC
- Media
- NavWeb TCC
- Other Public Transit Dispatch Systems
- Rail Operations Centers
- Regional Transit Management Center
- Utility Systems
- Weather Information System

3 USER-ORIENTED OPERATIONAL DESCRIPTION

This section describes the future Gwinnett County ITS from a user vantage point. It describes a vision of the essential functions, activities, and operational processes that need to be performed by the Gwinnett County users and TCC personnel to operate, monitor, maintain, and support the Gwinnett County ITS, communications, and traffic devices in the field for the management of traffic, incidents, and emergencies. It also conveys a vision for the inter-agency interactions, connections, and types of activities within the TCC as illustrated in Figure 3.

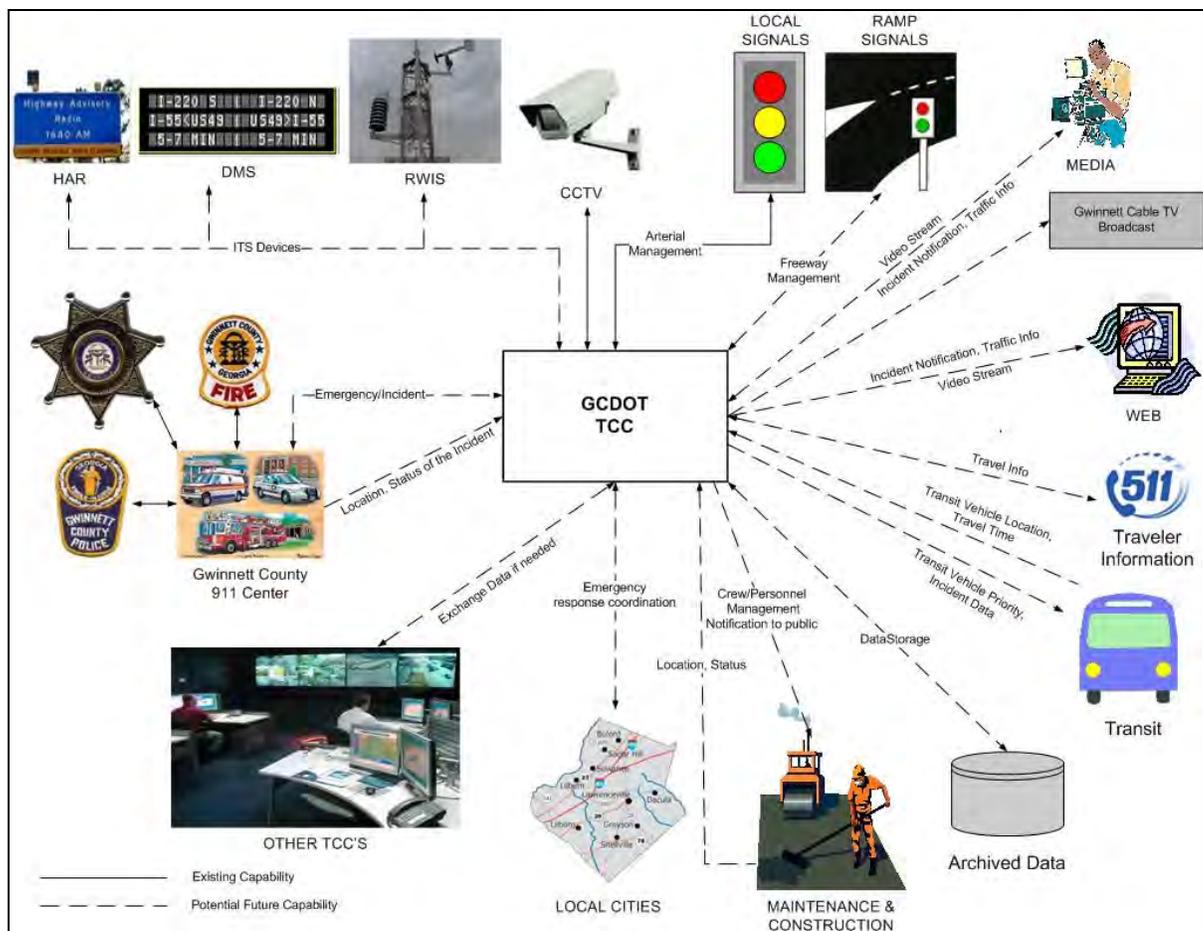


Figure 3: Gwinnett County ITS Overview

This section does not attempt to define the number of people required to support the TCC. Manpower requirements may require that one person assume multiple roles at any given time.

3.1 TCC Users

The Concept of Operations document is intended for audiences both internal and external to Gwinnett County. Internally, the Concept of Operations describes the operations of the TCC to employees within the GCDOT. The Concept of Operations does not define specific job responsibilities, yet it defines at a high level how the TCC operates and the general functions of ITS services at the TCC.

For other Gwinnett County Departments, the Concept of Operations provides an overview of the capabilities of the TCC, the TCCs responsibilities in transportation and emergency management, and the interaction between the TCC, GDOT, local agencies and other Gwinnett County Departments.

Further descriptions of how the various users and personnel will interact with the Gwinnett County ITS and TCC systems and each other are further described in Section 7.0, Operational Scenarios.

Gwinnett County Department of Transportation (GCDOT): Gwinnett County DOT personnel can utilize the TCC to coordinate activities of personnel in the event of an emergency, incidents, or other unusual conditions or events. The TCC staff can use the functions of the TCC to view Closed Circuit Television (CCTV) images of road conditions, incidents, events, and place corresponding information on Dynamic Message Sign (DMS) located on the corridors. The TCC will also allow them to collect data such as Road Weather Information System (RWIS) and vehicle count information for use in forecasting road conditions and travel times.

TCC Manager

The TCC Manager will be responsible for the overall operation of the Gwinnett County TCC. These responsibilities will include, but are not limited to:

- Review and respond to emergency calls forwarded by support staff, such as a report of a traffic signal in flash.
- Coordinate training of TCC Operators.
- Develop staffing schedules for the TCC.
- Coordinate staff assignments during periods of heavy activity.
- Monitor the performance of all TCC system computers, networks, and communications.
- Control which video channels are available for output to the media and public.
- Review and analyze TCC response to reported problems to determine better practices and procedures, if necessary.

- Coordinate with maintenance crews to prioritize ITS repairs with other maintenance activities.
- Notify higher levels of command in the case of major incidents.

TCC Operator

The TCC Operator will be responsible for performing the day to day operations of the TCC. These responsibilities will include, but are not limited to:

- For systems available to the TCC, review the operation of each traffic signal system on a daily basis.
- Work with traffic signal engineers and field crews to review and respond to citizen service requests.
- Work with Signal Timing Engineers to install new signal timing databases as necessary.
- Review signal related reports, such as reports of malfunctioning traffic signals.
- Periodically scan cameras for unusual traffic congestion. Use the cameras to determine cause of the congestion, if possible.
- Monitor the GDOT NaviGator system for incidents that will impact Gwinnett County.
- Report any incidents to the 911 Center for proper emergency response. Use video images to provide accurate and descriptive information to the 911 dispatcher to ensure the dispatch of the appropriate equipment and personnel.
- Interface with the GDOT NaviGator system to enter incident data.
- Notify TCC Manager of significant incidents.
- Monitor maintenance and construction activities that may impact Gwinnett County.

TCC Network Systems Administrator

The TCC Systems Administrator will be responsible for maintaining the computers and computer systems utilized in the TCC. These responsibilities will include, but are not limited to:

- Coordinate software installation and testing on TCC equipment.
- Communicate with computer system vendors for improvements.
- Arrange for the repair of equipment under warranty, or exceeding in-house repair capabilities.

- Maintain all security privileges to TCC systems.
- Monitor the performance of all TCC systems.
- Order supplies and maintenance related items.

Traffic Signal Engineer/Traffic Signal Trades Technician

The Traffic Signal Engineers and Technicians will utilize the components of the TCC in the course of performing their existing job responsibilities. In many cases, the TCC will provide an easier or more efficient way to perform these functions. Some functions that may be performed by the Traffic Signal Engineer/Technician will include, but are not limited to:

- Access traffic signal controllers to verify signal timing database.
- Download new signal timing databases to the signal controller.
- Use surveillance cameras to observe traffic conditions along corridors and modify signal timing.
- Use surveillance cameras and connection to traffic signals to validate operational complaints.
- Contact field maintenance crews for problems that must be corrected in the field.

Existing Agency / Center Interconnects with the TCC

GDOT TMC – NaviGator: Freeway management coordination with the TCC and traveler information dissemination through NavWeb. Exchange of area-wide transportation, emergency, evacuation and coordination information with the TCC. Traffic control / arterial network coordination for route diversion execution and planning.

Other TCCs: Other neighboring TCCs can exchange information during emergency situations to coordinate response activities more effectively and efficiently. Traffic data information can be used to coordinate signal timing among neighboring jurisdictions with coordinated systems.

Future Agency / Center Interconnects with the TCC

Gwinnett County 911 Dispatch Center: 911 Dispatch would exchange information with the TCC during emergency situations to coordinate response activities more effectively and efficiently. Traffic and incident data information, road network conditions, alert notification, emergency traffic control request, evacuation

information, and CCTV cameras can be used to coordinate emergency / incident operations.

Local EOC: Local EOC would interface with the TCC for incident management / monitoring information, surveillance and detection on arterials, traffic signal control strategies on arterials, signal preemption for emergency vehicles, and arterial weather detection.

Georgia Emergency Management Agency (GEMA) Area 7 Center: GEMA is the statewide coordinator for emergency management and would exchange information with the Gwinnett County TCC and other transportation agencies and emergency responders during emergency and wide-scale evacuation situations to coordinate overall response activities more effectively and efficiently. Exchange transportation and incident data/information and coordinate resources among various County agencies. Create standard operating procedures that will lead to a coordinated evacuation and disaster response plan.

Georgia State Patrol (GSP), Gwinnett County Police & Fire: Dispatch personnel can utilize the TCC application to view CCTV cameras situated at critical locations through out the County to monitor incidents or events. GSP, Local Police and Fire will be able to view other road conditions and be able to direct an appropriate response to the proper location. The GSP and Local Police can also monitor the ITS devices at the TCC during special events to control traffic flow and management of road closures and alternate route execution across the County

Gwinnett County Sheriff: Gwinnett County sheriff would interface with the TCC for incident and evacuation information, remote surveillance control, and to coordinate emergency response activities and management of road closures and alternate route execution across the County and state including status reporting and resource allocation for optimal emergency response.

Motorists: Motorists will receive both regulatory and advisory information from the Gwinnett County TCC via DMS, Gwinnett Cable TV Broadcast, Highway Advisory Radio (HAR), and AM and FM broadcasts. Images from CCTV cameras will be made available over the Internet or through the media so that the motorist can make informed decisions. With the widespread use of cellular phones, motorists provide additional input through 911 dispatch center for the identification and verification of highway incidents.

Travelers: Travelers or pre-trip planners make travel decisions based on information distributed by the Gwinnett County TCC regarding traffic conditions within the project limits. This information will normally be received through

Gwinnett Cable TV Broadcast, tuning to the HAR, DMS displays, or via the Internet.

Local Cities in Gwinnett County: Local cities and county public works departments can access information using CCTV cameras, RWIS information, road conditions, and road closure information in order to make more informed operational and maintenance decisions. When coordination between cities and the County is needed for emergencies or major events, the TCC can act as an information resource for local agencies and cities.

Local EMS Dispatch Center: Local EMS Dispatch would interface with the TCC for incident management / monitoring information, surveillance and detection on arterials, traffic signal control strategies on arterials, signal preemption for emergency vehicles, and arterial weather detection data.

Gwinnett County Airport: Airport would interface with the TCC for real-time traveler information on surface streets and share airport status with travelers. Disseminate travel time information to airport customers and share open/closed status of airport with customers. Airport may participate in the GA 511 system by providing open/closed status and airline schedule information.

Gwinnett County and Other Transit Center: GC transit center would interface with the TCC for local route traffic / road network conditions, transit system data, signal priority systems and real-time video display along routes and communications.

Local / Statewide Construction and Maintenance System: Exchange equipment maintenance status, maintenance and construction work plans, road network status, road weather information, roadway maintenance status and work zone information with the TCC for overall coordination of maintenance and construction activities.

Information Service Providers: An Information Service Provider (ISP) operated through NaviGator will provide timely traffic information to GC local radio stations, television stations, newspapers, and potentially cable operators. ISP would collect, process, and store information from the TCC and disseminate transportation information to system operators and to the traveling public.

Media: Exchange road network conditions, video surveillance video, external reports and media information requests with the TCC.

Rail Operations Center: The TCC would remotely control highway-rail intersection (HRI) equipment located in the field. Collect HRI advisory or alert

data from rail operations center and provide HRI equipment operational status to rail operations center. Control coordinated signalized intersections around HRI.

Other Regional Agencies

There are other agencies in the Gwinnett County and Atlanta region that may not have a direct role in Gwinnett County transportation operations but have a need to exchange data and information with the GC ITS network and would benefit from the information sharing.

The data collected by the NaviGator system and by the local partners provides a wealth of transportation planning data that was not previously available. The NaviGator system includes data management and archiving elements that allow for off-line analysis of travel data. Many agencies such as the Atlanta Regional Commission and the Georgia Regional Transportation Authority may need access to that planning data for research and for use in assessing transportation performance.

Atlanta Regional Commission (ARC): The Atlanta Regional Commission (ARC) is the designated metropolitan planning organization (MPO) for the Atlanta region. ARC receives data on operating conditions (traffic volumes and speeds, transit data) and on incidents in order to conduct planning analysis. ARC also develops and maintains the region's short range Transportation Improvement Program (TIP) and long range Regional Transportation Plan (RTP), which must include any ITS project that will use federal funds. The regional ITS architecture process must be incorporated fully into the Atlanta Regional Transportation Planning Process. The ARC evaluates all ITS projects of regional significance prior to inclusion into the TIP and long-range plan.

Georgia Regional Transportation Authority (GRTA): The Georgia Regional Transportation Authority (GRTA) is a forum for discussion of transportation issues. GRTA operates Xpress services within Gwinnett County and also receives data on operating conditions (traffic volumes and speeds, transit data) and on incidents in order to conduct planning analysis. GRTA is currently developing a Smart Corridor demonstration project that will implement several technologies that will integrate functions and services of freeway management, arterial management and transit management. GRTA is also indirectly working with Gwinnett County Transit and other transit agencies in the region to create a coordinated regional electronic payment system, traveler information system, trip itinerary planning system and transit data archiving.

4 SYSTEM OPERATIONAL NEEDS

Based on the goals, objectives, and ITS architecture requirements in Section 2.0 and the operational functions and processes in Section 3.0, this section identifies and provides a description of the user and personnel operational needs that will drive the overall ITS and TCC design requirements. Specifically, this section describes what the ITS and TCC needs to do and provide that it is not currently doing or providing.

As Gwinnett County continues to grow, so does the traffic congestion on its roadway network. The impacts of this congestion are felt by every citizen and business in the county through increased travel times and costs. The current upgrades and expansion plans of the Gwinnett TCC will help to mitigate the impacts of congestion by providing more efficient and effective methods of dealing with the increased demands and provide support for future ITS services, upgrades and expansion plans.

The Gwinnett County TCC serves as the central point of operations for the management of the transportation infrastructure and implementation of ITS services within Gwinnett County. GCDOT's transportation operations center will serve many functions. The Gwinnett County DOT will utilize NaviGator and other applications as appropriate in the TCC to manage the operations of the transportation infrastructure within the County. This involves the implementation of the ITS services listed below which helps improve traffic and emergency operations.

This section of this document addresses the specific goals and essential functions of TCC personnel and systems by program area.

4.1 Gwinnett County TCC

The existing Gwinnett TCC is undersized and outdated and is no longer able to accommodate the current or future needs of the County. Several major projects are currently under design or construction that will increase the number of traffic signals connected to the TCC from 300 to 350. Many of these new signals will be directly connected to the TCC for operation and will not require the user to "dial-up" the system with a modem. These projects will also increase the number of CCTV cameras deployed from 25 to almost 100. The current TCC does not have the physical space required to install the new equipment needed to support these additional field devices. In addition, the current system communications architecture is outdated and in need of an overall update.

The construction of the new Gwinnett County DOT Central Maintenance Facility has provided an opportunity to create a TCC with more space for current and future needs. During the design/construction process, the communications architecture can be designed

to accommodate both the new systems coming on-line and the legacy systems currently operating.

The creation of a single point of access to all field devices will allow the Gwinnett DOT to develop staffing and operational procedures that will more effectively respond to both recurring congestion and incidents. The development of a TCC with additional space for future growth will allow the expansion of the system to include cable television traffic information broadcasts, web access for travelers, dynamic message signs, and other promising areas of traffic management as discussed in this section.

The Gwinnett TCC, which is scheduled to be in full operation by late 2007, will be the location from which command and control of various ITS assets will be accomplished. From the TCC, the Operator or Engineer will be able to:

- Connect to Gwinnett County traffic signals
 - View and verify operation
 - Modify signal operations
- Connect to Gwinnett CCTV Cameras
 - View current traffic conditions
 - View signal operations
 - Identify incidents for reporting to 911 Dispatch
- Connect to NaviGator CCTV Cameras
 - View traffic conditions on the Interstate system
 - View traffic conditions in neighboring jurisdictions
 - Allow NaviGator access to Gwinnett CCTV images
- Communicate with the following Centers / Systems:
 - County Sheriff Dispatch
 - GSP Troop C Dispatch
 - Local Police Dispatch
 - Local Fire Dispatch
 - Local EMS Dispatch
 - Local (City) TCCs
 - Gwinnett County Field Equipment
 - Gwinnett County Construction and Maintenance
 - GDOT TMC – NaviGator
 - Gwinnett County Transit Center

Future enhancements and capabilities to the system will not be available immediately, but may be added to the TCC in the near future. The new TCC is being designed to accommodate these future expansions and added capabilities. These capabilities include:

- Notification of the public of traffic congestion, emergencies or incidents through the use of:
 - Georgia 511 system
 - Cable Access broadcasts
 - Information feeds to local media outlets
 - Web Access for travelers
 - Dynamic Message Signs
 - Highway Advisory Radios
- Provide transit applications such as: para-transit trip dispatching, transit passenger and fare management, trip itinerary planning, transit security, and automatic vehicle tracking.
- Connection of the TCC to other departments / centers:
 - Gwinnett County 911 Dispatch
 - Gwinnett County Transit Center and Other Transit Dispatch Systems
 - GEMA Area 7 Center
 - Gwinnett County Airport
 - Event Locations
 - GDOT Statewide Construction and Maintenance System
 - Local EOC
 - Local Media
 - Rail Operations Centers
 - Regional Transit Management Center
 - Utility Systems
 - Weather Information System
- ITS upgrades using County-wide WiFi implementation
- Integration with the Georgia Statewide 511 System

Further detail on these capabilities is included in the following sections.

4.2 Emergency / Incident Management

Emergency / Incident management is the work done to detect and respond to both unexpected events and planned events that could have a potential impact on public safety, traffic flow or asset maintenance. This involves utilizing ITS field devices, data processing, and communications to improve the incident management and response capabilities of transportation and public safety officials, the towing and recovery industry, and others involved in incident response.

Activities: The activities of incident management include incident detection and reporting, incident notification, resource tracking, incident management, media notification, property damage identification, and towing. The activities conducted at the TCC are described in detail below:

1. Receive notifications: Receive information of incidents affecting arterial operations from GDOT and/or law enforcement agencies.
2. Incident detection and reporting: Monitor CCTV cameras and sensors, report potential incidents and other unexpected and planned events, verify and input reported incidents by maintenance crew, or the public.
3. Incident Notification: Communicate existence of major incidents to emergency services, maintenance crews and public.
4. Resource tracking: Generate maintenance tracking logs.
5. Incident Management: Coordinate incident management role with first responders.
6. Wide-Area Alert: Post wide-area alerts/information on DMSs located on arterial or local streets. Disseminate wide-area alerts as requested by GDOT, GEMA or local EMAs.
7. Early Warning: Provide incident information as a result of a natural or man-made disaster and provide updates to GEMA, GDOT, local EOC, and EMAs, law enforcement agencies, transit agencies, as needed.
8. Disaster Response and Recovery: Coordinate emergency plans with GDOT, GEMA, local EMAs and EOC, and responding agencies. Manage traffic network restrictions and detours. Monitor disaster status and adjust traffic operations accordingly. Disseminate emergency traffic control information to GDOT, surrounding local TCCs and motorists.
9. Media Notification: Place, update and terminate messages on the DMS displays. Communicate pertinent information to GDOT TMC.
10. Property damage and responsible party: Input information from reporting entity and create a template for property damage form.
11. Coordinated Response: Provide coordination with GEMA Area 7 Center, Local EMS Dispatch and others for overall coordinated emergency response.

Significant incident management partnerships include:

- GDOT TMC – NaviGator
- Gwinnett County Sheriff Dispatch
- GSP, Local Police and Fire Dispatches
- Gwinnett County 911 and Local EMS Dispatches

- Local cities and TCCs
- Maintenance and Construction Management
- Information Service Providers (ISP)
- GEMA Area 7 Center

4.3 Arterial Management

Arterial Management Systems manage traffic along arterial roadways employing traffic signals, detectors and various means of communicating information to travelers. TCC operators can alert the public of hazards or congestion as well as to control the direction and flow of traffic in an incident area.

Activities: The activities of arterial management conducted by TCC operators include monitoring operational status of traffic signals by control of DMSs, and other changeable message signs (CMS) as well as HAR messages to alert the public to potential problems or congestion. Coordination of signal control upgrades, conduct signal timing checks, perform signal timing adjustments based on congestion and traffic alerts, coordinate preventative maintenance and service calls related to traffic signals. The activities conducted at the TCC are described in detail below:

1. Conduct traffic signal checks: Confirm proper communications from the TCC to the traffic signal controllers by checking ACTRA system to identify any communication failures.
2. Coordination of signal controller upgrade: Facilitate close coordination with contractor for signal control upgrades.
3. Conduct signal timing checks: Perform signal timing and time of day checks. Note any problems in the appropriate log.
4. Signal timing adjustment: Perform signal timing adjustments which emerge from any issues identified during signal timing checks.
5. Coordination of preventative maintenance and service calls related to traffic signals: Conduct weekly meeting with signal shop crew leaders to set working schedules for the week. Develop weekly maintenance activity report.
6. Coordinated Operations: Retrieve probe data from GDOT as needed. Use probe data to improve signal timings and other traffic operations/
7. Coordinated Support: Coordinate with Local EMS and Fire Dispatchers for emergency vehicle preemption. Coordinate with GC Transit Center for transit vehicle signal priority. Coordinate with GDOT TMC and others as needed for route diversion traffic signal planning and non-recurring incidents across jurisdictional lines.

8. HRI Operations: Receive information regarding HRI operations from GDOT and field equipment. Coordinate traffic operations at HRI in response to changes in railroad operations.

Significant arterial management partnerships include:

- Gwinnett County Transit Dispatch
- Local EMS and Fire Dispatches
- GDOT TMC - Navigator
- Maintenance and Construction management
- Rail Operations Center
- Information Service Providers (ISP)

4.4 Traveler Information

The **traveler information services** is concerned with the timely dissemination of traffic flow conditions, road restrictions, traffic impact accidents, and road-weather condition information to the traveling public. Traffic engineers in the TCC will utilize various media including the NaviGator website (www.georgia-navigator.com), the 511 traveler information phone system, and DMS to disseminate traveler information.

Activities: The TCC activities of the traveler information program include the following:

1. Provide traffic incident information or advisories to GDOT, GSP, Local Police/Sheriff for incidents within local jurisdictions.
2. Provide regular status reports and updated information to GDOT, GSP, Local Police/Sheriff as incident conditions warrant.
3. Provide travel time displays on DMS signs.
4. Update 511 system with pertinent traveler information.
5. Place incident alerts and road restriction messages on DMS and HAR.
6. Exchange incident data with ISP providers such as media and the Internet.
7. Share construction schedules and information concerning maintenance activities on major arterials.

Significant traveler information management partnerships include:

- GDOT TMC – Navigator
- GSP Troop C, Local Police and Sheriff
- 511 traveler information phone system
- Information Service Providers (ISP)
- Local media

4.5 Freeway Management

Georgia DOT primarily oversees the operations of the interstates running through Gwinnett County. Gwinnett County TCC can play a supplemental role in assisting freeway management by monitoring I-85, I-985, and local highways via CCTV cameras. Operations include ensuring communications via NaviGator to facilitate coordination with GDOT and adjacent counties. Freeway management is vital to ensure efficient operations without excessive degradation of arterial traffic flow.

Activities:

1. Coordinate ramp meter design and operation: Assess peak hour traffic data for interstate ramps to choose which would be best served by meters. Coordinate Ramp meter design and deployment with GDOT and ensure ramp meters function properly with minimal disruptions to arterials.
2. Ensure efficient operations without excessive degradation of arterial flow: Monitor CCTV cameras to assess arterial flow to and from interstate ramps. Notify appropriate personal of any reduced arterial flow related to issues on interstates.
3. Coordinate regional traffic operations with other jurisdictions: Facilitate coordination with GDOT and adjacent counties to ensure freeway management issues in Gwinnett County are responded to in a timely fashion.
4. Coordinate route diversion with GDOT TMC: Coordinate with GDOT TMC for traffic signal operations during route diversion from freeway to arterial roadway network.

Significant freeway management partnerships include:

- GDOT TMC - Navigator
- Maintenance and Construction Management
- Information Service Providers (ISP).

4.6 Transit Management

The Gwinnett County Transit Management Center manages the transit vehicle fleets and coordinates with other modes of transportation. The center provides operations, maintenance, customer information and manages daily functions of the transit agency.

Transit ITS services will include surveillance and communications, such as automated vehicle location (AVL) systems, computer-aided dispatch (CAD) systems, and remote vehicle and facility surveillance cameras, which enable transit agencies to improve the

operational efficiency, safety, and security of Gwinnett County's public transportation systems.

Activities:

1. Real-time Traffic Information: TCC to provide real-time information on traffic and incident conditions to GDOT, local TCCs and GC Transit Center that may affect transit operations.
2. Coordinated Operations: TCC to provide signal control data to GC Transit Center for use in transit vehicle signal priority operations.
3. Signal Maintenance: GCDOT to regularly maintain signal priority field equipment.
4. Monitor key park & ride locations: GC Transit to provide surveillance cameras to be used to monitor park and ride locations to enhance public safety.
5. Monitor transit vehicle locations: GC Transit to provide Automatic Vehicle Location (AVL) and computer aided dispatch systems to provide up-to-date information on vehicle locations and to assist transit dispatchers as well as inform travelers of the status of the bus.
6. Provide bus arrival and departure times: GC Transit to disseminate arrival and departure information to travelers through a variety of applications: in-vehicle, wayside, or in-terminal dynamic messages signs, as well as the Internet or wireless devices.
7. Plan and schedule fixed route transit services: GC Transit to provide fixed routes and schedules that can be planned and managed at the Transit Management Center.
8. Plan and schedule para-transit trip dispatching: GC Transit to provide para-transit trips that can be efficiently dispatched with AVL and computer aided dispatch systems.

Significant transit management partnerships include:

- Gwinnett County Transit Center
- Gwinnett County TCC
- GDOT TMC - NaviGator
- MARTA & GRTA
- Information Service Providers (ISP)
- Maintenance
- Local Cities and TCCs

4.7 Airport Management

Gwinnett County Airport needs real-time traveler information on surface streets and will share airport status with travelers.

Activities:

1. Disseminate travel time information to airport customers.
2. Share open/closed status of airport with customers.

Significant airport management partnerships include:

- Gwinnett County Airport
- Information Service Providers (ISP)

4.8 Maintenance and Construction Management

Maintenance and construction management will cover the TCC's procedures for effectively managing roadway maintenance and construction operations.

Activities: The activities of maintenance and construction include tracking maintenance and construction status and disseminating maintenance/construction activity information on major corridors. A brief description of each activity is as follows:

1. Develop application to track project status: Create an online application which can be updated by project stakeholders. This will allow project status to be accurately gauged at any time (example, GDOT's TIR application).
2. Monitor Construction project status: Monitor construction zones through CCTV cameras when applicable. Update any change in project duration.
3. Disseminate Construction activities to the public: Update County website with ongoing construction activities and future projects. Display CCTV images where available and applicable. Display construction activity on DMS displays on major arterials so that the public can plan alternate routes. Communicate pertinent information to GDOT's Transportation Management Center for construction related to state routes.

Significant construction and maintenance partnerships include:

- Local and Statewide Construction and Maintenance Management Systems

5 SYSTEM OVERVIEW

The purpose of this section is to provide a high-level description of the interrelationships of key system components, focusing on the interrelationships among the elements, system capabilities (functions) and the goals and objectives.

The Gwinnett TCC will provide the ability to monitor conditions on the roadways in and around the county. The connection to the NaviGator system will provide access to devices that are deployed by the Georgia Department of Transportation and other local agencies. In return, GDOT and other agencies are allowed access to components of the Gwinnett system. In practice, agencies of the NaviGator system share control of only the CCTV cameras. Control of dynamic message signs, traffic signals, and other devices is usually reserved for the owning agency.

Figure 4 provides an overview of the existing and future interrelationships between the Gwinnett TCC, the public, and the NaviGator system and reflects the Gwinnett County ITS infrastructure and TCC that will be completed in 2007.

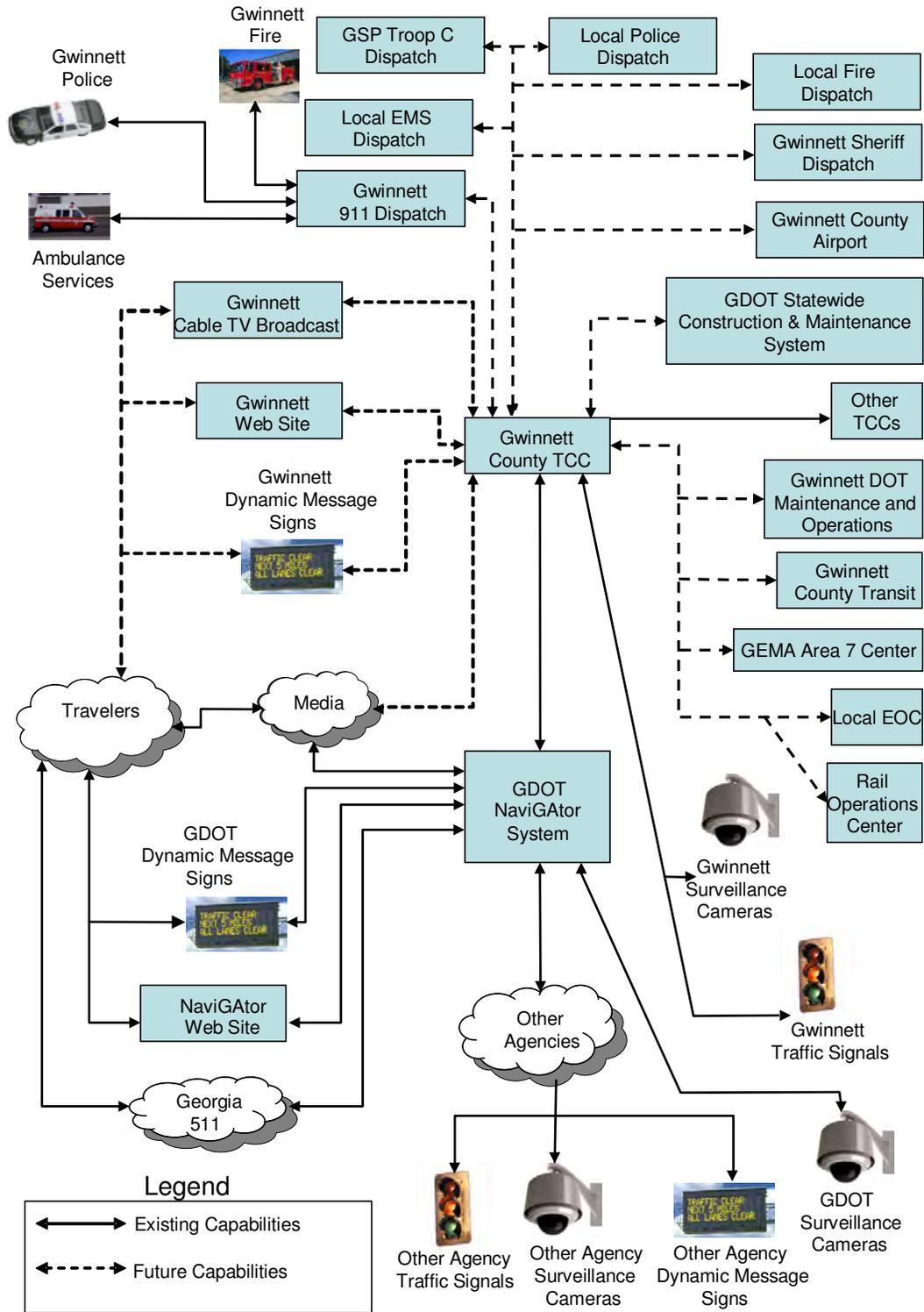


Figure 4: 2007 Gwinnett Transportation Control Center Overview

6 OPERATIONAL AND SUPPORT ENVIRONMENT

This section of the Concept of Operations describes the environment in which the ITS and TCC will operate, including information about the system's environment in the following categories: facilities, equipment, hardware, software, personnel, operational procedures and support necessary to operate the deployed system.

The TCC that will be completed and in operation in 2007 has been designed to fully support the existing system as well as taking into account the future enhancements and capabilities as discussed in this document.

6.1 Facilities

The Gwinnett TCC will be a space large enough to initially house a couple of operator consoles with additional work area for legacy computer systems within the TCC. The TCC could be sized to provide a conference area that could double as a command center in times of severe weather or major traffic incidents. The facility should be designed to allow the installation of a set of large viewing screens so video or data can be displayed for viewing through the entire TCC area.

An equipment room should be created for the computer and communication equipment that will be necessary to support the TCC over the next 10-12 years. This area will have three equipment racks initially and should be sufficient for up to 12 standard computer racks of equipment and should have adequate HVAC systems in place to keep the equipment cool. The equipment room should be physically separate from the TCC to provide noise buffers between the computer equipment and the main floor of the TCC.

The TCC and equipment room should be constructed with a raised flooring system to allow the routing of cables under the floor. The lighting in the TCC should be designed to provide many separately controlled zones for lighting the room to provide flexibility for the purpose of controlling the amount of light in any one are of the room. There should be no direct lighting between the operator consoles and the display area.

6.2 Equipment/Hardware

The hardware required to support the TCC will be distributed between the field, the main area of the TCC and the equipment room. The TCC hardware will provide for the human interface to the system and the hardware in the equipment room will provide communications and server support to field devices and other systems.

Field Equipment

The field equipment controlled from the TCC will include closed circuit TV cameras for traffic surveillance and traffic signal controllers for control of traffic. Video encoders and decoders provided will be compatible with existing GDOT MPEG-2 / MPEG-4 encoders/decoders. Future equipment may include cable TV access, Internet access, travel time detection sensors, DMSs, HAR stations, and other additions.

TCC Equipment Room

The equipment room will house the equipment necessary to physically communicate to the field devices. The equipment room hardware will include computer servers such as an ACTRA server for the traffic signal control software, the NaviGator system software, and hardware for the video display wall. This room will house multiple types and quantities of modems and switches to connect to field devices and other systems.

The equipment in this room should be installed in free-standing equipment racks with rack-mountable LCD monitor with KVM switch and uninterruptible power supply (UPS) capabilities in each rack. The racks will also contain the appropriate fixtures to manage the various cables and power cords for the components and fiber optic patch panels and other types of equipment necessary to connect to the field devices.

One rack-mountable Layer 3 Gigabit Ethernet Network Switch will be provided that is compatible with the existing GDOT Ethernet switching network. The network will be manageable using the GDOT existing Device Manager Network management software.

Main TCC Area

The main TCC area will be the primary work area for users of the TCC. This area should include operator consoles, computers, large display screens, and other work areas, including some filing and storage facilities.

Operator Workstations / Consoles in the TCC – There will initially be two operator workstations at the main console of the TCC. At each station, there should be a computer capable of connecting to the video surveillance and display system, the traffic signal software system, and the county's internal networks. Each operator should have three LCD monitors to provide flexibility in viewing multiple video feeds and traffic signal control software simultaneously. Each operator workstation should have a power back-up system to keep the hardware powered at all times. Each operator workstation will have one Digital Video Recorder card that is configured to record live MPEG-4 video streams.

TCC Work Area – Two separate workstations should be provided in the TCC to allow additional personnel to work in the room when necessary. These workstations should each have a computer to access the video surveillance and display system, the traffic signal software system, and the county’s internal networks. These computers should be provided with twin LCD monitors to allow at least one video feed to be viewed while also showing the signal control software.

6.3 Software

The TCC will be connected to many different systems, with each requiring a separate software package in order for users to gain access and control. Care should be taken when selecting computer hardware to ensure that it will be capable of operating the various software packages. Some of the various software components that will be required include:

- Traffic Signal Central Software (both legacy software and the ACTRA system)
- NaviGator Access Software – Starnet Xwin32 access software which is compatible with the GDOT NaviGator network.
- Display control software for video wall
- County software for e-mail, timesheets and other applications

6.4 Personnel

Section 3.0 defined the operation of the TCC from the perspective of different users. This section addresses the skill sets required by each user. While these user categories provide a good understanding of the type of skills required, it does not necessarily translate to personnel requirements. In practice, one person may fill more than one of these roles. Gwinnett County already has Traffic Signal Engineers and Technicians. While they will use the systems that the TCC provides to do their work more efficiently, their skill sets are not refined here.

TCC Manager

The TCC Manager is responsible for the overall operation of the Gwinnett County TCC. The manager must have the authority to supervise the TCC Operators and organize staffing and training schedules. The manager must be able to interact effectively with others in charge, including signal maintenance, public safety, information technology, higher levels of management, equipment vendors, suppliers, and the public. The manager should be well versed in the operation of all TCC systems and should develop and update the standard operating procedures of the TCC.

TCC Operator

The TCC Operator will be responsible for performing the day to day operations of the TCC. The Operator must be able to operate the basic TCC systems such as the surveillance cameras and traffic signal control software. The Operator does not need to be capable of developing traffic signal timing plans; however, they should be competent enough to upload/download signal timing databases as required by the Traffic Engineers and Technicians. The Operator must be capable of viewing signal operation and recognizing signal operational problems that need to be corrected.

TCC Systems Administrator

The TCC Systems Administrator will be responsible for maintaining the computers and computer systems utilized in the TCC. The Systems Administrator must understand the connectivity of the field devices to the system, including IP addressing. This administrator will most likely be a computer systems professional who is capable of supporting the TCC systems and could possibly be an employee of the Information Technology Division of the Gwinnett County Department of Support Services.

6.5 Other Support Required

The Gwinnett TCC will not operate in a vacuum, it is part of a larger organization. As such, the TCC will rely on additional support from external organizations to fulfill its role. Some of the areas that will require support are listed below:

Communications

The TCC personnel will be required to communicate with personnel outside of the TCC on a regular basis to accomplish their tasks. Communications to other departments such as traffic signal maintenance technicians in the field, the 911 Dispatch Center, and others as discussed in this document will be accomplished using a combination of telephones, radio/microwave systems and fiber optic links.

The County telephone system operates under the control of the Information Technology Division of the Department of Support Services. The TCC will rely on this Division to provide the appropriate handsets and extensions within the TCC.

The County currently owns and operates a 900 MHz radio system. The radio system is managed by the Administrative Services Division of the Gwinnett County Police Department. Current plans call for the future transition to a new radio system. The TCC will rely on the Police Department to provide the appropriate radio handsets to

support the TCC operations and to upgrade the systems as necessary during the transition to any new services.

Computer Systems

Once the TCC becomes operational, the County will have a number of new computer devices to maintain. While most of these devices will likely come with some manufacturers and vendor supplied warranty services, over time the maintenance and upgrades of these devices and software will become the responsibility of the County. It is likely that the expertise required to support this equipment and software will be available from the Information Technology Division of the Department of Support Services. Personnel from this Division should be involved with the installation and set-up of the TCC systems as early as possible to assist them in understanding the needs of the DOT.

Facilities

The Department of Transportation will rely on the Facilities Management Division of the Department of Support Services to provide and maintain the physical facilities of the TCC and the GCDOT's Central Maintenance Facility. Some of these responsibilities will include:

- Performing general maintenance of the building, including HVAC, restrooms, lighting, and janitorial services.
- Providing physical security of the building and TCC, including access control of the building in general and more restricted access to the TCC. This may be accomplished by controlled or monitored access to the building with keypad or keycard access to the TCC area.
- Providing emergency power in the event of power loss due to storms or incidents. The TCC systems should be connected to an emergency generator to maintain operations through extended power outages. The power back up systems installed with the individual systems in the TCC should be sized to keep the systems on-line until the emergency generator can start up and provide power.

7 OPERATIONAL SCENARIOS

This section provides several scenarios which describe the potential use of the Gwinnett County ITS and TCC. The following scenario narratives describe the actions and processes of the various users and personnel associated with the Gwinnett County TCC and other agencies under different conditions, including stress/failure scenarios and multiple circumstances.

7.1 Scenario # 1: Arterial Management: Signal Failure and Timing Updates

Monday Morning: It is a typical Monday morning in Gwinnett County. George, a TCC Operator, arrives in the TCC and begins his work day. He settles into his chair at the main operator console, adjusts the console monitors, keyboard height, and logs into the system to begin his daily routine. Using the systems at his disposal he:

- Views surveillance video of both surface streets and freeways using County and GDOT cameras to determine if any major traffic problems exist.
- Uses the GDOT NaviGator system to determine if there are any reported incidents or problems on the roadways.
- Selects video feeds to be displayed on the display wall and his various monitors.
- Reviews all connected traffic signals to verify that they are on-line and in proper operation.

George is notified that a citizen has complained about the operation of the traffic signal at State Route 20 at Old Peachtree Road. Specifically, the citizen has complained that eastbound traffic is not getting a left turn signal. George selects the surveillance camera near the intersection and puts the video image on one of his monitors. On a separate monitor, he brings up the data from the traffic signal controller at the intersection. Using the real-time video images in concert with the controller data, he realizes that the citizen is correct – eastbound vehicles are not being recognized by the vehicle detectors at the intersection. He checks ACTRA and the CCTV camera for any failure information and attempts to remotely fix the problem. Unsuccessful, George prepares a maintenance ticket and uses the county radio at his console to call Pete, the supervisor of the County's Traffic Signal Trades Technicians. George relates the information regarding the signal to Pete, who then dispatches a signal technician to the intersection to correct the problem.

Using the systems available, the TCC staff can check the operation of many of the roadways and signals in the area. They can also verify operational complaints and in many cases, resolve the problem without sending crews to the scene. By verifying the complaints, crew time is not wasted driving to a signal just to determine that no problem actually exists.

Meanwhile, Ringo, one of the county's traffic signal engineers has entered the TCC to begin his day. He has been working the entire month developing new signal timing plans for Sugarloaf Parkway between Duluth Highway (SR120) and Meadow Church Road. This area gets a lot of special event traffic from the Gwinnett Center and Discover Mills. During the month he has collected hours of video data of traffic on the route using the video recording software in the TCC computers. Viewed at a high speed playback, he is able to view traffic patterns over several hours in as little as a few minutes. This information has helped him in setting up his timing plans. Supported by field crews, Ringo uses the computers in the work area at the rear of the TCC to download the new timing plans to the controllers in the field. Once the timing plans are downloaded and verified as operational, the field crews are dispatched to other tasks. Ringo spends the next few hours observing traffic along the route using the surveillance cameras and connects to the individual traffic signals as necessary to make small adjustments in the timing plans.

<p>Operating from the TCC, the Signal Engineer has access to a more comprehensive view of the impacts of his signal timing plan. Changes to the operation of any individual signal controller can be performed in less than the amount of time it would take for the Signal Engineer to drive from one intersection to the other, park his vehicle, access the signal controller and reprogram the database.</p>
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Later in the morning, John comes into the TCC. John is the TCC Manager and has just returned from meetings defining future expansions of TCC capabilities, including providing public access to the video and data in the TCC through the County website and broadcasting the data over the county's cable access channel. John gives George a copy of the first draft of the TCC Standard Operating Practices Manual for his review and comments.

After checking in with everyone, John meets with Paula from the Information Technology Division of the Department of Support Services. Paula has been more or less permanently assigned to support the operations of the TCC. Usually somewhere in the DOT Central Maintenance Facility fixing a computer or printer problem, Paula has been involved with the TCC systems since the day they were installed. Her task today is to work with John to install a new firmware patch on the Display Server that was provided by the manufacturer. The installation of the patch is accomplished with just a few glitches that Paula irons out and then she is off to fix a printer in the building that is reportedly not printing.

Pete has finished assigning work to all of the signal crews for the day and comes to the TCC to do a quick check of all the traffic signals. During his scan, he notices that the signal at the intersection of Scenic Highway at Webb Gin House Road is not

communicating. Pete uses the surveillance cameras in the area and recognizes that there is congestion around the intersection that is not normal for this time of day. The signal at the intersection seems to be functioning, but the timing is off and it is not in coordination with the signals around it. Pete knows he has a crew headed to that area of the County to install some new pedestrian signals and contacts them with the county radio to check this intersection out first. It turns out that the fiber modem has failed in the signal cabinet and the replacement of the modem brings the signal back on-line and in coordination.

7.2 Scenario # 2: Emergency/Incident Management

Later on that Monday afternoon...

Things have quieted down in the TCC. George is alone in the TCC performing the routine duties of downloading signal databases to the field when requested by the signal maintenance crews, addressing citizen complaints to verify the complaint, correct them if possible, and if not, forwarding them to Pete.

During a routine scan of some surveillance cameras, George notices completely stopped vehicles northbound on Peachtree Industrial Blvd (PIB) at Medlock Bridge Road. Stopped traffic on PIB isn't an unknown phenomenon, but not at this time of day and not in this direction. George points the camera to the north and zooms in to look for the cause of the problem. All he sees is more stopped vehicles. He quickly switches to the camera at PIB and South Old Peachtree Road. Looking north, he sees no congestion so he spins the camera to look south. He sees the beginning of the stopped cars and zooms in with the CCTV camera, there is a tractor trailer on its side in the left lane and median. Immediately in front of the truck are a couple of cars that have apparently also been in the accident.

Seeing the severity of the incident, George immediately gets on the phone to contact the Gwinnett County 911 Center. George identifies himself to the 911 Dispatcher. The 911 Dispatcher is aware of the capabilities of the TCC as they were recently given a tour of the facility. The Dispatcher has already been contacted by citizens with cell phones and a police car has already been dispatched. George informs the Dispatcher that the accident involves two cars and that a truck is on its side – all of this is new information to the 911 Dispatcher who immediately begins dispatching additional equipment to the scene.

Using the real-time video images to provide the 911 Dispatcher with additional information about the incident, the overall duration of the incident will be reduced by having the appropriate response mobilized more quickly.

While he is talking to the 911 Dispatcher, George sees John walking down the hall and waves him into the TCC. Seeing the video of the incident on the display wall, John

immediately enters the TCC. From the location and severity of the incident, John knows that this incident will have severe impacts to traffic in the area in the fast approaching rush hour. John sits at the second console and accesses the GDOT NaviGator system. He enters all of the information that he has available in the incident entry screen while calling the GDOT personnel on the phone. He requests that GDOT consider putting information about the incident on their Dynamic Message Signs on I-85 to help travelers find alternate routes and stay away from this section of Peachtree Industrial Blvd.

As soon as George finishes with the 911 center, he immediately contacts the local GDOT office and informs them that a truck has overturned. Past experience indicates that there will probably be a fuel leak and that the emergency personnel will probably need a load of sand and a front-end loader at the scene. GDOT agrees to send a sand truck but is not able to provide a front-end loader in a reasonable amount of time. Overhearing this part of the conversation, John contacts Gwinnett DOT Maintenance and a front-end loader is sent towards the scene.

These steps completed, John and George continue to monitor the situation and eagerly anticipate the day when the 911 Dispatcher will have access to the surveillance video to view the images themselves. George continues to monitor traffic in the area and informs GDOT when the incident has been cleared and all lanes are re-opened.

John returns to his office to finish reviewing the construction plans for an ITS project that will add dynamic message signs throughout the county, including along SR316. He considers the possibilities that will exist when the TCC can communicate directly to the public through the use of the dynamic message signs and a website.

At the end of the day, George logs out of the systems, puts the displays into standby mode, turns out the lights and locks the doors. Another day in the life of the TCC is complete.

7.3 Scenario # 3: Remote Signal Maintenance

Wednesday Morning: It is a typical mid-week afternoon in Gwinnett County. Jack, a maintenance supervisor for Gwinnett County is responsible for local intersection controllers and associated traffic equipment. During the course of his day he may answer service calls for traffic signal failures, special configuration requests and maintenance. He was warned by a TCC operator of problems with a local intersection, so he begins his shift by confirming the health and status of the intersection controller.

The controller was identified as “inactive” on the ACTRA system After viewing the ACTRA street maps and checking congestion data for the street, he concludes that the problem is not only real but urgent since traffic is now backed up for two blocks. Upon further review he notices that the controller appears to be responding but has been placed in a service mode. Instead of dispatching a maintenance crew, he views the

intersection via CCTV, reviews the maintenance records for the intersection and determines that the controller was placed and left in a standby mode by a previous crew. From the TMC, Jack changes the status of the controller to “operational” and service is restored.

The ability to remotely access field controllers has given Jack a jump start on troubleshooting system problems and better managing his maintenance crews – keeping them working on pressing issues only. His job has been made easier, from the TCC, by allowing remote access to diagnostic status of intersection controllers.

7.4 Scenario # 4: Airport Management – Traveler Information

Thursday Afternoon: John, a business traveler, has just arrived late in the afternoon at Gwinnett County Airport – Briscoe Field for a business meeting in Atlanta on Friday. The flight arrives very late due to weather delays and John is tired and stressed from his flight, so the last thing he needs is to fight traffic on his way to Atlanta at night. He had planned on renting a car at the airport and traveling to the hotel in Atlanta with directions provided by the rental company.

He visits the rental car company and secures his transportation and a travel map with directions to his destination (a convenience provided by the rental company). Before leaving, the rental agency attendant advises him to verify the map against current traffic conditions identified on a kiosk provided by the Airport on his way out. There he finds information on local traffic conditions. Upon review, he finds that the recommended route taking him out of Lawrenceville along GA-316 to I-85 toward Atlanta is experiencing major delays with I-85 at GA-316 completely shut down due to an earlier accident involving a tanker spill.

As it is already close to 8pm and he is very tired and does not want to sit in traffic for possibly hours, he decides to stay in Lawrenceville overnight, get a good night of sleep and get up the next morning and drive to Atlanta for his meeting. He finds a local Lawrenceville hotel from the kiosk and gets up the next morning and follows the directions provided by the rental company.

Using the real-time traffic information, travel time information, and area roadway status maps a traveler at the airport can make informed decisions on area travel and decide on alternative routes.

7.5 Scenario # 5: Traveling Public

Saturday Morning: Ann and Kelly (mother and daughter) who live in Duluth are planning a full day of shopping at the Mall of Georgia in Buford, during the big “After

Christmas Sales.” They both know the importance of arriving early to get the best buys, so they want to do whatever they can to avoid traffic.

Having heard about the new Traveler Information Website, Ann logs on just prior to leaving in the morning, and accesses the traffic conditions on the website. They are not very surprised to find that I-85 Exit 115 is jammed with traffic with major delays due to an early morning accident. They also notice that I-985 is flowing freely and decide to take this route and get off at Exit 4 to the Mall. Using this alternate route, they head out with a plan to arrive at the mall when the doors first open.

After a tiring day of shopping, they are ready to go home. On their way out of the mall, they notice the new Traveler Information Display (TID) installed near the exit of the mall and stop to check if the freeways are moving now. The freeway condition map shows all “green” for their normal route home. Armed with this information they race home to try on their new clothes.

<p>Using the real-time traffic and travel time information, and strategically located traveler information displays at the mall, a traveler can make informed decisions on area travel and either decide on taking alternative routes or their usual route with the knowledge that its operating as expected.</p>

7.6 Scenario # 6: Agency Coordination

An emergency call about an accident at US 78 and SR 124 in Snellville, comes into the Snellville Police Department (PD). Laura, a Snellville PD dispatcher, takes the call and reacts accordingly:

Recognizing this as a monitored intersection in the ITS, Laura switches her CCTV video display to the videos for the intersection. She further accesses the ITS incident screens which also contain AVL information to determine the nearest unit to be dispatched. She enters information about the incident into the Snellville PD CAD system and the system issues an emergency EMS/Fire/Police dispatch.

At the GC TCC, Joe (the TCC operator on duty) is interrupted by the emergency request from PD, as an alert is flashed on his monitor. Joe reacts to the CAD system request by placing the intersection into an emergency mode. He further updates the messages on local HAR, CMS and DMS in the area. This provides motorists information on the incident and alternate routes.

With the integration of Snellville PD CAD (coordinated law enforcement system) and AVL into the ITS, the sharing of incident and response information will become a reality. This information can be valuable in determining appropriate traffic management actions. This integration of AVL information with the ITS will enable the Snellville PD to use the region's traffic information to better manage dispatching and emergency response times of police vehicles.

7.7 Scenario # 7: Major Event Coordination and Planning

Mall of Georgia:

Susan is the Special Events Coordinator for the Mall of Georgia. In this capacity she is tasked with the planning and coordination of traffic in and out of the Mall during special events. In four weeks, she and the Mall will be faced with the arrival of a U.S. Presidential Candidate who will be making a scheduled stop at the Mall of Georgia as part of a campaign swing through Georgia. She is very concerned about the potential traffic jams that are anticipated in the Mall's parking lot and surrounding area as well as security for the event.

Susan and the Mall have been using the capabilities of the NaviGator Web (NavWeb) for a year now. She logs on to the secure website (provided to special event generators in the local area). The website gives her access to a menu that allows her to define events and incidents for which event generators are requesting special traffic management. She inputs information that has been agreed to by participating agencies, some of the information she provides includes:

- *Customer information (anticipated volume turnover or throughput at the mall)*
- *Anticipated parking volume and turnover for the Mall's local lots.*
- *Special requests of GSP and local PD (traffic control, security, etc...)*
- *Special requests of local agency assets (DMS, CMS, traffic signal changes,...)*

The event information is stored on a NaviGator server, making it available for publishing across NavWeb to any agency wishing to subscribe to it. The information is automatically published on the NavWeb website, the Kiosks located throughout the mall, and local cable television channels. The NavWeb TCC logs the event and a predefined system response automatically notifies the involved agencies (City of Buford, City of Lawrenceville, GSP, Mall Security, City of Buford PD) via e-mail, AutoFax and updates to the NavWeb special events database.

On opening day, the Mall is assisted by the contacted agencies, as they implement pre-defined event management agreements. The GC TCC and local TCC coordinate and implement revised traffic signal timing plans (implemented via existing signal control

systems) – this coordination allows for smoother traffic along arterials paralleling the surrounding freeways.

By automatically alerting agencies early in the schedule, and publishing a pre-defined response to the planned traffic event, NavWeb has simplified agency coordination of resources. Some of the automatic and pre-approved agency system responses may include:

- Mobilization and strategic placement of local DMSs to direct traffic around the mall.
- Mall Security, City of Buford PD coordinate personnel resources in traffic control and security cooperating with Federal security personnel.
- Area traffic signal timing changes to allow for smoother traffic flow.