

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

---

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

**FILE** P.I. #0006820 & 0006821                      **OFFICE** Design Policy & Support  
CSCMQ-0006-00(820)  
& CSCMQ-0006-00(821)  
GDOT District 7 - Metro Atlanta  
Fulton County    **DATE** 11/7/2011  
ITS on SR 140 From SR 9 to CR 107/Barnwell  
Road

**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:**

Genetha Rice-Singleton, Program Control Administrator  
Bobby Hilliard, State Program Delivery Engineer  
Cindy VanDyke, State Transportation Planning Administrator  
Angela Robinson, Financial Management Administrator  
Glenn Bowman, State Environmental Administrator  
Kathy Zahul, State Traffic Engineer  
Georgene Geary, State Materials & Research Engineer  
Ron Wishon, State Project Review Engineer  
Jeff Baker, State Utilities Engineer  
Ken Thompson, Statewide Location Bureau Chief  
Michael Henry, Systems & Classification Branch Chief  
Bryant Poole, District Engineer  
Scott Lee, District Preconstruction Engineer  
Jonathan Walker, District Utilities Engineer  
Cynthia Burney, Project Manager  
BOARD MEMBER - 6th Congressional District

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

PROJECT CONCEPT REPORT

Project Numbers: CSCMQ-0006-00(820), CSCMQ-0006-00(821)

County: Fulton

P. I. Numbers: 0006820, 0006821

Federal Route Number: N/A

State Route Number: 140 and 92

ITS on SR 140/Holcomb Bridge Road (0006820) and SR 92/Crossville Road (0006821)

Submitted for approval:

DATE 9-30-11 Scott E. Mohler  
Scott Mohler, URS Corporation

DATE 9-30-11 Muhammad Rauf  
Muhammad Rauf, City of Roswell

DATE 9/30/11 [Signature]  
State Program Delivery Engineer

DATE 30 Sep 2011 Cynthia C. Bunnery  
Project Manager

Recommendation for approval:

DATE \_\_\_\_\_  
Program Control Administrator

DATE 10-21-11 \* Glenn Bowman  
State Environmental Administrator

DATE 10-21-11 \* Kathy Zahul  
State Traffic Engineer

DATE 10-12-11 \* Ron Wishon  
Project Review Engineer

DATE 10-12-11 \* Jeff Baker/S.P.  
State Utilities Engineer

DATE \_\_\_\_\_  
District Engineer

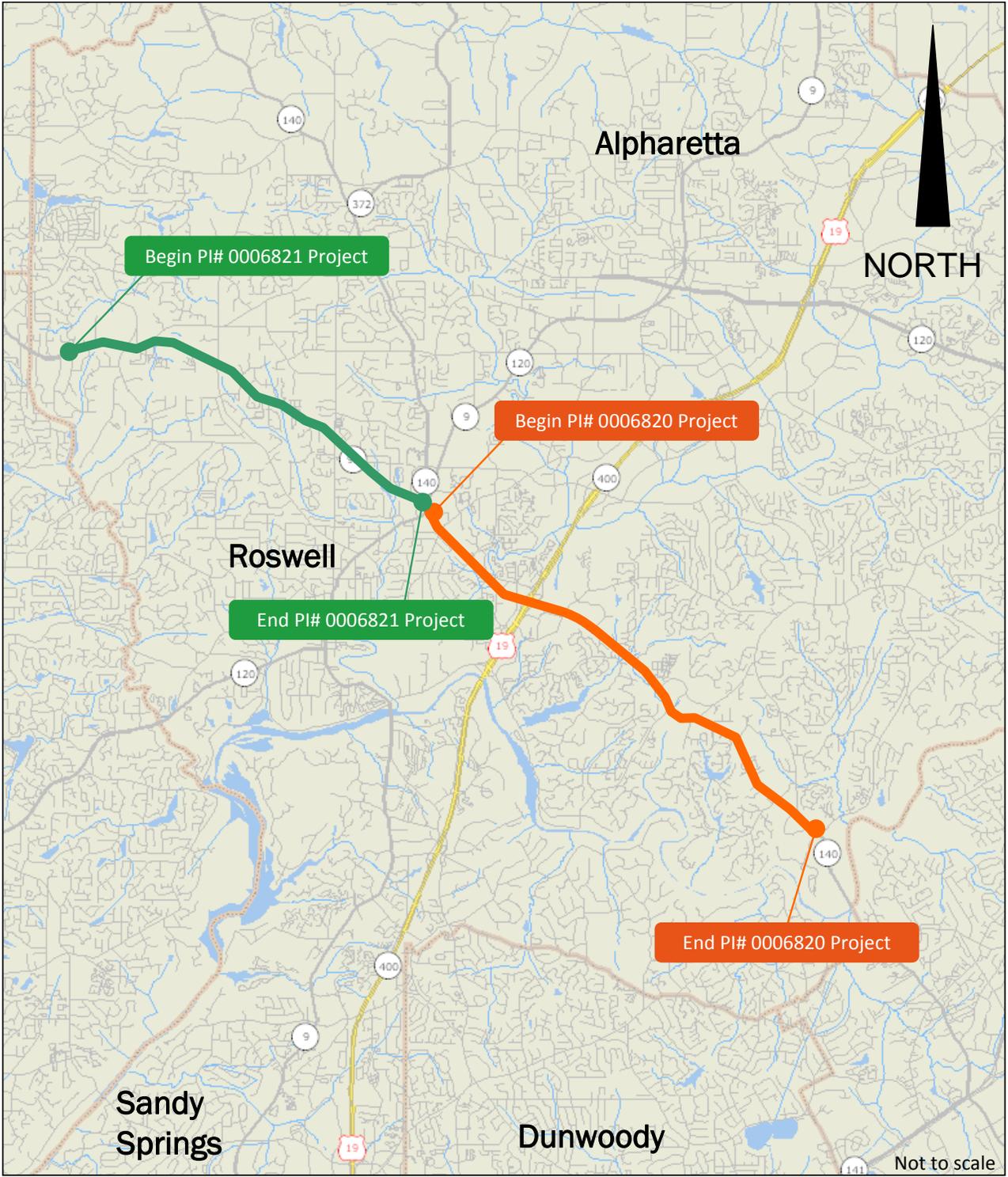
DATE \_\_\_\_\_  
State Transportation Financial Management Administrator

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).

DATE 10-17-11 \* Cindy VanDuke  
State Transportation Planning Administrator

\* Recommendation on file

**Project Map:**



**Need and Purpose:** This section of State Routes 140 and 92 (the corridor) is a multi-lane facility running between Steeple Run near the Cobb County line in the west to Barnwell Road in the east. The facility provides a corridor between west and east Roswell and also provides access to both Cobb and Cherokee counties. State Route 140 is also the only roadway in the City of Roswell to intersect with SR 400, which is the City's only major north-south limited access roadway in the area. Weekday commuter traffic, weekend shopping, and recreational traffic have increased over the years along with the commercial and residential development in this area. With this growth in population and increasing traffic demand, there is a need for improving the operations and throughput on the SR 140 / SR 92 corridor. This project proposes operational improvements along the corridor (and at five nearby adjacent signalized intersections) using Intelligent Transportation System (ITS) elements to operate the corridor more efficiently, balance the flow of traffic using or crossing the corridor, manage incidents and special events, and communicate travel information to the public through GDOT 511. This is achieved by implementing adaptive signal control, surveillance cameras, incident management, travel time collection along the corridor, and sharing of travel time data with GDOT 511. The implementation of ITS on the SR 140 / SR 92 corridor will provide smoother operations and the means to better handle congestion and incidents.

The Concept of Operations for this project is included in Attachment #5, and it verifies the project is consistent with the Atlanta Regional ITS Architecture and identifies the roles and responsibilities of the intended ITS users.

**Description of the proposed project:** The project will install ITS elements along the corridor from Wildwood Springs/Steeple Run near the Cobb County line in the west to Barnwell Road in the east. The design will include providing ITS elements such as adaptive signal control equipment, closed circuit television (CCTV) cameras, travel time collection stations, portable intelligent work zone system, portable CCTV with detector trailer, permanent count-classification stations, and Roswell Traffic Control Center (TCC) equipment. Adaptive control will be installed at signalized intersections throughout the corridor and at five closely-spaced, adjacent cross-street traffic signals including Old Roswell Road at Commerce Parkway, Mansell Road at Eagles Crest Village Lane, Old Alabama Road at Holcomb Woods Parkway, Mansell Road at Houze Road, and Mansell at Kroger Plaza.

The proposed project devices will utilize existing power sources, cabinets and poles wherever possible to minimize construction time and limit environmental impacts. It is expected that no new bores, cabinets or poles will be required. The ITS devices provided under this project will communicate with the Roswell TCC via the Ethernet network on the SR 92/140 corridor and on SR 9. This network is currently being implemented under the GDOT Regional Traffic Operations Program (RTOP) project, which is also installing many CCTV cameras along the corridor. In addition to the cameras added by RTOP, this project will install additional cameras to attain complete coverage of the corridor. The new ITS devices will be integrated with the existing Roswell TCC systems including the CCTV display wall and management system, travel time server, adaptive traffic control system and the GDOT Navigator network.

The City of Roswell will be the operator of this system and will monitor and control all elements of this project from the Roswell TCC. Travel time data collected by this project will be utilized by the City of Roswell and also be transmitted to the GDOT 511 system for use by the public.

The following tables list the intersections and ITS features included in the project.

	<b>SR 140 (Holcomb Bridge Road) Intersection</b>	<b>Adaptive Control</b>	<b>CCTV</b>	<b>Other Features</b>
1	SR 9	x		* 7 Travel time stations * Intelligent work zone system * Permanent count-classification stations * TCC equipment * TCC integration and testing * Ethernet communications
2	Old Roswell Rd and Commerce Pkwy (closely-spaced, adjacent cross-street traffic signal)	x	x	
3	Grimes Bridge Road	x		
4	Mansell Rd and Eagles Crest Village Ln (closely-spaced, adjacent cross-street traffic signal)	x	x	
5	Warsaw Road	x		
6	Old Holcomb Bridge Road/Riverwood Lane	x	x	
7	Roswell Summit Parkway/Dogwood Road	x		
8	SR 400 southbound ramps	x	x	
9	SR 400 northbound ramps	x		
10	Market Boulevard	x	x	
11	Old Alabama Road	x		
12	Old Alabama Road @ Holcomb Woods Pkwy (closely-spaced, adjacent cross-street traffic signal)	x	x	
13	Holcomb Woods Parkway	x	x	
14	Martins Landing Road/Terramont Drive	x		
15	Calibre Creek Parkway	x	x	
16	Eves Road	x		
17	Fouts Road	x		
18	Steeplechase Drive (West)	x	x	
19	Champions Green Parkway	x		
20	Holcomb Bridge Middle School	x		
21	Steeplechase Drive (East)	x	x	
22	Holcomb Center	x	x	
23	Nesbitt Ferry Road	x		
24	Barnwell Road	x		
	<b>Total Count</b>	<b>24</b>	<b>11</b>	

Project Concept Report page 5  
 Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
 P. I. Number: 0006820, 0006821  
 County: Fulton

	<b>SR 92 (Crossville Road) Intersection</b>	<b>Adaptive Control</b>	<b>CCTV</b>	<b>Other Features</b>
1	Mansell Rd	x		* 5 Travel time stations * TCC equipment * TCC integration and testing * Diagnostic laptop computers * Ethernet communications
2	Mansell Rd @ Kroger Plaza (closely-spaced, adjacent cross-street traffic signal)	x	x	
3	Mansell Rd @ Houze Rd (closely-spaced, adjacent cross-street traffic signal)	x	x	
4	Bentgrass Dr	x		
5	Crabapple Rd	x		
6	Grace Hill Dr (un-signalized intersection)		x	
7	Roswell Crossing Shopping Center	x	x	
8	King Rd/Woodstock Rd	x		
9	West Wind Blvd	x	x	
10	Hardscrabble Rd	x		
11	Bowen Rd/Mountain Park Rd	x		
12	Steeple Run/Wildwood Springs Dr	x		
	Total Count	11	5	

**Is the project located in a PM 2.5 Non-attainment area**  X  Yes   No

**Is the project located in an Ozone Non-attainment area?**  X  Yes   No.

This project proposes to install ITS elements along the SR 140 and 92 corridors. No additional capacity is being added.

**PDP Classification:** Major   Minor  X

**Federal Oversight:** Full Oversight ( ), Exempt( X), State Funded( ), or Other ( )

**Functional Classification:** Urban Principal Arterial

**U. S. Route Number(s):**  None  **State Route Number(s):**  SR 140 and SR 92



- Existing fiber optic communications cable on SR 140 and 92
- Existing Ethernet network on SR 140 and 92 with connectivity to the Roswell TCC. Network provides communications to traffic signal controllers and CCTV cameras.
- Existing traffic signals at 29 intersections along the corridor

**Proposed Design Features:**

- Proposed typical section:
  - SR 140: *Existing section to remain*
  - SR 92: *Existing section to remain*
- Proposed Design Speed Mainline:
  - SR 140: *Existing posted speed to remain*
  - SR 92: *Existing posted speed to remain*
- Proposed Maximum grade Mainline:  N/A  %
- Maximum grade allowable:  N/A  %
- Proposed Maximum grade Side Street:  N/A  %
- Maximum grade allowable:  N/A  %
- Proposed Maximum grade driveway:  N/A  %
- Proposed Minimum radius of curve:  N/A  ft
- Minimum radius allowable:  N/A  ft
- Maximum allowable superelevation rate:  N/A  %
- Proposed maximum superelevation rate:  N/A  %
- Right-of-Way
  - Width: *Project will be constructed within the existing Limited Access/Right of Way.*
  - Easements: Temporary ( ), Permanent ( ), Utility ( ), Other ( ). *None expected.*
  - Type of access control: Full ( ), Partial ( ), By Permit ( ), Other ( ). *None expected.*
  - Number of parcels:  0                       Number of displacements:
    - Business:  0
    - Residences:  0
    - Mobile homes:  0
    - Other:  0
- Structures: *None expected.*
- Major intersections: *None expected.*
- ITS Elements: The project will install ITS elements along the corridor from Wildwood Springs/Steeple Run near the Cobb County line in the west to Barnwell Road in the east. The design will include providing ITS elements such as adaptive signal control equipment, CCTV cameras, travel time collection stations, portable intelligent work zone system, portable CCTV with detector trailer, permanent count-classification stations, and Roswell Traffic Control Center (TCC) equipment. The ITS devices provided under this project will communicate with the Roswell TCC (1810 Hembree Road, Alpharetta, GA) and will share video and data with the GDOT Navigator system.
- Transportation Management Plan Anticipated: Yes ( ) No (X)

- Design Exceptions to controlling criteria anticipated:

	<u>YES</u>	<u>NO</u>	<u>UNDETERMINED</u>
1. DESIGN SPEED:	( )	( X )	( )
2. LANE WIDTH:	( )	( X )	( )
3. SHOULDER WIDTH:	( )	( X )	( )
4. BRIDGE WIDTH:	( )	( X )	( )
5. HORIZONTAL ALIGNMENT:	( )	( X )	( )
6. SUPERELEVATION:	( )	( X )	( )
7. VERTICAL ALIGNMENT:	( )	( X )	( )
8. GRADE:	( )	( X )	( )
9. STOPPING SIGHT DISTANCE:	( )	( X )	( )
10. CROSS SLOPE:	( )	( X )	( )
11. VERTICAL CLEARANCE:	( )	( X )	( )
12. LATERAL OFFSET TO OBSTRUCTION:	( )	( X )	( )
13. BRIDGE STRUCTURAL CAPACITY:	( )	( X )	( )

- Design Variances: *None expected.*
- Environmental concerns:

Ecology

2 Open Waters  
 14 Streams  
 1 Wetland

Archaeology

No Archaeological Sites

History

7 Residential and Commercial Properties – Potentially NRHP eligible  
 130 East Crossville Road – 1950  
 205 East Crossville Road – 1964  
 280 Crossville Road – 1946  
 300 Crossville Road – 1960  
 310 Crossville Road – 1960  
 320 Crossville Road – 1956  
 445 Crossville Road – 1946

USTs

13 Gas Stations

Parks

2 Parks

Leita Thompson Memorial Park  
 1200 Woodstock Road  
 Roswell, GA 30075

East Roswell Park  
 9000 Fouts Road  
 Roswell, GA 30076

Churches

4 Churches

Crosspoint Community Church  
77 East Crossville Road  
Roswell, GA 30075

Fellowship Bible Church  
480 West Crossville Road  
Roswell, GA 30075

Christ United Methodist Church  
1340 Woodstock Road  
Roswell, GA 30075

North Atlanta Community Church  
2385 Holcomb Bridge Road  
Roswell, GA 30076

Schools

1 School

Holcomb Bridge Middle School  
2700 Holcomb Bridge Road  
Alpharetta, GA 30022

- Anticipated Level of environmental analysis:
  - Are Time Savings Procedures appropriate? Yes (X) No ( )
  - Categorical exclusion anticipated (X).
  - Environmental Assessment/Finding of No Significant Impact anticipated (FONSI) ( ).
  - Environmental Impact Statement (EIS) ( ).
  
- Utility involvements: *Power service will be required for ITS devices. Whenever possible, existing service points will be utilized versus calling for new/additional service points. The following utilities will be coordinated with:*
  - AT&T
  - Atlanta Gas Light Resources
  - City of Atlanta Bureau of Watershed Management
  - Comcast, Inc.
  - Fulton County Public Works
  - Georgia Power Company
  - Georgia Power Transmission
  
- Public Interest Determination Policy and Procedure Required? Yes ( ) No ( X )
  
- VE Study Anticipated Yes ( ) No ( X )
  
- The Benefit/Cost Ratio was estimated based on information the USDOT provided on their benefits website. Adaptive traffic signals provide significant benefits by improving signal timing and by maintaining the improved timings on a continuous basis. California conducted a

study of the B/C Ratio of their adaptive traffic signal projects and determined a B/C Ratio of 17 to 1 [Source: <http://www.benefitcost.its.dot.gov/its/benecost.nsf/ID/42419C3E5993E9CD852569EA0071D556?OpenDocument&Query=BApp>]. Benefits of this project are therefore estimated at \$1.7 Mil (Cost) x 17 (B/C ratio) = \$29 Mil

**Project Cost Estimate and Funding Responsibilities:**

	PE		ROW	UTILITY	CST			MITIGATION
By Whom →	Roswell	SRTA	Roswell	Roswell	FHWA (80%)	Roswell (20%)	SRTA	Roswell
<b>\$ Amount PI 0006820</b>	\$96,000	\$114,800	\$0	\$5,000	\$600,000	\$150,000	\$459,200	\$0
	Subtotal = \$210,800				Subtotal = \$1,209,200			
<b>\$ Amount PI 0006821</b>	\$72,000	\$0	\$0	\$5,000	\$400,000	\$100,000	\$0	\$0
	Subtotal = \$72,000				Subtotal = \$500,000			
<b>Total</b>	<b>\$168,000</b>	<b>\$114,800</b>	<b>\$0</b>	<b>\$10,000</b>	<b>\$1,000,000</b>	<b>\$250,000</b>	<b>\$459,200</b>	<b>\$0</b>
	<b>Total = \$282,800</b>				<b>Total = \$1,709,200</b>			

\* CST cost includes: Construction, Engineering and Inspection

**Project Activities Responsibilities:**

- Design: *URS Corporation*
- Right-of-Way Acquisition: *N/A*
- Right-of-Way funding (real property): *N/A*
- Relocation of Utilities: *N/A*
- Letting to contract: *City of Roswell*
- Supervision of construction: *City of Roswell and CEI services firm*
- Providing material pits: *None required.*
- Providing detours: *None anticipated.*
- Environmental Studies/Documents/Permits: *URS Corporation*
- Environmental Mitigation: *N/A*

**Coordination:**

- Initial Concept Meeting date and brief summary. *6/23/10: Roswell decided to continue to deploy the same ITS architecture as the SR 9 ATMS, which also follows Roswell's ITS Master Plan. The ITS field elements will include CCTVs, adaptive signal control, travel time stations, and Ethernet communications.*
- Concept meeting date and brief summary. *Not held.*
- P A R meetings, dates and results. *Not required.*
- FEMA, USCG, and/or TVA. *None anticipated.*
- Public involvement. *None anticipated.*

- Local government comments: *Roswell wants to deploy as many CCTVs as needed to achieve full coverage of the corridor and closely-spaced, adjacent cross-street traffic signals. They also want adaptive signal control at all corridor traffic signals and closely-spaced, adjacent cross-street traffic signals, and travel time stations at as many locations as the construction budget will allow. Roswell has partnered with the GDOT Regional Traffic Operations Program to establish Ethernet communications on SR 140 and SR 92 by December 2011; therefore, the designers of this project will need to treat the Ethernet communications as an existing element.*
- Other projects in the area:
  - P.I. # 721780/721790: (Long Range) – Phase 1 PEMAS011401084 ( P.I.# 721780), Phase 2 PEMAS0114085 (P.I.# 721790)
  - P.I. #0000252: SR 140 (Holcomb Bridge Road) – HPP-00-0000-00(252)
  - P.I. #0007070: CSSTP-0007-00(070) SR 140 at Barnwell Rd. Operational Improvement, right turn lane
  - P.I. #770933: CM000-00SW(004) Sidewalks Holcomb Bridge Rd. from Old Holcomb Br. Rd. to east of SR 400
  - P.I. #0006274: CSSTP-0006-00(274) Sidewalks/ Streetscape SR9 from Norcross St. to Holcomb Bridge Rd. SR 140
  - P.I. #0006727: CSSTP-0006-00(727) ITS from Abernathy Rd. to Forsyth County Line
  - P.I.# 0009710: Regional Traffic Operations Program – Active management of traffic flow along SR 92 and SR 140
- Railroads. *N/A*
- Other coordination to date. *None*

**Traffic Signal Timing and Coordination:**

Traffic signals will be timed using an adaptive signal system to maintain coordinated traffic flow progression through the corridor. The adaptive signal system will be programmed to minimize the overall total delay of the roadway segment. The major street typically carries the larger volumes, thus the adaptive signal system will provide the majority of the green time to the major roadway approaches. The progression of vehicles along the major roadway will be given the priority even when the characteristics of the roadway traffic flow and control changes. Once the programming of the adaptive signal system has been completed to optimize traffic flow, any modification to the programming to increase green time on minor streets will not adversely affect the traffic flow progression on the major roadway.

**Scheduling – Responsible Parties’ Estimate:**

- |  |                |              |
|--|----------------|--------------|
| • Time to complete the environmental process:      | Begin: 6/22/10 | End: 5/11/12 |
| • Time to complete preliminary construction plans: | Begin: 7/25/11 | End: 6/22/12 |
| • Time to complete right-of-way plans:             | Begin: N/A     | End: N/A     |
| • Time to complete the Section 404 Permit:         | Begin: N/A     | End: N/A     |
| • Time to complete final construction plans:       | Begin: 6/25/12 | End: 9/17/12 |
| • Time to complete the purchase of right-of-way:   | Begin: N/A     | End: N/A     |

**Other alternates considered:** *Alternative #1: No Build*

**Comments:** *None*

Project Concept Report page 12  
Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
P. I. Number: 0006820, 0006821  
County: Fulton

**Attachments:**

1. CES Cost Estimates
2. Supplemental PFA
3. PFA
4. Benefit/Cost Ratio
5. Concept of Operations

Concur:   
Director of Engineering

Approve:   
Chief Engineer

Date: 11-3-2011

Project Concept Report page 13  
Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
P. I. Number: 0006820, 0006821  
County: Fulton

**ATTACHMENT #1**

**CES COST ESTIMATES**

Project Concept Report page 14  
 Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
 P. I. Number: 0006820, 0006821  
 County: Fulton

STATE HIGHWAY AGENCY

DATE : 10/06/2011  
 PAGE : 1

JOB ESTIMATE REPORT

JOB NUMBER : 0006820-CONCEPT      SPEC YEAR: 01  
 DESCRIPTION: ATMS ON SR 140/ HOLCOMB BRIDGE RD FROM BARNWELL RD TO SR 9  
 FULTON

COST GROUPS FOR JOB 0006820-CONCEPT

COST GROUP	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ACTIVE?
ITS	TRAFFIC CONTROL CSCMQ-0006-00(820)	24.000	1500.00000	36000.00	Y
ITS	CCTV CAMERA AND MOUNT	11.000	4300.00000	47300.00	Y
ITS	CABINET B	11.000	4300.00000	47300.00	Y
ITS	VIDEO ENCODER	11.000	3800.00000	41800.00	Y
ITS	FIELD SWITCH, TYPE C	11.000	2500.00000	27500.00	Y
ITS	GBIC	22.000	400.00000	8800.00	Y
SGNL	CABINET POWER	11.000	2500.00000	27500.00	Y
ITS	FDC RACK-MOUNTED 6 FIBER	11.000	500.00000	5500.00	Y
ITS	FUSION SPLICE	48.000	50.00000	2400.00	Y
ITS	TRAVEL TIME DETECTION SITE	7.000	7000.00000	49000.00	Y
SGNL	ADAPTIVE TRAFFIC CONTROL WITH DETECTORS	24.000	23000.00000	552000.00	Y
ITS	TCC INTEGRATION AND TESTING	1.000	33800.00000	33800.00	Y
ITS	OSP FIBER OPTIC CABLE DROP, SM, 6 FIBER	1210.000	1.30000	1573.00	Y
ITS	CONDUIT, NONMETL, TP 3, 2 IN	1100.000	3.00000	3300.00	Y
ITS	STRAIN POLE	11.000	6180.00000	67980.00	Y
ITS	PORTABLE INTELLIGENT WORK ZONE SYSTEM	1.000	89000.00000	89000.00	Y
ITS	PORTABLE CCTV WITH DETECTOR TRAILER	1.000	45000.00000	45000.00	Y
ITS	PERMANENT COUNT-CLASSIFICATION STATION	3.000	22000.00000	66000.00	Y
ACTIVE COST GROUP TOTAL				1151753.00	
INFLATED COST GROUP TOTAL				1151753.00	

TOTALS FOR JOB 0006820-CONCEPT

ESTIMATED COST:	1151753.00
CONTINGENCY PERCENT ( 0.0 ):	0.00
ENGINEERING AND INSPECTION PERCENT ( 5.0 ):	57587.65
ESTIMATED TOTAL:	1209340.65

Project Concept Report page 15  
 Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
 P. I. Number: 0006820, 0006821  
 County: Fulton

STATE HIGHWAY AGENCY

DATE : 10/06/2011  
 PAGE : 1

JOB ESTIMATE REPORT

JOB NUMBER : 0006821-CONCEPT      SPEC YEAR: 01  
 DESCRIPTION: ATMS ON SR 92/ CROSSVILLE RD FROM SR 9 TO STEEPLE RUN  
 FULTON

COST GROUPS FOR JOB 0006821-CONCEPT

COST GROUP	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ACTIVE?
ITS	TRAFFIC CONTROL CSCMQ-0006-00(820)	11.000	1500.00000	16500.00	Y
ITS	CCTV CAMERA AND MOUNT	5.000	4300.00000	21500.00	Y
ITS	CABINET B	5.000	4300.00000	21500.00	Y
ITS	VIDEO ENCODER	5.000	3800.00000	19000.00	Y
ITS	FIELD SWITCH, TYPE C	5.000	2500.00000	12500.00	Y
ITS	GBIC	10.000	400.00000	4000.00	Y
SGNL	CABINET POWER	5.000	2500.00000	12500.00	Y
ITS	FDC RACK-MOUNTED 6 FIBER	5.000	500.00000	2500.00	Y
ITS	STRAIN POLE	5.000	6180.00000	30900.00	Y
ITS	FUSION SPLICE	24.000	50.00000	1200.00	Y
ITS	TRAVEL TIME DETECTION SITE	5.000	7000.00000	35000.00	Y
SGNL	ADAPTIVE TRAFFIC CONTROL WITH DETECTORS	11.000	23000.00000	253000.00	Y
ITS	TCC EQUIPMENT (ADAPTIVE SERVER, ETC.)	1.000	20000.00000	20000.00	Y
ITS	TCC INTEGRATION AND TESTING	1.000	13000.00000	13000.00	Y
ITS	OSP FIBER OPTIC CABLE DROP, SM, 6 FIBER	550.000	1.30000	715.00	Y
ITS	CONDUIT, NONMETL, TP 3, 2 IN	500.000	3.00000	1500.00	Y
ITS	DIAGNOSTIC LAPTOP COMPUTERS	3.000	3500.00000	10500.00	Y
ACTIVE COST GROUP TOTAL				475815.00	
INFLATED COST GROUP TOTAL				475815.00	

TOTALS FOR JOB 0006821-CONCEPT

ESTIMATED COST:	475815.00
CONTINGENCY PERCENT ( 0.0 ):	0.00
ENGINEERING AND INSPECTION PERCENT ( 5.0 ):	23790.75
ESTIMATED TOTAL:	499605.75

Project Concept Report page 16  
Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
P. I. Number: 0006820, 0006821  
County: Fulton

**ATTACHMENT #2**

**SUPPLEMENTAL PFA**

**SUPPLEMENTAL AGREEMENT NUMBER ONE  
BY AND BETWEEN  
GEORGIA DEPARTMENT OF TRANSPORTATION  
AND  
CITY OF ROSWELL  
FOR  
CSCMQ-0006-00(820) & CSCMQ-0006-00(821)  
PI 0006820 & 0006821  
SR 140/HOLCOMB BRIDGE RD AND SR/92 ATMS/ITS PROJECTS**

THIS AGREEMENT is made and entered into this 22<sup>nd</sup> day of Sept 2011, by and between the GEORGIA DEPARTMENT OF TRANSPORTATION, (hereinafter referred to as the "DEPARTMENT"), an agency of the State of Georgia, whose address for purposes of this Agreement is One Georgia Center, 600 W. Peachtree Street N.W., Atlanta, Georgia 30308, and CITY OF ROSWELL, acting by and through its Mayor and Council, hereinafter referred to as the "SPONSOR".

WHEREAS, the DEPARTMENT and SPONSOR heretofore entered into an Agreement dated December 28, 2010, hereinafter called the "ORIGINAL AGREEMENT", for the purpose of installing ATMS and ITS hardware along SR 140/Holcomb Bridge Rd and SR 92 in the City of Roswell, Georgia Department of Transportation Project Number CSCMQ-0006-00(820) & CSCMQ-0006-00(821), and P.I. Number 0006820 & 0006821, hereinafter referred to as the "PROJECT"; and

WHEREAS, due to changes in funding arrangements and then need to extend time to complete phases of the project schedule, the parties mutually desire to amend the ORIGINAL AGREEMENT and delete Attachments A and B in their entirety and replace them with Attachments A and B dated April 22, 2011.

NOW, THEREFORE, the parties hereto mutually agree that for and in consideration of the mutual promises, the public purposes, and acknowledgements and agreements contained herein, together with other good and valuable consideration, the receipt of which is hereby acknowledged, the parties do hereby agree to replace Attachments A and B from the ORIGINAL AGREEMENT dated, December 28, 2010, with Attachments A and B dated April 22, 2011.

Except as modified, changed or amended, all terms and conditions of the ORIGINAL AGREEMENT dated December 28, 2010, shall remain in full force and effect.

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

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

DEPARTMENT OF TRANSPORTATION

CITY OF ROSWELL

BY: [Signature]  
Commissioner



BY: [Signature]  
Jere Wood  
Mayor

ATTEST: [Signature]  
Treasurer

Signed, sealed and delivered this 29  
day of June, 2011, in the  
presence of:

[Signature]  
Witness



[Signature]  
Notary Public

This Agreement approved by the CITY OF  
ROSWELL, the 29th day of  
June, 2011

Attest  
[Signature]  
Marlee Press, City Clerk

FEIN: 58-6000655

## ATTACHMENT "A"

**Project Number: CSCMQ-0006-00(820) – City of Roswell**

**Project Number: CSCMQ-0006-00(821) – City of Roswell**

### Revised Amounts

Project (PI#, Project #, Description)	Preliminary Engineering		Right of Way			Construction		Utility Relocation	
	Funding	PE Activity by	*Funding of Real Property	Acq. by	Acq. Fund by	*Funding	Letting by	Utility Funding by	Railroad Funding by
PI# 0006820, CSCMQ-0006-00(820) SR 140/HOLCOMB BRIDGE RD FROM S.R. 9 TO CR 107/BARNWELL RD. ATMS/ITS	(100%) SRTA (\$114,800) >(\$114,800) 100% Local Gov.	Local Gov.	(100%) LCL GOV	Local Gov.	Local Gov.	(80%) Federal (\$600,000) (20%) LCL GOV (\$150,000) (100%) SRTA (\$459,200) >(\$1,209,200) 100% Local Gov.	Local Gov.	100% Local Gov.	100% Local Gov.
PI# 0006821, CSCMQ-0006-00(821) SR 92 FROM SR 9 TO COBB COUNTY LINE, ATMS/ITS	(100%) LCL GOV	Local Gov.	(100%) LCL GOV	Local Gov.	Local Gov.	(80%) Federal (\$400,000) (20%) LCL GOV (\$100,000) >(\$500,000) 100% Local Gov	Local Gov.	100% Local Gov	100% Local Gov

**Note:** Maximum allowable GDOT participating amounts for PE category shall be 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. \*R/W and Construction amounts shown are estimates for budget planning purposes only.

### Original Amounts

Project (PI#, Project #, Description)	Preliminary Engineering		Right of Way		Construction		Utility Relocation		
	Funding	PE Activity by	*Funding of Real Property	Acq. by	Acq. Fund by	*Funding	Letting by	Utility Funding by	Railroad Funding by
PI# 0006820, CSCMQ-0006-00(820) SR 140/HOLCOMB BRIDGE RD FROM S.R. 9 TO CR 107/BARNWELL RD. ATMS/ITS	(100%) LCL GOV	Local Gov.	(100%) LCL GOV	Local Gov.	Local Gov.	(80%) Federal (\$600,000) (20%) LCL GOV (\$150,000) >(\$750,000) 100% Local Gov.	Local Gov.	100% Local Gov.	100% Local Gov.
PI# 0006821, CSCMQ-0006-00(821) SR 92 FROM SR 9 TO COBB COUNTY LINE, ATMS/ITS	(100%) LCL GOV	Local Gov.	(100%) LCL GOV	Local Gov.	Local Gov.	(80%) Federal (\$400,000) (20%) LCL GOV (\$100,000) >(\$500,000) 100% Local Gov	Local Gov.	100% Local Gov	100% Local Gov

**ATTACHMENT "B"**  
**0006820 – City of Roswell**

**Proposed Project Schedule**

Environmental Phase						
Concept Phase						
Preliminary Plan Phase						
Right of Way Phase						

<b>Deadlines for Responsible Parties</b>	<b>Execute Agreement</b>	<b>Month/Year (Approve Concept)</b>	<b>Month/Year (Approve Env. Document)</b>	<b>Month/Year (Authorize Right of Way funds)</b>	<b>Month/Year (Authorize Const. funds)</b>
	07/2011	12/2011	05/2012	Not needed	1/2012

**Annual Reporting Requirements**

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

**ATTACHMENT "B"**  
**0006821 – City of Roswell**

**Proposed Project Schedule**

Environmental Phase	[Shaded]					
	[Shaded]					
Concept Phase	[Shaded]					
Preliminary Plan Phase	[Shaded]					
	[Shaded]					
Right of Way Phase	[Shaded]					
	[Shaded]					

<b>Deadlines for Responsible Parties</b>	<b>Execute Agreement</b>	<b>Month/Year (Approve Concept)</b>	<b>Month/Year (Approve Env. Document)</b>	<b>Month/Year (Authorize Right of Way funds)</b>	<b>Month/Year (Authorize Const. funds)</b>
	07/2011	12/2011	05/2012	Not needed	11/2012

**Annual Reporting Requirements**

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

Project Concept Report page 17  
Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
P. I. Number: 0006820, 0006821  
County: Fulton

## **ATTACHMENT #3**

**PFA**



November 26, 2008

The Honorable Jere Wood, Mayor  
City of Roswell  
38 Hill Street  
Roswell, Georgia 30075

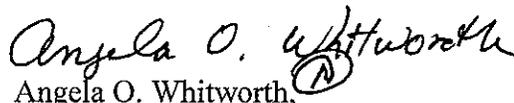
Dear Mayor Wood:

I am returning for your files an executed agreement between the Georgia Department of Transportation and the City of Roswell for the following projects:

**PROJECT#: CSCMQ-0006-00(820) Fulton County, P.I. #0006820**  
**PROJECT#: CSCMQ-0006-00(821) Fulton County, P.I. #0006821**

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)635-8149.

Sincerely,

  
Angela O. Whitworth,  
Financial Management Administrator

AOW: rm

Enclosure

c: Bob Rogers  
Bryant Poole - District 7  
Jeff Baker - Utilities

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**INTERDEPARTMENTAL CORRESPONDENCE**

**FILE:** CSCMQ-0006-00(820) & CSCMQ-0006-00(821) The City of Roswell  
PI'S# 0006820 & 0006821

**DATE:** 9/30/08

**FROM:** Ted Crabtree, District Planning & Programming Engineer

**TO:** Keith Golden, State Traffic & Safety Engineer

**SUBJECT:** *Project Framework Agreement*

Three signed copies of the above-referenced Project Framework Agreement were signed by the City of Roswell and are being forwarded to you for further execution. Please sign these agreements and then send them on to Bob Rogers at the Office of Financial Management.

If you have any questions, please call me at this office at 770-986-1260.

TC/BGH

cc; Bob Rogers

Attachment(s)

**AGREEMENT**  
**BETWEEN**  
**DEPARTMENT OF TRANSPORTATION**  
**STATE OF GEORGIA**  
**AND**  
**THE CITY OF ROSWELL**  
**FOR**  
**TRANSPORTATION FACILITY IMPROVEMENTS**

This Framework Agreement is made and entered into this 24<sup>th</sup> day of October, 2008, by and between the DEPARTMENT OF TRANSPORTATION, an agency of the State of Georgia, hereinafter called the "DEPARTMENT", and the City of Roswell, acting by and through its Mayor and City Council, hereinafter called the "LOCAL GOVERNMENT".

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

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

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

WHEREAS, the 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, ¶(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 shall contribute to the PROJECT by funding all or certain portions of the PROJECT costs for the preconstruction engineering (design), all reimburseable utility relocation costs, right of way acquisitions and construction, as specified in Attachment A, attached hereto and incorporated herein by reference. Expenditures incurred by the LOCAL GOVERNMENT and eligible for reimbursement by the DEPARTMENT shall not be considered reimbursible to the LOCAL GOVERNMENT until the LOCAL GOVERNMENT receives a written notice to proceed for each phase of the PROJECT.

2. The DEPARTMENT shall contribute to the PROJECT by funding all or certain portions of the PROJECT costs for the preconstruction engineering (design) activities, right of way acquisitions or construction as specified in Attachment A.

3. 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 Preconstruction Engineering Activities. The Right of Way and Construction funding estimate levels as specified in Attachment A are provided herein for planning purposes and does not constitute a funding commitment for right of way and construction activities. The DEPARTMENT will prepare LOCAL GOVERNMENT Specific Activity Agreements for applicable Right of Way and Construction 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.

4. The LOCAL GOVERNMENT shall be responsible for all costs for the continual maintenance of the project and the continual operations of any and all sidewalks and the grass strip between the curb and gutter and the sidewalk within the PROJECT limits.

5. 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 (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 construction or right of way, as applicable.

6. The LOCAL GOVERNMENT shall certify that they have read and understands the regulations for "CERTIFICATION OF COMPLIANCES WITH FEDERAL PROCUREMENT REQUIREMENTS, STATE AUDIT REQUIREMENTS, AND FEDERAL AUDIT REQUIREMENTS" and will comply in full with said provisions.

7. The LOCAL GOVERNMENT shall accomplish all of the design activities for the PROJECT. The design activities shall be accomplished in accordance with the DEPARTMENT's Plan Development Process, 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, the DEPARTMENT's Plan Presentation Guide, PROJECT schedules, and applicable guidelines of the DEPARTMENT. The LOCAL GOVERNMENT responsibility for design shall include, but is not limited to the following items:

a. Prepare the PROJECT concept report 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 modified by the LOCAL GOVERNMENT as required by the DEPARTMENT and re-approved by the DEPARTMENT during the course of design due to public input, environmental requirements, or right of way considerations.

b. Develop the PROJECT base year (year facility is expected to be open to traffic) and design year (base year plus 20 years) traffic volumes. This shall include average daily traffic (ADT) and morning (am) and evening (pm) peak hour volumes. The traffic shall show all through and turning movement volumes at intersections for the ADT and peak hour volumes and shall indicate the percentage of trucks expected on the facility.

c. Validate (check and update) the approved PROJECT concept and prepare a PROJECT Design Book for approval by the DEPARTMENT prior to the beginning of preliminary plans.

d. Prepare environmental studies, documentation, and reports for the PROJECT that show the PROJECT is in compliance with the provisions of the National Environmental Protection Act and Georgia Environmental Protection Act, as appropriate to the PROJECT funding. This shall include any and all archaeological, historical, ecological, air, noise, underground storage tanks (UST), and hazardous waste site studies required as well as any environmental reevaluations required. The LOCAL GOVERNMENT shall submit to the DEPARTMENT all environmental documents and reports for review and approval by the DEPARTMENT and the FHWA.

e. Prepare all public hearing and public information displays and conduct all required public hearings and public information meetings in accordance with DEPARTMENT practice.

f. Perform all surveys, mapping, soil investigation studies and pavement evaluations needed for design of the PROJECT.

g. Perform all work required to obtain project permits, including, but not limited to, US Army Corps of Engineers 404 and Federal Emergency Management Agency (FEMA) approvals. These efforts shall be coordinated with the DEPARTMENT. As part of the design an environmental assessment will be conducted, which may or may not result in environmental impacts of the surrounding area. If it is determined that there will be impacts that will require mitigation, then it will be the responsibility of the LOCAL GOVERNMENT to resolve the matter.

h. Prepare the PROJECT drainage design including erosion control plans and the development of the hydraulic studies for the Federal

Emergency Management Agency Floodways and acquisition of all necessary permits associated with the drainage design.

i. Prepare traffic studies, preliminary construction plans including a cost estimate for the Preliminary Field Plan Review, preliminary and final utility plans, preliminary and final right of way plans, staking of the required right of way, and final construction plans including a cost estimate for the Final Field Plan Review, erosion control plans, lighting plans, traffic handling plans, and construction sequence plans and specifications including special provisions for the PROJECT.

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

k. Failure of the LOCAL GOVERNMENT to follow the DEPARTMENT's Plan Development Process will jeopardize the use of Federal funds in some or all of the categories outlined in this Agreement, and it shall be the responsibility of the LOCAL GOVERNMENT to make up the loss of that funding.

8. All Primary Consultant firms 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. Any Consultant hired by the Local Government to perform work on

the Project must be compliant to applicable state and federal regulations relating to the procurement of design services in accordance with the Brooks Architect-Engineers Act of 1972, better known as the Brooks Act.

9. The PROJECT construction and right of way plans shall be prepared in English units.

10. All drafting and design work performed on the project shall be done utilizing the DEPARTMENT's latest approved software respectively, and shall be organized as per the Department's guidelines on electronic file management.

11. 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.

12. 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 design of the bridge(s) and prepare any required hydraulic

and hydrological studies. The final bridge plans shall be incorporated into this PROJECT as a part of this Agreement.

13. The LOCAL GOVERNMENT shall follow the DEPARTMENT's procedures for identification of existing and proposed utility facilities on the PROJECT. These procedures, in part, require all requests for existing, proposed, or relocated facilities to flow through the DEPARTMENT's Project Liaison and the District Utilities Engineer.

14. The LOCAL GOVERNMENT shall address all railroad concerns, comments, and requirements to the satisfaction of the DEPARTMENT.

15. If the right of way phase is 100% local funding with no Federal or State reimbursement, upon the DEPARTMENT's approval of the project right of way plans, verification that the approved environmental document is current, which shall mean that the approval of the environmental document occurred within six (6) months of the approval notice by the DEPARTMENT's for project right of way plans, and delivery of a written notice to proceed, the LOCAL GOVERNMENT may proceed with the acquisition of the necessary right of way for the PROJECT. If the right of way phase involves federal and/or state funding reimbursement, upon the Department's approval of the project right of way plans, the Local Government may proceed with all pre-acquisition right of way activities, however, property negotiation and acquisition cannot commence until right of way funding authorization is approved. Right of way acquisition shall be 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 and in accordance with the "Contract for the Acquisition of Right of Way" to be prepared by the Office of Right of Way and executed between the LOCAL GOVERNMENT and the DEPARTMENT prior to the commencement of any right of way activities. 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. In the event the LOCAL GOVERNMENT is to receive reimbursement of all or part of the acquisition funding, reimbursable right of way costs are to include land and improvement costs, property damage values, relocation assistance expenses and contracted property management costs. Non reimbursable costs include administrative expenses such as appraisal, consultant, attorney fees and any in-house property management or staff expenses. All required right of way shall be obtained and cleared of obstructions, including underground storage tanks, prior to advertising the PROJECT for bids. The LOCAL GOVERNMENT shall further be responsible for making all revisions to the approved right of way plans, as deemed necessary by the DEPARTMENT, for whatever reason, as needed to purchase the required right of way.

16. Upon completion and approval of the PROJECT plans, certification that all needed rights of way have been obtained and cleared of obstructions, and certification that all needed permits for the PROJECT have been obtained by the

LOCAL GOVERNMENT the PROJECT shall be let for construction. The DEPARTMENT, unless shown otherwise on Attachment A, shall be solely responsible for securing and awarding the construction contract for the PROJECT.

17. The LOCAL GOVERNMENT shall review and make recommendations concerning all shop drawings prior to submission to the DEPARTMENT. 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 diskettes and printouts, and any other data prepared under the terms of this Agreement shall become the property of the DEPARTMENT if required. 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. Traffic signals will be timed to maintain coordinated traffic flow progression through the synchronized intersections. The signal timing will be designed to minimize the overall total delay of the roadway segment. The major street typically carries the larger volumes, thus the signal timing will provide the majority of the green time to the major roadway approaches. The progression of vehicles along the major roadway will be given the priority even when the characteristics of the roadway traffic flow and control changes. Once a signal timing plan has been completed to optimize traffic flow, any modification to the signal

timing to increase green time on minor streets will not adversely affect the traffic flow progression on the major roadway.

20. The LOCAL GOVERNMENT shall be responsible for the professional quality, technical accuracy, and the coordination of all 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 designs, drawings, specifications, and other services furnished for this PROJECT. Failure by the LOCAL GOVERNMENT to address the errors or deficiencies within 30 days shall cause the LOCAL GOVERNMENT to assume all responsibility for construction delays 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.

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

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

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

RECOMMENDED:

THE CITY OF ROSWELL

[Signature]  
State Traffic and Safety Engineer

[Signature]  
Director of Preconstruction

[Signature]  
Chief Engineer

DEPARTMENT OF  
TRANSPORTATION

BY: [Signature]  
Commissioner

ATTEST: [Signature]  
Treasurer

REVIEWED AS TO LEGAL FORM:

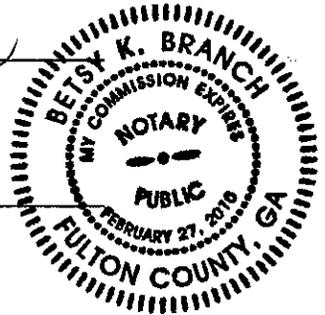
[Signature]  
Office of Legal Services

BY: [Signature]  
Name Kay G. Love  
Title City Administrator

Signed, sealed and delivered this 22<sup>nd</sup> day of September, 2008, in the presence of:

[Signature]  
Witness

[Signature]  
Notary Public



This Agreement approved on the 3<sup>rd</sup> day of September, 2008.

[Signature]  
City Clerk

FEIN: 58-6000655

THE CITY OF ROSWELL

## ATTACHMENT "A"

**Project Number: CSCMQ-0006-00(820) – City of Roswell**

**Project Number: CSCMQ-0006-00(821) – City of Roswell**

Project (PI#, Project #Description)	Work Type	Preliminary Engineering		Right of Way		Construction		Utilities Relocation Costs by
		Funding	Design	Funding of Real Property	Acquisition & Administrative Cost by	Funding	Letting by	
PI# 0006820 CSCMQ-0006-00(820) SR 140/Holcomb Bridge Road from S.R.9 to C.R.107 / Barnwell Road	ATMS / ITS	100% Local Gov.	Local Gov.	100% Local Gov.	Local Gov.	\$600,000 - 80% Fed. \$150,000 – 20% Local Gov. >100% Local Gov.	Local Gov.	100% Local Gov.
PI# 0006821 CSCMQ-0006-00(820) SR 92 from S.R.9 to Cobb County Line	ATMS / ITS	100% Local Gov.	Local Gov.	100% Local Gov.	Local Gov.	\$500,000 - 80% Fed. \$100,000 – 20% Local Gov. >100% Local Gov.	Local Gov.	100% Local Gov.

**Note:** 1. Maximum allowable GDOT reimbursible amount may be shown above in lieu of percentages when applicable. Local Government will only be reimbursed the percentage of the accrued invoiced amounts up to but not to exceed the maximum amount indicated.

2. Cash participation limits may be shown above in lieu of percentages when applicable.

**ATTACHMENT "B"**  
**0006820 – City of Roswell**

**Proposed Project Schedule**

Environmental Phase	[Redacted]			[Redacted]	[Redacted]	[Redacted]
	[Redacted]			[Redacted]	[Redacted]	[Redacted]
Concept Phase	[Redacted]			[Redacted]	[Redacted]	[Redacted]
	[Redacted]			[Redacted]	[Redacted]	[Redacted]
Preliminary Plan Phase	[Redacted]			[Redacted]	[Redacted]	[Redacted]
	[Redacted]			[Redacted]	[Redacted]	[Redacted]
Right of Way Phase	[Redacted]			[Redacted]	[Redacted]	[Redacted]
	[Redacted]			[Redacted]	[Redacted]	[Redacted]

Deadlines for Responsible Parties	Execute Agreement	Month/Year (Approve Concept)	Month/Year (Approve Env. Document)	Month/Year (Authorize Right of Way funds)	Month/Year (Authorize Const. funds)
	9/2008	3/2009	6/2009	9/2009	1/2010

**Annual Reporting Requirements**

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

**Training Certification Requirement**

The Local Government shall 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 Plan Development Process 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.

**ATTACHMENT "B"**  
**0006821 – City of Roswell**

**Proposed Project Schedule**

<b>Environmental Phase</b>						
<b>Concept Phase</b>						
<b>Preliminary Plan Phase</b>						
<b>Right of Way Phase</b>						

<b>Deadlines for Responsible Parties</b>	<b>Execute Agreement</b>	<b>Month/Year (Approve Concept)</b>	<b>Month/Year (Approve Env. Document)</b>	<b>Month/Year (Authorize Right of Way funds)</b>	<b>Month/Year (Authorize Const. funds)</b>
	9/2008	3/2009	6/2009	9/2009	1/2010

**Annual Reporting Requirements**

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

**Training Certification Requirement**

The Local Government shall 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 Plan Development Process 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.

Project Concept Report page 18  
Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
P. I. Number: 0006820, 0006821  
County: Fulton

## **ATTACHMENT #4**

### **Benefit/Cost Ratio**

Project Concept Report page 19  
Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
P. I. Number: 0006820, 0006821  
County: Fulton

**Benefit/Cost Ratio:**

B/C Ratio 17 to 1      Source (see source information on next page or go to this link):  
<http://www.benefitcost.its.dot.gov/its/benecost.nsf/ID/42419C3E5993E9CD852569EA0071D556?OpenDocument&Query=BApp>

Estimated benefits of this project:

<b>PI No.</b>	<b>Estimated Construction Cost</b>	<b>x B/C Ratio</b>	<b>= Benefit</b>
PI 0006820	\$1.2 Mil	17 / 1	\$20.4 Mil
PI 0006821	\$0.5 Mil	17 / 1	\$8.5 Mil
		<b>Total</b>	<b>\$29 Mil</b>


[About RITA](#)
[Contact Us](#)
[Press Room](#)
[Careers](#)
[RITA Offices](#)
[Site Map](#)
 
[Benefits Database](#)
[Browse Benefits By](#)
[Benefit of the Month](#)
[ITS Knowledge Resources](#)
[ITS](#) >> [Benefits Database](#) >> [View by Application](#) >> Summary

 Need assistance? [Contact us](#) or view the [Help page](#).

 Search for:  in Benefits 

 Quick Links: [AO](#) [B](#) [C](#) [DS](#) [LL](#)

**This benefit was Benefit of the Month for November, 2003!**

## The estimated benefit-to-cost ratio for optimizing signal timing plans, coordinating traffic signal control, and implementing adaptive signal control in California was 17:1.

 7-11 January 2001  
 Statewide, California, United States

[E-mail](#) | [Post a Comment](#) | [Print](#)

### Summary Information

This paper summarizes an evaluation of the benefits of optimizing traffic signal timing plans, coordinating traffic signal control, and implementing adaptive signal control at locations throughout the State of California. The signal timing optimization and coordination projects were carried out during the Fuel Efficient Traffic Signal Management (FETSIM) Program, between 1983 and 1993. This program involved 163 local agencies and 334 projects, improving 12,245 signals at a cost of \$16.1 million, or \$1,091 per signal. Timing plans were developed using the TRANSYT-7F software package. TRANSYT-7F also produced estimates of delay, number of stops and fuel consumption under the recommended signal timing plans, indicating the benefits of optimization. This created a database of the impacts of coordinated signal timing optimization under a variety of local conditions across the many projects implemented during the FETSIM program. Data from the Los Angeles Advanced Traffic Control and Surveillance System (ATSAC), allows an assessment of the performance of traffic responsive signal control at several intersections. The results presented in this paper are based on analysis of the accumulated statistics from the local agencies carrying out the signal improvement projects.

The TRANSYT-7F model estimates from 163 of the 334 FETSIM projects (49 percent), representing 55 percent of the total number of signals retimed, demonstrated positive results from signal retiming of coordinated signal systems. The study found an average 7.7 percent reduction in travel time, 13.8 percent reduction in delays, 12.5 percent reduction in stops and 7.8 percent decline in fuel use. This study excluded TRANSYT-7F results for oversaturated approaches, as the simulation overestimates the benefits of retiming under these conditions. Results of "before" and "after" floating car studies reported by some of the jurisdictions support the TRANSYT-7F figures. The average reductions reported by the floating car studies were: 7.4 percent in travel time, 16.5 percent in delay, and 17 percent in stops. The differences between these figures and the TRANSYT-7F values are due to the survey routes selected by the projects, which did not cover each link of the retimed signal network.

There was considerable variation in the improvement achieved by the retiming projects, for a variety of reasons:

- Quality of existing timing plans: When existing timing plans were already performing well, there was often little benefit in signal optimization.
- Network configuration: The largest savings were obtained on arterials, rather than signalized grid networks.
- Traffic Patterns: High volume systems with predominant through movements achieved the greatest improvements. Savings were marginal on systems containing several congested intersections in need of capacity improvements.
- Signal Equipment: Systems with actuated signals and easily modifiable control parameters achieved greater benefits.

"Before" and "after" field studies using floating cars assessed the performance of 76 of the projects that implemented coordinated signal control during the FETSIM program. The report indicated the benefit-to-cost ratio for the cumulative impact of all the FETSIM projects, as determined by the recommended AASHTO method, was 17:1.

### Average User Rating

0 ( ratings)

### Rate this Benefit

(click stars to rate)

**Benefit Comments**

No comments posted to date

Source
<p>ITS Benefits: The Case of Traffic Signal Control Systems</p> <p>Author: Skabardonis, Alexander required field.</p> <p>Published By: Paper presented at the 80th Annual Transportation Research Board Meeting, Washington, District of Clolumbia</p> <p>Source Date: 7-11 January 2001</p>

**Comment on this Benefit**

To comment on this summary, fill in the information below and click on submit. An asterisk (\*) indicates a

Name (optional):

E-mail (optional):

Comments: \*

**Benefits From This Source**

[Optimized signal timing plans, coordinated traffic signal control, and adaptive signal control reduced fuel use by 7.8 percent in California.](#)

[Optimizing signal timing plans, coordinating traffic signal control, and implementing adaptive signal control in California reduced travel time by 7.4 to 11.4 percent, decreased delay by 16.5 to 24.9 percent, and reduced stops by 17 to 27 percent.](#)

[The estimated benefit-to-cost ratio for optimizing signal timing plans, coordinating traffic signal control, and implementing adaptive signal control in California was 17:1.](#)

**Application Areas**

[Intelligent Infrastructure > Arterial Management > Traffic Control > Adaptive Signal Control](#)

[Intelligent Infrastructure > Arterial Management > Traffic Control > Advanced Signal Systems](#)

**Goal Areas**

[Productivity](#)

**Typical Deployment Locations**

Metropolitan Areas

**Keywords**

traffic signals, adaptive signals, coordinated signals, signal coordination, centralized signal control, signal synchronization, advanced signal control, signal timing optimization, coordinated signal control, advanced signal controller, traffic signal retiming, retiming, Coordinated signal timing, pre-timed, pretimed, time-of-day signal timing, fixed-time

ID: 2001-00176

 [Subscribe to New Benefits Entries RSS Feed](#) | [View all available RSS Feeds](#) | [What is RSS?](#)

Research and Innovative Technology Administration (RITA) • U.S. Department of Transportation (US DOT)  
1200 New Jersey Avenue, SE • Washington, DC 20590 • 800-853-1351 • E-mail RITA

[Accessibility](#) | [Disclaimer](#) | [Fast Lane](#) | [FedStats](#) | [Freedom of Information Act](#) | [No FEAR Act](#) | [OIG Hotline](#) | [Privacy Policy](#) | [RSS](#) | [USA.gov](#) | [White House](#) | [Wireless](#)

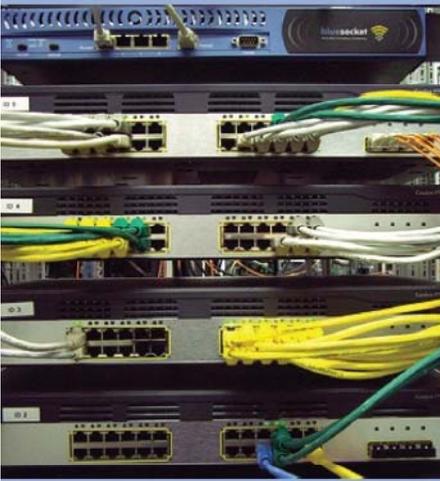
Plug-ins: [PDF Reader](#) | [Flash Player](#) | [Excel Viewer](#) | [PowerPoint Viewer](#) | [Word Viewer](#) | [WinZip](#)

Project Concept Report page 20  
Project Number: CSCMQ-0006-00(820), CSCMQ-0006-00(821)  
P. I. Number: 0006820, 0006821  
County: Fulton

**ATTACHMENT #5**

**CONCEPT OF OPERATIONS**  
**SR 92 & SR 140 ATMS**

# Concept of Operations SR 92 & SR 140 ATMS



Project Numbers: CSCMQ-0006-00(820), PI #0006820, ARC #FN-203  
CSCMQ-0006-00(821), P.I. #0006821, ARC #FN-204



In association with  
Gresham Smith & Partners

Version 1.0  
August 16, 2010

# **Concept of Operations SR 92 and SR 140 Advanced Transportation Management System (ATMS)**

## **Project No:**

Project Number: CSCMQ-0006-00(820)  
PI #0006820, ARC #FN-203  
(ATMS on SR 140/Holcomb Bridge Rd from Barnwell Rd to SR 9)

Project Number: CSCMQ-0006-00(821)  
P.I. #0006821, ARC #FN-204  
(ATMS on SR 92/Crossville Rd from SR 9 to Steeple Run)

## **Prepared for:**

CITY OF ROSWELL  
38 HILL STREET,  
ROSWELL, GA 30075

## **Prepared by:**



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

## Table of Contents

<b>1</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	Study Process.....	2
1.2	Document Organization .....	2
<b>2</b>	<b>SCOPE OF PROJECT.....</b>	<b>3</b>
2.1	Purpose for Implementing the SR 92 and SR 140 ATMS Concept of Operations.....	3
2.2	Vision and Mission Statements.....	3
2.3	User Descriptions.....	4
2.4	Intended Audience .....	6
2.5	Boundary .....	7
<b>3</b>	<b>OPERATIONAL NEEDS.....</b>	<b>8</b>
3.1	Existing Operational Characteristics .....	11
3.2	Incident and Emergency Management.....	11
3.3	Special Events Management.....	12
3.4	Safety .....	12
3.5	Traffic Management.....	12
3.6	Traveler Information.....	13
3.7	Public Transportation Management .....	13
<b>4</b>	<b>SYSTEM OVERVIEW .....</b>	<b>14</b>
<b>5</b>	<b>OPERATIONAL SCENARIOS.....</b>	<b>22</b>
5.1	Signal Failure and Timing Updates .....	22
5.2	Major Traffic Incident .....	24
5.3	Planned Special Event and Agency Coordination .....	25
5.4	Emergency Signal Timing Implementation .....	28
<b>6</b>	<b>OPERATIONAL and SUPPORT ENVIRONMENT .....</b>	<b>30</b>
6.1	Software.....	30
6.2	Personnel .....	31
	APPENDIX A – List of Acronyms.....	32

## List of Figures and Tables

Figure 1-1 – Systems Engineering Process.....	1
Figure 2-1 – SR 92 and SR 140 Project Boundaries.....	7
Table 3-1 – SR 92 and SR 140: Needs and Recommended ITS Measures .....	9
Figure 4-1 – SR 92 and SR 140 ATMS High Level System Overview Diagram .....	15
Figure 4-2 – SR 92 and SR 140 ATMS Traffic Network.....	17
Figure 4-3 – SR 92 and SR 140 ATMS Incident & Emergency Management Functions	19

## Document Control

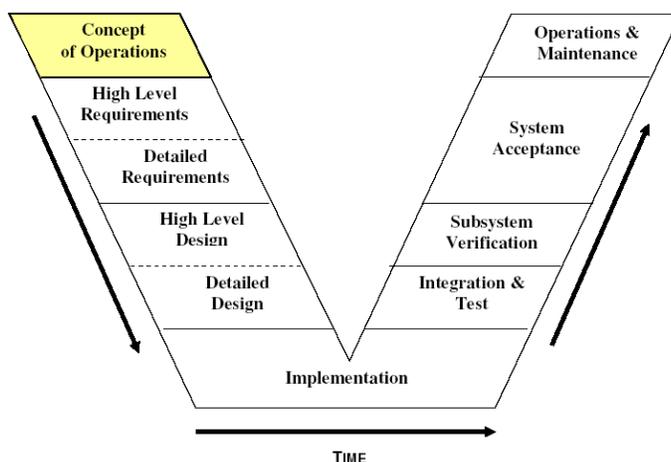
Date	Version	Description
7-27-10	0.1	Draft reviewed by Roswell
8-16-10	1.0	Release 1.0 submitted to GDOT

# 1 INTRODUCTION

The Concept of Operations for State Route (SR) 92 and SR 140 describes the mission of the City of Roswell and identifies goals, needs and Intelligent Transportation Systems (ITS) solutions to improve transportation operations and incident management on SR 92 and SR 140.

This document outlines the goals of this project that were initially described in the SR 9 ATMS Concept of Operations document. The SR 92 / SR 140 project is an expansion of the systems and functionality proposed in the SR 9 Concept of Operations. The present project will add the same ATMS elements proposed in SR 9 Concept of Operations and will be integrated with these new SR 9 systems for control, display and data collection. The SR 92 /SR 140 ATMS project will provide the City of Roswell with additional tools to manage traffic along this important commuter corridor.

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



**Figure 1-1 – Systems Engineering Process**

## 1.1 Study Process

The City of Roswell is the primary stakeholder for this project and has identified their issues, needs and requirements for the project. Extensive use of the formal studies conducted for the SR 9 project (PI 0006727 / CSSTP-0006-00(727) / SR 9 ATMS) in 2009 and those findings have also been utilized in this Concept of Operations.

## 1.2 Document Organization

The Concept of Operations document has been organized to give a broad over view and then provide additional details to meet the needs of the intended audience.

- *Chapter 2* begins with the overall Scope of the project – the road map that was used to develop the Concept of Operations. This chapter includes high-level information on the geographical boundary of the project, the users of the corridor as well as the overall project mission and vision.
- *Chapter 3* describes the operational needs of the SR 92 and SR 140 corridor, including the current traffic conditions experienced how the City manages the corridor and how the implementation of an ATMS along the corridor could help improve traffic operations along the corridor.
- *Chapter 4* offers a system overview of the current and future ATMS for the SR 92 and SR 140 corridor. This chapter includes a set of diagrams that show conceptually how ITS solutions can be integrated along the SR 92 and SR 140 corridor and how they are connected to each other. It also illustrates the various agencies and organizations who will exchange information with the ATMS.
- *Chapter 5* describes the existing and recommended facilities that are needed to manage the ITS field devices located along the SR 92 and SR 140 corridor. This chapter describes the hardware, software and communications equipment that will be needed for the system as well as the necessary staffing and maintenance considerations.
- *Appendix A* provides the reader with a set of acronyms used in the document.

## 2 SCOPE OF PROJECT

The SR 92 and SR 140 ATMS Concept of Operations is intended to meet the requirements of the proposed Scope of Work. The document has been written with a specific purpose while addressing the mission of City of Roswell and the future vision for the SR 92 and SR 140 corridor. The document is written to address an audience who is interested in improving transportation operations along the SR 92 and SR 140 corridor while gaining a better understanding of who uses the corridor.

### 2.1 Purpose for Developing the SR 92 and SR 140 ATMS Concept of Operations

The **Purpose** of developing the ATMS Concept of Operations is to document the current operations on SR 92 and SR 140 from the eastern end of the project at Barnwell Road to Wildwood Spring/Steeple Run in the west, as well as to address what is needed to operate the SR 92 and SR 140 corridor more efficiently and safely. The objective is to coordinate traffic operations and incident management along the corridor, provide traveler information and to establish operational procedures. The Concept will describe the future ITS operations on SR 92 and SR 140 that address the needs of the corridor and meets the stated objective.

### 2.2 ATMS Vision and Mission

The **Vision** for the SR 92 and SR 140 corridor is a well-managed corridor that includes a robust Ethernet fiber communications network connecting well-maintained ITS field devices. These field devices will be used by in the City to perform CCTV surveillance, adaptive signal control and travel time reporting. The system will have excess capacity to accommodate future devices and upgrades.

The **Mission** for the SR 92 and SR 140 corridor was derived from information gathered from the meetings with the City of Roswell where the following requirements became evident.

- Balance the flow of traffic using or crossing the SR 92 and SR 140 corridor safely and efficiently
- Manage incidents and special events along the SR 92 and SR 140 corridor
- Facilitate communication to incident responders and the public

### **2.3 User Description**

The document identifies the users and managers of the corridor and their relationships. The primary user of the SR 92 / SR 140 Concept of Operations will be the City of Roswell and its Municipal Departments.

#### The City of Roswell

The City has a primary function of managing traffic signals, maintaining and adjusting timing plans and performing maintenance on the traffic signal equipment. The City also manages both planned and unplanned incidents that impact the SR 92 / SR 140 corridor. This incident management includes activities that clear incidents and restore traffic to normal conditions as soon as possible.

#### Georgia DOT

SR 92 and SR 140 are state routes and are under the jurisdiction of GDOT. GDOT has delegated signal operations and maintenance along the project corridor to the City of Roswell. Any significant change that the City makes to the corridor is of interest to GDOT. GDOT seeks to obtain as much information as possible on incidents and maintenance and construction activities that involve road closures.

#### GDOT Regional Traffic Operations Program (RTOP)

The SR 92 and SR 140 corridors have been selected for inclusion in the GDOT RTOP program. This new program has been instituted to provide management and maintenance of important state routes to minimize congestion and delays. The program



will add GDOT funded resources to the compliment the City of Roswell's management and maintenance of the corridor.

#### Roswell Police, Fire Departments and EMS

Emergency responders often use SR 92 and SR 140 as the fastest east - west route for incident response. Emergency responders primary concern at an incident is safety; however they are also interested in clearing the scene as quickly as possible to limit the time of exposure to responders and others on the scene.

#### 911 Center

Dispatchers rely on reliable traffic information, such as knowing about lane closures due to construction and maintenance. With this information they can dispatch emergency responders along the fastest route to incidents.

#### Local Motorists

Local motorists on SR 92 and SR 140 are typically making short-distance trips within the City or to an adjacent city or county along the corridor. Local motorists expect SR 92 and SR 140 to be a route that has limited traffic signal stops and a predictable mean speed, especially during non-peak hours. Local motorists expect that SR 92 and SR 140 is one of the most efficient east – west routes within the City and west to Cobb and Cherokee counties.

#### Commuters

Most commuters travel SR 92 and SR 140 on a daily basis traveling to and from their places of employment, traveling primarily during the AM and PM peak traffic times. The majority of SR 92 and SR 140 commuters are traveling eastbound in the AM peak and westbound in the PM peak. Over the past number of years, as the corridor has become a larger business center, the volume of eastbound AM commuters and westbound PM commuters has increased significantly. Commuters have very few east – west travel routes through the area. This corridor experiences significant congestion in both the AM and PM peak, leaving commuters with limited options. These options include altering the time they start their trip, telecommuting, or a hybrid of these options. Most commuters

seek consistent commute times, so real-time trip information is important to them, especially since their route options are limited. In the future, the number of commuters is expected to increase as growth occurs in the west and north of the corridor.

#### Neighboring Cities and Counties

Traffic from neighboring areas significantly impacts operations along the SR 92 and SR 140 corridor. A number of commuters who use SR 92 and SR 140 originate from outside the project area. For example, many SR 92 and SR 140 commuters traveling through the corridor originate in Cobb and Cherokee counties.

#### Media

Members of the media typically include television, radio and private information service providers (ISPs). These groups are interested in obtaining information on traffic issues along SR 92 and SR 140 so they can broadcast this information to their viewers, listeners and subscribers.

## **2.4 Intended Audience**

The primary audience for the Concept of Operations is the City of Roswell and specifically the following departments:

- Transportation
- Police
- Fire
- Emergency Management Services (EMS)
- Public Works
- Information Technology (IT)
- Maintenance

Others who will be interested in this document include GDOT, private information service providers, neighboring areas; and others who are actively using, planning to use, or advising other agencies on how to use ITS operations to manage transportation across Georgia.

## 2.5 Boundary

The boundary of the area to be served by the SR 92 and SR 140 ATMS is along the corridor from Barnwell Road on SR 140 in the east to near the Fulton/Cobb county line in the west, as depicted in Figure 2-1. ITS field devices and associated communications devices will be located along the corridor and will be used to provide benefit to travelers on corridor as well as those entering and exiting the corridor from a cross streets or arterials. Communication between the City Traffic Control Center (TCC) and the ITS field devices along SR 92 and SR 140 corridor must be provided.

**Figure 2-1 – SR 92 and SR 140 ATMS Project Boundaries**



### **3 OPERATIONAL NEEDS**

This section of the Concept of Operations provides a general description of the corridor, current conditions experienced by the corridor, and traffic operations performed by the City along the SR 92 and SR 140 corridor. Specifically this section describes the need for implementing an ATMS on the SR 92 and SR 140 corridor with relevant ITS tools.

Table 3-1 is a list of needs identified by the City along the SR 92 and SR 140 corridor along with the relevant user service from the ITS Architecture and the proposed measures that could be employed to address each need.

**Table 3-1 – SR 92 and SR 140 Needs and Recommended ITS Measures**

ID	User Services	Needs	Measures
1.	Traffic Management	Better communications for the entire corridor	Fill communications gaps on SR 92 and SR 140 to create continuous communications infrastructure along SR 92 and SR 140 project corridor
2.	Traffic Management	Effective management of maintenance and construction activities	<ul style="list-style-type: none"> <li>• Electronic tracking of all maintenance activities</li> <li>• Automated notification of loop failures</li> <li>• Develop an inventory tracking system</li> </ul>
3.	Traffic Management	Improve signal timing coordination and effectiveness	<ul style="list-style-type: none"> <li>• Re-time signals every 2 to 3 years</li> <li>• Measure the effectiveness of existing signal timing plans</li> <li>• Explore Adaptive signal timing</li> </ul>
4.	Traffic Management	Share traffic and incident information with neighboring jurisdictions when needed	Provide capability to view traffic and incident information from neighboring jurisdictions
5.	Traveler Information	Traveler information dissemination along SR 92 and SR 140	<ul style="list-style-type: none"> <li>• Install CCTV where necessary</li> <li>• Install Travel Time System</li> <li>• Develop web site(s) for SR 92 and SR 140.</li> <li>• Explore individual subscriber alert notification system</li> <li>• Disseminate benefits of altering trip times using travel time information provided by the system</li> </ul>
6.	Traveler Information	SR 92 and SR 140 information to 511 system	Provide capability to send information to the GDOT 511 system
7.	Traveler Information	Notification of maintenance activities and special events to the public	<ul style="list-style-type: none"> <li>• Provide information on web site(s)</li> <li>• Explore individual subscriber alert notification system</li> <li>• HAR (Highway Advisory Radio) for special events</li> </ul>
8.	Incident / Emergency Management	Respond to and clear incidents quickly.	<ul style="list-style-type: none"> <li>• Provide access of CCTV cameras to the 911 centers</li> <li>• Establish Standard Operating Procedures (SOP) for incident management response by Public Safety Department and the Transportation Department.</li> <li>• Establish a TIM team, and include wrecker services</li> <li>• Provide real time road conditions, maintenance and construction activities to the 911 center</li> </ul>

ID	User Services	Needs	Measures
9.	Incident / Emergency Management	Roswell Police & Fire need road conditions for SR 92 and SR 140 as it is a primary response route and they lack good alternate routes	<ul style="list-style-type: none"> <li>• Same measures as ID #1 above</li> <li>• Complete CCTV coverage on SR 92 and SR 140</li> <li>• Enhanced CCTV viewing capability in 911 center</li> <li>• Consider fixed CCTV cameras at desired locations</li> </ul>
10.	Incident / Emergency Management	Diversion timing plans for SR 92 and SR 140 during major incident	Develop diversion timing plans in coordination with the other cities
11.	Incident / Emergency Management	Track emergency vehicles for quicker incident response	Evaluate the need for AVL in emergency vehicles
12.	Incident / Emergency Management	Improve response time and safety of fire trucks through traffic signals	Evaluate the need for pre-emption
13.	Special Events Management	Enhance Special Events Management	<ul style="list-style-type: none"> <li>• Enhance coordination between the agencies for special events</li> <li>• Provide CMS, CCTV, pre-event traveler information</li> <li>• Develop SOP between the local cities and their Police Departments regarding the ability to manually override signals during special events</li> </ul>
14.	Public Transportation	Communications for future transit services	Design additional communications capacity for future transit use

### **3.1 Existing Operational Characteristics**

The SR 92 and SR 140 in the project boundary area is a 10.29-mile segment of a multi-lane, urban/suburban arterial roadway with 29 signals. This roadway services a number of commercial, residential housing, schools and retail establishments. The entire segment has unrestricted access and is controlled by traffic signals via the Roswell transportation department and GDOT. The roadway is heavily congested during weekday AM and PM rush hours, leading to delays. However, the roadway is also busy during non-peak hours as well. Some intersections frequently operate well beyond design capacity.

The SR 140 section intersects with SR 400 one of the heaviest traveled roadways in the state. The route is a major thoroughfare for east – west commuters and is heavily used by emergency responders traveling to incidents on and near the SR 92 and SR 140 corridor or on SR 400. Traffic volumes are anticipated to increase over time as more residents move into the area and along the corridor and more retail and other establishments are built along the route.

### **3.2 Incident and Emergency Management**

Incident and Emergency Management on SR 92 and SR 140 is performed by the City and the City DOTs' main role during an incident or emergency is helping with traffic control at the scene. Although Incident and Emergency are two separate user services, in the context of SR 92 and SR 140, many of the needs and resulting measures as described in Table 3-1 relate to both services.

Incident Management is defined as the tasks and tools needed to assist emergency responders (Police, Fire and EMS) respond to and clear incidents quickly. This may involve closing and re-opening lanes of traffic as needed while providing the fastest incident access possible for emergency - Police, Fire and EMS as well as wrecker services, especially through signalized intersections. The 911 Center also needs to be

notified of maintenance and construction-related activity and/or lane closures along or in the vicinity of SR 92 and SR 140.

The City needs to be able to view incidents that occur on SR 92 and SR 140 and be able to provide the best traffic management support to emergency responders. Quick and efficient communication between all entities involved within the City as well as between neighboring cities is necessary and critical to the success of the corridor's Transportation Incident Management (TIM) plan.

Emergency Management is defined as the ability to manage emergencies that impact the roadway network. In the context of the SR 92 and SR 140 corridor, the City is primarily concerned with maintaining a high level of safety for all emergency responders and motorists during emergency situations and/or evacuations.

### **3.3 Special Events Management**

There are several regularly occurring special events that impact traffic on this corridor and on SR 9, which is a major roadway crossed by the corridor. Although the City Police Department is the main player in managing special events, the City DOT has a supporting role to assist the Roswell Police and other cities in traffic management. Coordination with the neighboring cities and GDOT will ensure that traffic operations are minimally impacted during special events.

### **3.4 Safety**

The City of Roswell has identified a need to provide a way for their TCC staff to remotely monitor video images at high crash intersections and at other locations where pedestrian safety is a known concern.

### **3.5 Traffic Management**

The City performs Traffic Management on SR 92 and SR 140 with a main focus on maintaining up-to-date signal timing plans that minimize delay while not causing excessive delay on cross streets. Once the existing fiber optic communications network

project is upgraded to Ethernet and new CCTV, adaptive signal timing and travel time stations are complete along the entire length of the corridor, it will be possible for the City to remotely manage their traffic signal operations and maintenance activities from the Roswell TCC at a significant cost benefit.

Traffic signal coordination between the SR 92 and SR 140 corridor and the SR 9 corridor will be improved by this project because the adaptive system will be extended to the SR 140 and 92 signals adjacent to SR 9.

### **3.6 Traveler Information**

Effective management of the SR 92 and SR 140 corridor requires that users be able to access traveler information from the corridor in a timely manner. There is a need to know as much as possible about major incidents and maintenance/construction activities on SR 92 and SR 140 that might affect safety and travel times.

Providing traveler information to the public concerning delays, special events or major incidents that may impact SR 92 and SR 140 is an important facet of this project. There is a need to get information to motorists while they are driving on SR 92 and SR 140, as well as before they leave home or work if they plan to use SR 92 and SR 140 as part of their route. Traveler information benefits the motorists by allowing them to have more information available in order to make travel decisions. Traveler information needs to be provided to GDOT for inclusion on the Georgia NaviGator web site, the 511 telephone system and to local media outlets.

### **3.7 Public Transportation Management**

MARTA provides passenger bus service along SR 140 Holcomb Bridge Road from SR 400 to SR 9. No MARTA service is provided west of SR 9. The City will need to communicate with MARTA to advise them of crashes, closed roads and detours that might impact their bus routes.

## **4 SYSTEM OVERVIEW**

The purpose of this section is to provide a high-level description of the system components along SR 92 and SR 140, focusing on the interrelationships among the elements, system capabilities (functions) and the goals and objectives.

Chapter 3 discussed the operational needs for the SR 92 and SR 140 corridor that were identified by the City. Chapter 4 describes what the SR 92 and SR 140 corridor would “look like” if all of the recommended measures were implemented. In other words, this chapter describes the ultimate advanced traffic management system for SR 92 and SR 140 without considering financial or other constraints. Those constraints will be evaluated during the development of the Concept Report that follows this Concept of Operations.

### **4.1 Recommended SR 92 and SR 140 ATMS**

Figure 4-1 offers a high-level view of the SR 92 and SR 140 ATMS.

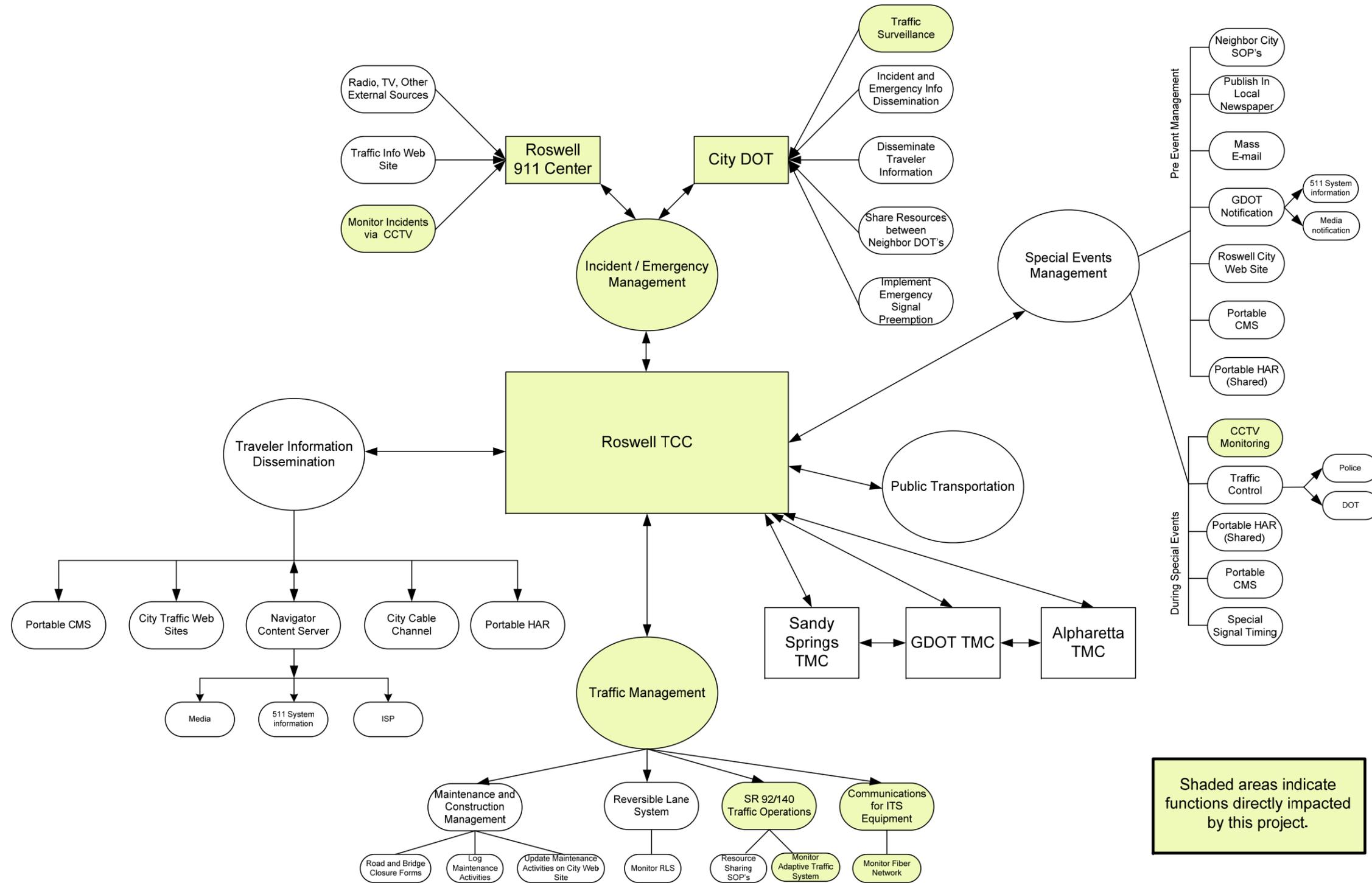


Figure 4-1 SR92 / SR140 ATMS High Level System Overview Diagram

### Traffic Management

The primary task of the City along the SR 92 and SR 140 corridor is traffic management, specifically signal operations. Maintaining a reliable and efficient network of traffic signals is one of the best measures the City can take to improve traffic operations. Ways that the City can improve their traffic signal operations include optimizing signal-timing operations, interconnecting signal controllers and synchronizing their system clocks to enable remote operations from the TMC/TCC via the TACTICS software and utilizing CCTV installed at signalized intersections to verify maintenance requests and to observe traffic operations and take any appropriate action. The conversion of the corridor communications to Ethernet, the installation of CCTV cameras, adaptive signal timing and travel time sensors all contribute to efficiency of the Traffic Management task.

Figure 4-2 shows the existing traffic management operations utilized by the City and the functions affected by the proposed systems.

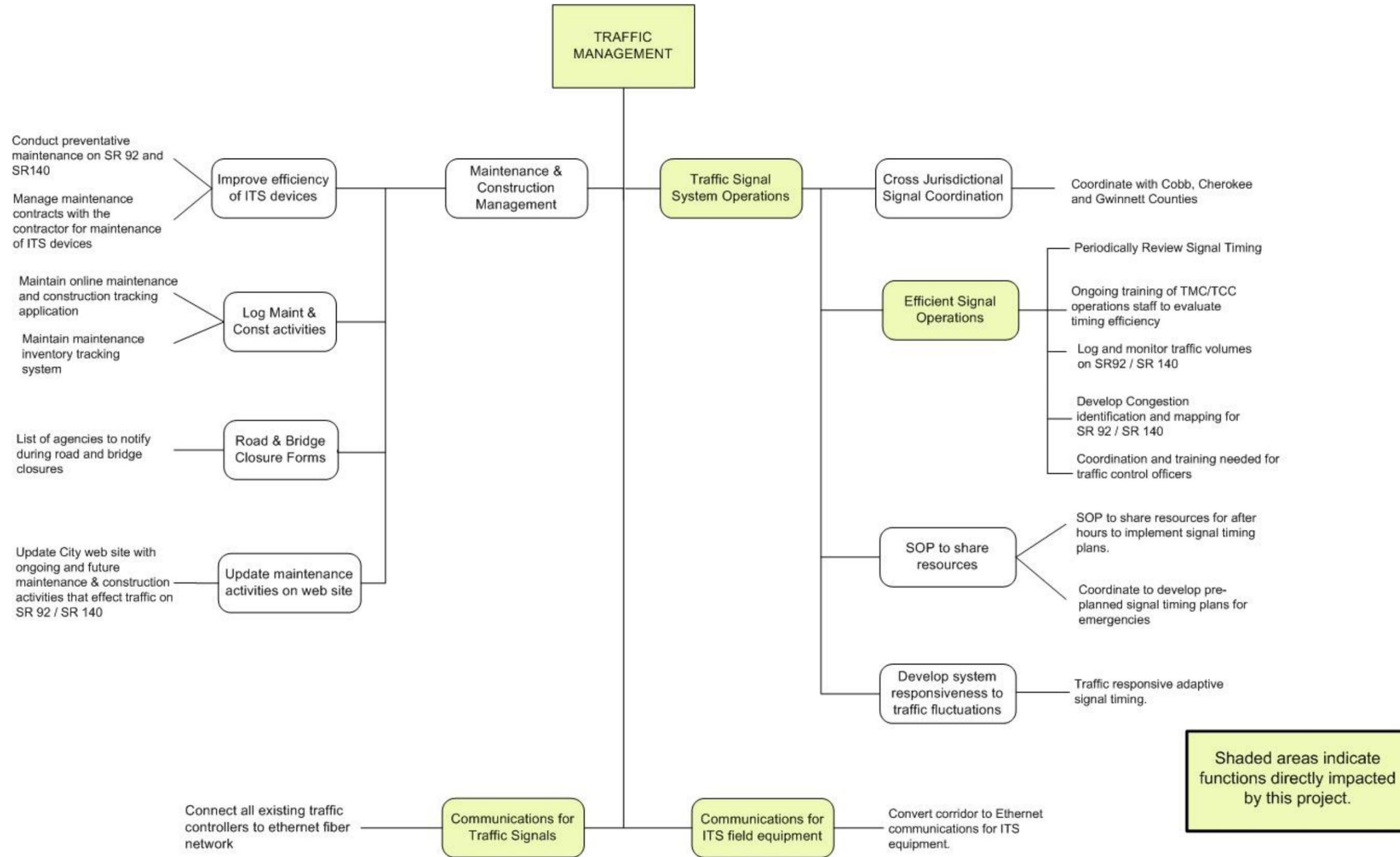


Figure 4-2 SR 92 / SR 140 ATMS Traffic Network

### Incident and Emergency Management

Another major task of the City is incident management. An important goal for the City is minimizing the length of time roads or lanes are closed due to incidents. The first incident management priority of the City should be to improve the response times of emergency responders (Police, Fire and EMS) and to provide them a clear path to incidents on the corridor or to incidents routed along the corridor. Once emergency responders are on the scene, the top priority is the safety of these responders and the public. Only after the incident is safe and secure should action be taken to mitigate the traffic congestion caused by the incident.

The second incident management priority is to the other motorists using SR 92 and SR 140 or roads that are affected by traffic on SR 92 and SR 140. Congestion mitigation following incidents on the corridor is a challenge given that many segments are already congested during peak hours. Priority should be placed on notifying neighboring city agencies when there is an incident, so that they can be made aware that traffic may be adversely affected there and to request for assistance when necessary.

Emergency situations require a coordinated emergency management plan that will include pre-determined timing plans to greatly increase the SR 92 and SR 140 green phase lengths at signalized intersections. The benefit of such a plan will be limited during AM and PM rush hour, due to the high volume of traffic, but more significant during non-peak times.

Figure 4-3 shows incident and emergency management functions along the SR 92 and SR 140 corridor.

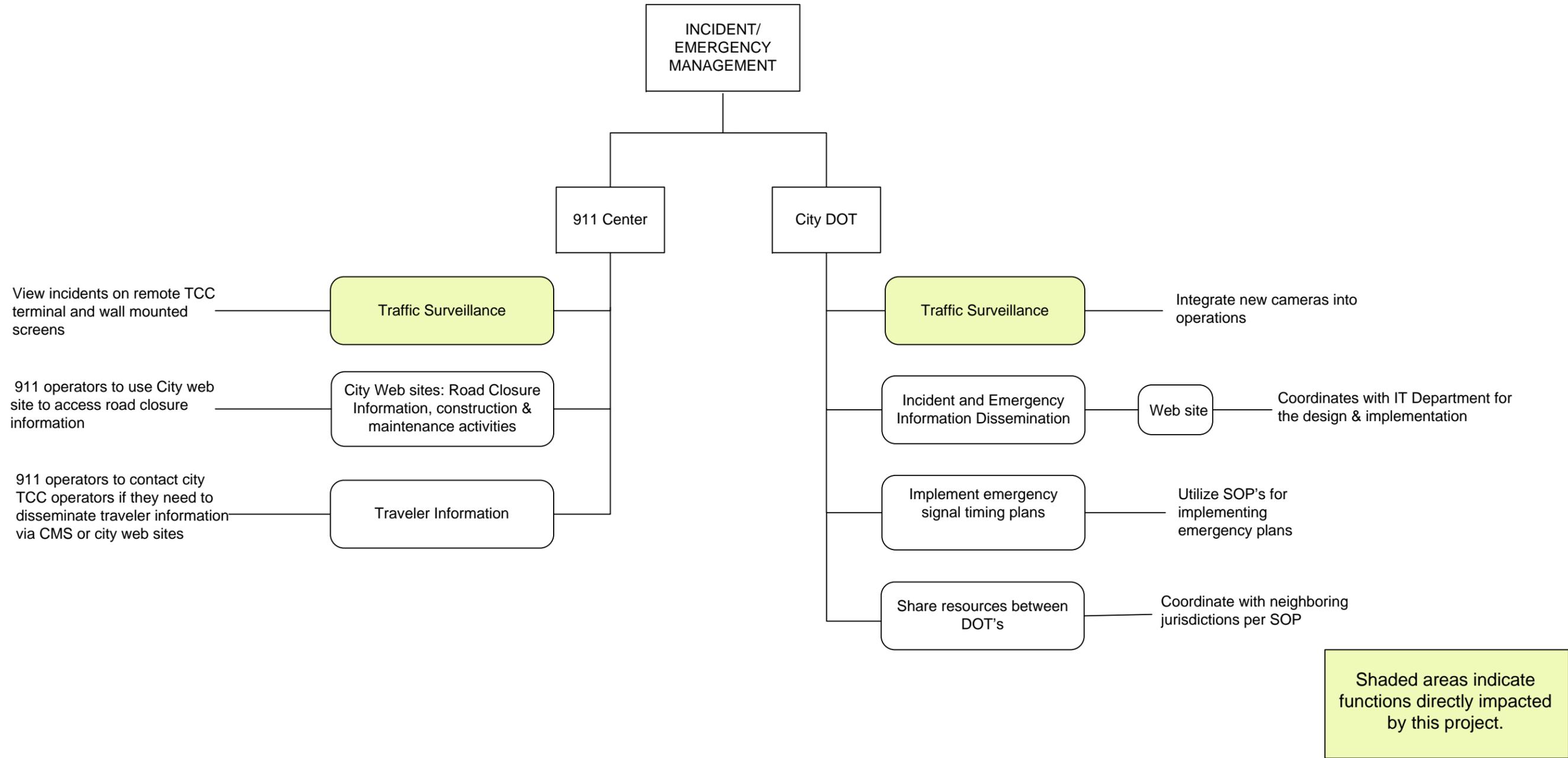


Figure 4-3 – SR 92 and SR 140 ATMS Incident and Emergency Management Functions

### Other User Services

The following are additional user services that are part of the proposed SR 92 and SR 140 ATMS:

- Traveler Information
- Special Events Management
- Safety
- Public Transportation

The City presently has a web site dedicated to posting relevant traveler information and will utilize the proposed ATMS information collected by this project to add to the data available on the web site. Emergency management providers and other ITS stakeholders should be encouraged and shown how they can utilize the available traveler information to enhance their operations. Traveler information may also include capturing and broadcasting CCTV video images along the SR 92 and SR 140 corridor as well as other data captured by ITS devices that may be of interest to the traveler. The City will work with GDOT and the public to ensure that traveler information is communicated in a timely manner and that motorists are utilizing the information that is being provided.

The City currently has a plan for regularly occurring special events. Special event management operations should be expanded to include the use of CCTV for traffic surveillance and to provide relevant traveler information to motorists before and during special events. Events in other cities will require a cooperative effort between cities and a blending of more than one special event response plans.

Public Transportation involves providing communications along the route for MARTA to utilize as needed

### Conclusion

As a result of developing this Concept of Operations report, it is clear that there are two types of methods that should be implemented to address the needs of the corridor. One is the upgrading of the current physical ITS devices to provide the additional user services discussed in Chapter 4. A second, but very important consideration for this project is the integration of the system with existing ATMS operations.

The follow on Concept Report and Conceptual Design phases of the SR 92 and SR 140 ATMS project will determine the specific ITS components that can be implemented with the programmed budgets.

## 5 OPERATIONAL SCENARIOS

The Concept of Operations is easier to understand when the items that are addressed in the earlier chapters of the document are expressed in the manner of real-world operational scenarios. Four such scenarios have been included in this chapter to help the audience better understand the items described in the Concept.

### 5.1 Signal Failure and Timing Updates

Monday Morning: It is a typical Monday morning in Roswell. 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 City and GDOT cameras to determine if any major traffic problems exist.
- Accesses cameras of neighbor cities to determine if there are any incidents on the SR 9 corridor and GA 400 freeway that could affect traffic on SR 92 and SR 140.
- 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 operating properly.

George is notified that a citizen has complained about the operation of the traffic signal on Holcomb Bridge Road (SR 140) at the SR 400 northbound ramp. Specifically, the citizen has complained that eastbound traffic is not getting a left turn signal. George selects the surveillance camera at 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 City radio at his console to call Pete, the City's Traffic Signal Technician, and asks him to correct the problem.

*Using the systems available, the TMC 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 a problem does not exist.*

Meanwhile, Alex, one of the City'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 signals west of Barnwell Road to Eves Road. This area gets a lot of traffic from the shopping centers. During the month, he has collected hours of video data of traffic on the route using the video recording software in the TMC computers. Viewed at 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, Alex uses the computers in the work area of the TMC 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. Alex 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.

*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.*

## 5.2 Major Traffic Incident

An emergency call about an accident at Old Alabama Road and Holcomb Bridge Road comes into the Roswell Police Department (PD). Laura, a Roswell PD dispatcher, takes the call and reacts accordingly:

Recognizing this as a monitored intersection in the ATMS, Laura selects this intersection for viewing on the traffic workstation located in the dispatch center. With a full function TCC workstation, Laura has the same access to traffic cameras as operators at the TCC. She looks at the monitor and moves the camera around the intersection to locate the accident and quickly notices a minivan and a SUV have had a right-angle collision with damage to both the vehicles. She also notices that the people are injured. Laura enters information about the incident and the severity of the incident into the Roswell PD CAD system and the system issues an emergency EMS/Fire/Police dispatch. Since both the cars are damaged, a notification is sent to the towing truck company with details about the location of the incident and number of vehicles involved in the accident. This helps in faster clearance of the incident and ensures traffic gets back to normal conditions.

*The 911 center uses the CCTV video to gather incident scene information in a few seconds and dispatches appropriate information to the emergency crew and the towing truck company which ultimately shortens the clearance time of the incident scene, hence less impact to drivers and improved safety for the police department as they are out of the road quicker.*

She further looks at the traffic backing on Holcomb Bridge Road and Old Alabama Road due to the accident vehicles and the emergency vehicles blocking the lane. Laura sends a message to the TCC center at the City of Roswell about the accident.

At the Roswell TCC, Joe (the TCC operator on duty) is interrupted by the emergency request from PD, as an alert is flashed on his monitor. Joe switches from the preset

video images to the intersection of Holcomb Bridge Rd. and Old Alabama Road and quickly notices the impact of the accident on both the corridors. He calls the 911 center and coordinates with Laura to take control of the camera. Laura confirms that she doesn't require the camera anymore and Joe is now able to scan the area to access the impact of the accident. He reacts quickly to the incident by placing the intersection into an emergency mode. He sends an update to the City web site and GDOT 511 this provides motorists information on the incident ahead and will help them reroute their commute avoiding further stress on police and the motorists. In 10 minutes, Joe notices that the EMS has dispatched the injured to the hospital, police has cleared the scene and the towing trucks have taken both the vehicles off the street. The traffic now begins to move slowly in both the directions and he takes the intersection out of the emergency mode. He also removes the information about the accident on City web site and GDOT 511

*With the communication between the Roswell PD and the TCC center at the City of Roswell, the sharing of incident and response information will help provide a safer and quicker clearance of the incident scene. This information can be valuable in determining appropriate traffic management actions by the TCC and shorter clearance time by the PD department which in turn provides safer roads to the motorists.*

### **5.3 Planned Special Event and Agency Coordination**

Mike is the Special Events Coordinator for the City of Roswell. In this capacity, he is tasked with the planning and coordination of traffic into and out of the City. The Hospitality Highway Century bike race passes through the City every year. This event results in the passage of over 1000 cyclists through the City along with spectators and associated traffic. This unusual influx of traffic and people creates a significant impact on the traffic in the area. As the race passes through Roswell, Alpharetta, Sandy Springs Mountain Park, Johns Creek and Milton it affects the traffic through those cities and along the southbound lanes of SR 400, which is shut down for a short time during the

race. The problems encountered are the potential traffic jams, accidents, traffic rerouting and security for the event. The challenge is to educate the public before the onset of the event and to provide accurate travel information before and during the event.

During the special events the police department and the DOT are involved at different stages of the event in playing different roles to make for a safer event. The Roswell Police department already has procedures for pre-event and during the event management. Mike arranges a joint meeting between the TCC and the police to plan for traffic control, detouring and controlling traffic on SR 9 and SR 140 during the passage of the race group. They discuss the measures that need to be taken before the onset of the event, including providing information to the public using the city web sites, local newspapers, E-blast, portable VMS and portable HAR at strategic locations in Roswell and Alpharetta. The Chief Traffic Engineers from Roswell, Alpharetta and Sandy Springs agree upon having portable CMS signs posted on SR 9, north and south of Holcomb Bridge Road, to inform motorists to expect delays during the event. A portable HAR will be also be stationed at the intersection of SR 140 and SR 400 transmitting information about the event. Previously agreed SOP are implemented for special events to share resources and equipment between the all the cities. City of Alpharetta agrees upon using and sharing the two AERO (Alpharetta Emergency Response Operator) units in the Cities of Alpharetta and Roswell on the day of the event. Both Cities agree upon alternative signal timing plans to be implemented on the day of the race.

City of Roswell also coordinates with GDOT to notify them about the event and subsequent road closure information and provides access to their special events information through their web site. GDOT provides this information on the permanent CMS signs on GA 400 and provides the information about the race to the local TV and radio stations.

On the day of the event, both cities implement pre-defined event management agreements. The Alpharetta TCC and Roswell TCC coordinate and implement revised traffic signal timing plans (implemented via existing signal control systems) – this coordination allows for smoother traffic along alternative routes around the affected area.

The TCC is able to monitor CCTV video along the event route on SR 140 and SR 92 and along SR 9 and SR 400 which are all impacted by the event. This TCC operator is able to monitor traffic conditions and look out for any incidents that affect the traffic and confirm that special traffic plans are operating as expected. Both 911 centers in the Cities of Roswell and Alpharetta have CCTV coverage of the event route and major corridors which ultimately helps the PD with the security aspects of the event.

*By coordinating with different agencies early in the schedule, sharing resources between agencies by implementing SOPs, and informing the public about the special events through various means of information dissemination, the race will become a success and helps with smoother traffic flow with minimal or no incidents.*

Some of the important pre-event and during the event responses may include:

- TCC becomes the center of event management.
- TCC operations at both the cities use CCTV cameras to monitor traffic conditions and check messages on the portable CMS signs. Special events information dissemination is planned and deployed to web site and local newspapers.
- Coordination between the cities and GDOT makes for smoother traffic control and traveler information dissemination.
- Mobilization and strategic placement of portable CMS and HAR's to direct traffic around the City.
- The affected cities Police Departments make use of the CCTV cameras along SR 92 and SR 140 and other major routes to check on the security of the participants and the general public.
- Area traffic signal timing changes are made to allow for smoother traffic flow.

#### **5.4 Emergency Signal Timing Implementation**

One Friday afternoon in August about 4:00 PM there is a major accident on SR 400 Northbound between Holcomb Bridge Rd. (exit 7) and Mansell Rd. (exit 8). The accident involves an overturned tractor-trailer that lost control on the wet pavement. The accident not only blocks 3 out of 4 lanes on SR 400 but also causes secondary rear-end accidents with two vehicles at the end of the queue. This completely closes SR 400. Due to the accidents severe backups are caused on SR 400 for commuters traveling northbound. The 911 center in Roswell starts receiving calls from motorists. The information is verified by Jack, the 911 dispatcher by viewing the appropriate CCTV cameras on GA 400. The 911 Center dispatches Police, Fire and Emergency Services as well as wrecker services to clear the incident as quickly as possible. The GDOT TMC is notified about the incident and their operator updates the NaviGator and 511 systems. The Alpharetta TCC is also notified of the accident and their TCC operator verifies it by looking at the SR 9 shared video and the NaviGator system. The Roswell TCC operator updates the information on the City web site and forwards information to the GDOT 511 system. All traffic northbound traffic on SR 400 begins detouring onto the SR 140 / Holcomb Bridge east and west exits.

The TCC operators at the City of Alpharetta, Sandy Springs are also notified by the 911 center about the accident on SR 400. The TCC operators from the cities update their web sites to report the accident and alert motorists about the possible heavy congestion from motorists exiting SR 400. The CMS signs along SR 400 are updated with messages with accident information and information about the expected delays. Each TCC operator turns the appropriate CCTV cameras to get live traffic video feeds on SR 400 and to see heavy backups forming on the arterial route.

At 4:30 PM, the Alpharetta TCC operator alerts Roswell and Sandy Springs to deploy the emergency signal timing plan to help both east and west bound traffic flow on Holcomb Bridge. Sandy Springs and Alpharetta start seeing congestion in their cities and consent to implement emergency signal timing plan immediately. The signal timing

plans deployed by the three agencies have a high cycle length with maximum time given to SR 140 in Roswell and SR 9 in Sandy Springs and Alpharetta. The three cities have a SOP prepared for situations like this which describes the communications and signal timing plan activation protocols and procedures.

It was 6:00 PM when GDOT had successfully cleared the truck and the other accidents from the freeway. By this time there was still heavy congestion on both GA 400 and SR 140 and SR 9 the three agencies continue to check traffic conditions through their CCTV cameras and update the GDOT accordingly. By 8:00 PM, the traffic is cleared and traffic has returned to normal conditions and hence the TCC Operators from the three cities decide to switch back to the normal signal timing plans.

*By successful coordination between the three agencies and traveler information dissemination through CMS, 511 and web sites the motorist is kept informed about the incident and by using the predetermined signal timing plans conditions return to normal within a few hours of a major incident*

## 6 OPERATIONAL and SUPPORT ENVIRONMENT

This section of the Concept of Operations describes the environment in which the ITS and the Roswell 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.

### 6.1 Software

The Roswell TCC will be outfitted and become fully operational with the SR 9 ATMS project, which also upgraded the existing Sandy Springs and Alpharetta TCC's.

The TCC is connected to many different systems, with each requiring a separate software package in order for users to gain access and control. Some of the various software components that will be used to provide the functionality described in this document:

- Traffic Signal Central Software (TACTICS)
- Video management and display software for managing CCTV and a video wall and a web site.
- Travel Time Software for managing the Travel Time system
- Adaptive Traffic Control System software.
- Software for e-mail, timesheets and other applications
- Software for managing HAR's
- Software for congestion mapping displays
- Script for sending information on incidents and maintenance/construction activities to GDOT via XML format.

## 6.2 Personnel

By the time the SR 92 and SR 140 ATMS project is under way the Roswell TCC will be operational and will have staffed their TCC with personnel meeting the following criteria. The fully trained and qualified staff listed below will allow the City of Roswell Transportation department to fully utilize the technology provided under this project and to best serve the public.

### TCC Manager

The TCC Manager will be responsible for the overall operation of the 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.

## APPENDIX A – LIST OF ACRONYMS

ATMS .....	Advanced Transportation Management System
AVL .....	Automatic Vehicle Location
CAD .....	Computer Aided Dispatch
CCTV .....	Closed Circuit Television
CMS .....	Changeable Message Sign(s)
DOT .....	Department of Transportation
EMS .....	Emergency Management Service(s)
FHWA .....	Federal Highway Administration
GDOT .....	Georgia Department of Transportation
HAR .....	Highway Advisory Radio
HOV .....	High Occupancy Vehicle
ISP .....	Information Service Provider
IT .....	Information Technology
ITS .....	Intelligent Transportation System
MOU .....	Memorandum of Understanding
PD .....	Police Department
RLS .....	Reversible Lane System
SOP .....	Standard Operating Procedures
SR .....	State Route
TCC .....	Traffic Control Center
TIM .....	Transportation Incident Management
TMC .....	Transportation Management Center