

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PROJECT CONCEPT REPORT

**CM-85-2(176)
GWINNETT COUNTY
P.I. NO. 110720**

FEDERAL ROUTE NO: NH-85-1, I-85
STATE ROUTE NO: 403

*Navigator Communications and Surveillance
Expansion on I-85 from SR 316 to SR 20*

Recommendation for approval:

DATE 7-8-05 
State Traffic Safety & Design Administrator

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

DATE _____
State Traffic Operations Engineer

DATE _____
State Transportation Planning Administrator

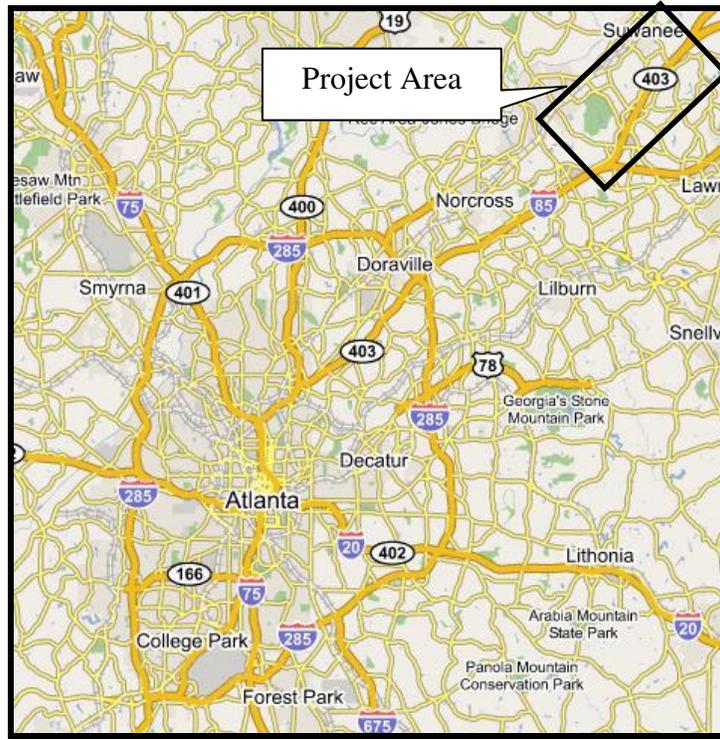
DATE _____
State Transportation Financial Management Administrator

DATE _____
State Environmental / Location Engineer

DATE _____
District Engineer

DATE _____
Project Review Engineer

PROJECT LOCATION MAPS



Location of Project in Gwinnett County



Detail Map of Project Area

Need and Purpose:

The purpose of this project is to increase the efficiency and safety of the corridor by expanding the NaviGator system in Gwinnett County on I-85 from the SR 316 interchange to the SR 20 interchange near the Mall of Georgia. The expansion of the NaviGator system in this region will help manage the congestion currently being experienced along this corridor during peak hours. These time savings will be accomplished by reducing incident response/clearance times, prevention of secondary accidents, and providing information to motorists of roadway/traffic conditions.

The Georgia DOT's NaviGator – Intelligent Transportation System has been in operation since April 1996. Initially providing coverage on Interstates 75 and 85, primarily within the I-285 Perimeter Highway, it is currently being extended along Langford Parkway (SR 166) in Fulton County and Peachtree Industrial Boulevard (SR 141) in DeKalb and Gwinnett counties, with additional projects on I-20, I-75, I-85, I-285, I-575, I-675, I-985, SR 316, SR 400, and US 78 planned as part of the Fast Forward Program. The system consists of surveillance cameras (CCTV), vehicle detection system cameras (VDS), Changeable Message Signs (CMS), and ramp meters. By use of a fiber optic communications backbone, all the devices are tied to the Transportation Management Center (TMC) and various Traffic Control Centers (TCCs) in the Metro Atlanta area. Operators located at the TMC are able to detect incidents and dispatch, with minimal delay, appropriate response teams. The NaviGator program benefits the trucking industry and motorists by reducing incident response/clearance times, and providing better information with consequential safety improvements.

On April 14, 2004, Governor Sonny Perdue introduced the Fast Forward Congestion Relief Program which includes accelerated growth of the NaviGator system throughout the Metro Atlanta region. The Fast Forward Program provides \$211 million to expand the NaviGator and Highway Emergency Response Operator (HERO) coverage with a goal of reducing peak hour delays by 30%. This project will assist in faster detection of incidents at the TMC, resulting in quicker response by emergency personnel, better information to travelers, and improved highway safety.

Description of the proposed project:

Coverage

This project will install CCTV and VDS coverage necessary to provide roadway condition information to the NaviGator system. In turn, CMS are to be installed to allow NaviGator operators to communicate roadway condition information back to drivers. The project begins at Hub D located at the I-85/Pleasant Hill Road interchange. Along I-85 from Pleasant Hill Road to the SR 316 interchange, fiber optic cables will be installed in existing conduit duct bank, but no new devices will be installed. From the SR 316 interchange to SR 20, conduit duct bank will be installed on northbound and southbound I-85. The project ends at the I-85/SR 20 interchange; however, a new southbound CMS and corresponding CCTV camera will be installed 1.6 miles north of the SR 20 interchange to inform southbound drivers of traffic conditions as they enter NaviGator coverage. Poles or other mounting apparatus for the devices are included in this project.

Communications Plan

This project will use the new Gig Ethernet communications architecture. All of the device information for video, volume, speed and system management will be transmitted digitally over the network, as opposed to the older analog method involving switches and multiplexers. All network electronics required to operate and communicate with the devices in this project are included. Network electronics includes equipment to be located in existing Hub D, proposed Hub Y, or in the Equipment Room at the TMC; devices for multiplexing video and data signals; and devices for converting analog signals to digital signals for transmission on fiber.

Crossover links will be installed at SR 316, SR 317, and at SR 20 to provide links between the northbound and

southbound fiber optic cables. This project will add fiber optic trunk lines along both sides of I-85, connecting Hub D and Hub Y, and extend to the north end of the project at SR 20. A fiber optic “drop cable” will extend to the proposed CMS and CCTV north of the SR 20 interchange. Conduit installed by other projects will be utilized wherever possible.

CCTV

CCTV cameras will be designed to provide near continuous coverage of I-85 between SR 316 and SR 20. Two types of surveillance cameras are proposed for this project: a closed circuit television (CCTV) camera for general traffic surveillance and a camera for security in the new hub building. Typical CCTV spacing will be approximately 2/3 mile with cameras located as needed to provide interchange coverage. The traffic surveillance and vehicle detection cameras will be mounted on strain poles typically located outside of the clear zone of the roadway. However, where appropriate, some cameras may be mounted on existing sign structures or in the median of the roadway. One additional CCTV will be located approximately 1.6 miles north of SR 20 to view the proposed southbound CMS at this location. CCTV coverage between I-985 and SR 20 will require cameras on both sides of I-85 because the median is wide and heavily forested, and cameras are not able to view both directions of travel.

VDS

VDS camera locations will be chosen to provide an average spacing of 1/3 mile along the project. The poles or other mounting apparatus for the cameras are included in this project.

CMS

CMS will be 3 x 21 signs mounted on full-span structures. CMS will be located about 1 mile south of Lawrenceville-Suwanee Road (SR 317) for northbound I-85 traffic. This sign will be able to provide information for conditions on I-985. In addition, CMS will also be located about 1.5 miles north of the SR 20 for southbound traffic. This sign will be able to provide information to drivers as they enter the NaviGator system. This project will also modify the existing CMS located on southbound I-85 about 1 mile south of Lawrenceville-Suwanee Road (SR 317) to use fiber optic communications.

Hubs

A new hub building, Hub Y, will serve as a field connection point for the various devices installed on this project. Hub Y will be located in the southwest quadrant of the Lawrenceville-Suwanee Road (SR 317) interchange. This location has convenient and safe access from all directions and will simplify future NaviGator expansion along I-985.

Ramp Meters

Ramp meters will be installed at the SR 317 interchange to SB and NB I-85. Each ramp meter will require two VDS cameras to monitor the operation of the ramp meter, as well as CCTV for visual coverage of the length of the ramp. Each ramp meter will be installed either on both the left and right shoulders of the on ramp, or above each lane adjacent to the stop bar, depending upon geometric constraints. All supporting hardware, VDS, CCTV, poles and/or mast arms, lane markings, signal assemblies, as well as controller cabinets and signage for the installation of ramp meters are in this project.

Is the project located in a Non-attainment area? Yes No .

PDP Classification: Major Minor

Federal Oversight: Full Oversight , Exempt , State Funded , or Other

Functional Classification: Interstate Principal Arterial

U. S. Route Number(s): I-85

State Route Number(s): SR 403

Traffic (2004 AADT)

source: http://www.dot.state.ga.us/dot/plan-prog/transportation_data/traffic_counts/index.shtml

I-85 (Pleasant Hill Road to SR 316)	206,700
I-85 (SR 316 to SR 120)	177,920
I-85 (SR 120 to Old Peachtree Road)	173,960
I-85 (Old Peachtree Road to Lawrenceville-Suwanee Road (SR 317)	188,320
I-85 (Lawrenceville-Suwanee Road to I-985)	167,490
I-85 (I-985 to Buford Lawrenceville)	105,570

Existing design features:

- Typical Sections:
 - *Varies: 3 - 5 lanes in each direction*
- Posted Speed:
 - *65 mph from Pleasant Hill Road to I-985*
 - *70 mph from I-985 to north limit of project*
- Minimum Radius: *N/A*
- Maximum Grade: *N/A*
- Major structures:
 - *Bridge at Duluth Highway overpass at I-85*
 - *Bridge at Sugarloaf Parkway underpass at I-85*
 - *Bridge at Old Peachtree Road overpass at I-85*
 - *Bridge at Lawrenceville Suwanee Road overpass at I-85*
 - *Bridge at Buford Drive underpass at I-85*
- Major interchanges or intersections along the project:
 - *I-85 @ Duluth Highway*
 - *I-85 @ Sugarloaf Parkway*
 - *I-85 @ Old Peachtree Road*
 - *I-85 @ Lawrenceville Suwanee Road*
 - *I-85 @ Buford Drive*
- Existing length: *13.1 miles*

Proposed Design Features:

- Typical Sections:
 - *I-85: Existing section to remain*
- Posted speed:
 - *65 mph from Pleasant Hill Road to I-985*
 - *70 mph from I-985 to north limit of project*
- Minimum Radius: *N/A*
- Maximum grade: *N/A*
- 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 Mainline: *N/A* Minimum Radius allowable: *N/A*
- Proposed Minimum Radius Side Street: *N/A* Minimum Radius allowable: *N/A*
- Type of Access: *Limited Access*
- Right of way: *Project will be constructed within the existing Limited Access/Right of Way. No additional right of way and/or easements will be required.*
 Number of parcels: *0* Number of displacements: *0*
 - Business: *0*
 - Residences: *0*
 - Mobile homes: *0*
 - Other: *0*
- Structures:
 - CMS: Northbound I-85 about 1 mile south of Lawrenceville-Suwanee Road (SR 317), and southbound I-85 about 1.6 miles north of SR 20.
 - Strain Poles for CCTV and VDS
- Major intersections and interchanges:
 - *I-85 @ Duluth Highway (existing)*
 - *I-85 @ Sugarloaf Parkway (existing)*
 - *I-85 @ Old Peachtree Road (existing)*
 - *I-85 @ Lawrenceville Suwanee Road (existing)*
 - *I-85 @ Buford Drive (existing)*
- Traffic control during construction: *Shoulder closures and/ or lane closures will be necessary during installation of conduit, fiber optic cables, changeable message signs, and strain poles. Traffic pacing will be required during installation of changeable message signs.*
- Design Exceptions to controlling criteria anticipated: *None anticipated.*

	<u>UNDETERMINED</u>	<u>YES</u>	<u>NO</u>
HORIZONTAL ALIGNMENT:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ROADWAY WIDTH:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SHOULDER WIDTH:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VERTICAL GRADES:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CROSS SLOPES:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
STOPPING SIGHT DISTANCE:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SUPERELEVATION RATES:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
HORIZONTAL CLEARANCE:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SPEED DESIGN:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VERTICAL CLEARANCE:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BRIDGE WIDTH:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
BRIDGE STRUCTURAL CAPACITY:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

- Design Variances: *None Anticipated*
- Environmental Concerns: *None Anticipated*
- Probable Locations of Underground Storage Tanks: *N/A*
- Probable Locations of Hazardous Waste: *None Anticipated*
- Level of environmental analysis:
 - Are Time Savings Procedures appropriate? Yes , No ,
 - Categorical Exclusion ,

- Environmental Assessment/Finding of No Significant Impact (FONSI) , or
- Environmental Impact Statement (EIS) .
- Utility involvements: *Power service will be required for all ATMS devices..*
- Meets Logical Termini Requirements: *Yes*
- Conforms to TIP/STIP: *Yes*

Project responsibilities:

- Design: *Gresham Smith and Partners on behalf of the Georgia DOT.*
- Right of Way Acquisition: *N/A*
- Relocation of Utilities: *GDOT*
- Letting to contract: *GDOT*
- Supervision of construction: *GDOT*
- Providing material pits: *None Required*
- Providing detours: *None Anticipated*

Coordination

- Pre-Concept Meeting: *February 17, 2005*
- Initial Concept Meeting date and brief summary: *To be determined.*
- Concept meeting date and brief summary: *To be determined.*
- P. A. R. meetings, dates and results: *None Required*
- Public involvement: *No public meetings are anticipated.*
- Local government comments: *N/A*
- Other projects in the area: *See attached list*
- Other coordination to date: *Gwinnett County will request facilities during Initial Concept Meeting.*

Scheduling – Responsible Parties’ Estimate

- Time to complete the environmental process: *4 Months*
- Time to complete preliminary construction plans: *6 Months*
- Time to complete right of way plans: *N/A*
- Time to complete the Section 404 Permit: *N/A*
- Time to complete final construction plans: *7 Months*
- Time to complete to purchase right of way: *N/A*

Other alternates considered:

Alternative #1: No Build

Comments: *Extension of NaviGator system, current fiscal year FY 05*

Attachments:

1. Cost Estimate including E & C
2. List of other projects in the area (ARC Project Fact Sheets + Projects In Area summarized below)
3. Concept Report Rating Form

ATMS/I-85 Communication/Surveillance from SR 316 to SR 20

CM-85-2(176), PI 110720

Gwinnett County

Quantities and Cost Summary

Concept Cost Estimate- No Hub at SR 20

Item Code	Description	Unit	Quantity	Engineer Estimate	
				Unit Price (\$)	Amount (\$)
150-1000	Traffic Control CM-575-1(34)	Lump	Lump		\$ 150,000.00
151-1300	Field Engineer's Office, Type 3	Each	1	\$ 50,000.00	\$ 50,000.00
610-1075	Remove Guardrail Anch, All Types	Each	3	\$ 200.00	\$ 600.00
615-1200	Directional Bore, 5 IN	Lin Ft	11,700	\$ 30.00	\$ 351,000.00
631-2463	LED Pixel CMS, Walk in, 3x21, 18 IN, Type B	Each	2	\$ 125,000.00	\$ 250,000.00
631-8000	Testing	Lump	Lump		\$ 10,000.00
632-0003	Changeable Message Sign, Portable, Type 3	Each	4	\$ 10,000.00	\$ 40,000.00
638-1001	Str Support for Overhead Sign	Lump	Lump	\$ 60,000.00	\$ 60,000.00
638-1001	Str Support for Overhead Sign	Lump	Lump	\$ 60,000.00	\$ 60,000.00
639-4004	Strain Pole, Type IV	Each	47	\$ 3,600.00	\$ 169,200.00
641-1200	Guardrail, TP W	Lin Ft	1,940	\$ 13.00	\$ 25,220.00
641-5001	Guardrail Anch, TP 1	Each	8	\$ 450.00	\$ 3,600.00
641-5012	Guardrail Anch, TP 12	Each	14	\$ 1,400.00	\$ 19,600.00
647-2140	Pullbox, PB-4	Each	106	\$ 1,000.00	\$ 106,000.00
647-2150	Pullbox, PB-5	Each	35	\$ 1,300.00	\$ 45,500.00
682-9040	Electrical Communication Box, TP 5	Each	21	\$ 3,950.00	\$ 82,950.00
682-6222	Conduit, Nonmetl, TP 2, 2 IN	Lin Ft	1,660	\$ 6.00	\$ 9,960.00
682-6231	Conduit, Nonmetl, TP 3, 2 IN	Lin Ft	1,430	\$ 4.00	\$ 5,720.00
682-6520	Fiberglass, 2 IN	Lin Ft	2,400	\$ 45.00	\$ 108,000.00
682-7065	Duct Bank, Type 3	Lin Ft	114,600	\$ 25.00	\$ 2,865,000.00
797-2099	Hub Building, Fully Outfitted	Each	1	\$ 150,000.00	\$ 150,000.00
935-1118	Outside Plant Fiber Optic Cable, Loose Tube, SM, 144 Fiber	Lin Ft	60,000	\$ 5.50	\$ 330,000.00
935-1117	Outside Plant Fiber Optic Cable, Loose Tube, SM, 96 Fiber	Lin Ft	229,000	\$ 3.30	\$ 755,700.00
935-1113	Outside Plant Fiber Optic Cable, Loose Tube, SM, 24 Fiber	Lin Ft	68,000	\$ 2.00	\$ 136,000.00
935-1513	Outside Plant Fiber Optic Cable, Drop, SM, 24 Fiber	Lin Ft	8,900	\$ 3.50	\$ 31,150.00
935-3103	Fiber Optic Closure, Underground, 24 Fiber	Each	67	\$ 600.00	\$ 40,200.00
935-3107	Fiber Optic Closure, Underground, 96 Fiber	Each	20	\$ 800.00	\$ 16,000.00
935-3108	Fiber Optic Closure, Underground, 144 Fiber	Each	4	\$ 1,000.00	\$ 4,000.00
935-3403	Fiber Optic Cable, FDC (Rack Mounted), 24 Fiber	Each	67	\$ 750.00	\$ 50,250.00
935-3407	Fiber Optic Cable, FDC (Rack Mounted), 96 Fiber	Each	10	\$ 1,500.00	\$ 15,000.00
935-3408	Fiber Optic Cable, FDC (Rack Mounted), 144 Fiber	Each	2	\$ 2,000.00	\$ 4,000.00
935-4010	Fiber Optic Splice, Fusion	Each	5,654	\$ 50.00	\$ 282,700.00
935-8000	Testing	Lump	Lump		\$ 13,000.00
936-1001	CCTV System, Type B	Each	20	\$ 12,000.00	\$ 240,000.00

936-8000	Testing	Lump	Lump		\$ 5,000.00
936-8500	Training	Lump	Lump		\$ 2,000.00
937-1000	Video Camera Sensor Assembly	Each	93	\$ 5,100.00	\$ 474,300.00
937-3010	Video Detection System Processor, Type A	Each	62	\$ 12,000.00	\$ 744,000.00
937-8000	Testing	Lump	Lump		\$ 7,500.00
937-8500	Training	Lump	Lump		\$ 7,500.00
939-1190	Video Encoder, Type A	Each	20	\$ 5,000.00	\$ 100,000.00
939-1195	Video Decoder, Type A	Each	10	\$ 5,000.00	\$ 50,000.00
939-2211	Network Switch, Layer 3 GigE, Type A (Four SM 17dB GBICs)	Each	1	\$ 90,000.00	\$ 90,000.00
939-2221	GBIC Enterprise Routing Switch Module, 8 Port	Each	2	\$ 15,000.00	\$ 30,000.00
939-2232	GBIC Type B	Each	14	\$ 4,000.00	\$ 56,000.00
939-2300	Field Switch, Type A	Each	54	\$ 4,000.00	\$ 216,000.00
939-2301	Field Switch, Type B	Each	13	\$ 7,000.00	\$ 91,000.00
939-3020	Equipment Frame	Each	9	\$ 1,200.00	\$ 10,800.00
939-4040	Type D Cabinet	Each	75	\$ 4,000.00	\$ 300,000.00
939-5020	Electrical Power Service	Each	67	\$ 2,500.00	\$ 167,500.00
639-6000	Hub Uninterruptible Power Supply	Each	1	\$ 4,500.00	\$ 4,500.00
939-8000	Testing	Lump	Lump		\$ 7,500.00
939-8500	Training	Lump	Lump		\$ 7,500.00
xxx-xxxx	Ramp Meter Equipment	Each	2	\$ 75,000.00	\$ 150,000.00
Total Estimate					\$ 9,077,050.00

Total Estimate:	\$ 9,077,050.00
Inflation:	0
10% E & C	\$ 907,705.00
Total Project Cost	\$ 9,984,755.00

PROJECTS IN AREA:

1. Description: SR 316/I-85 Interchange and HOV lanes
Project ID: PI 110530
2. Description: HOV lanes on I-85 from 316 to Hamilton Mill Road
Project ID: PI 0003164
3. Description: Public Relations Campaign, I-85 @ SR 316
Project ID: PI 0006079
4. Description: Demolition of Gwinnett County's interstate rest areas #75 and #76 (near I-985).
Project ID: PI 110435, NH-IM-85-2(158)
5. Description: Auxiliary Lanes on I-85 N from I-985 to N. of Hamilton Mill Road
Project ID: PI 110600
6. Description: LED Warning Devices, I-85 @ SR 20
Project ID: PI 0007309
7. Description: ATMS on I-985 from I-85 to Flowery Branch
Project ID: PI 0006336
8. Description: CD Road from SR 317 to Old Peachtree Road (Gwinnett County)
9. Description: McGinnis Ferry Extension (bridge over I-85)
Project ID: Long Range Project

SCORING RESULTS AS PER TOPPS 2440-2

Project Number: CM-85-2(176)		County: Gwinnett		PI No.: 110720	
Report Date:		Concept By:			
<input checked="" type="checkbox"/> CONCEPT		DOT Office: Traffic Safety and Design			
		Consultant: Gresham Smith and Partners			
Project Type: Choose One From Each Column	<input type="checkbox"/> Major	<input checked="" type="checkbox"/> Urban	<input checked="" type="checkbox"/> ATMS		
	<input checked="" type="checkbox"/> Minor	<input type="checkbox"/> Rural	<input type="checkbox"/> Bridge	<input type="checkbox"/> Building	<input type="checkbox"/> Interchange
			<input type="checkbox"/> Intersection	<input type="checkbox"/> Interstate	<input type="checkbox"/> New Location
			<input type="checkbox"/> Widening & Reconstruction	<input type="checkbox"/> Miscellaneous	
FOCUS AREAS	SCORE	RESULTS			
Presentation					
Judgment					
Environmental					
Right of Way					
Utility					
Constructability					
Schedule					

NOTICE OF LOCATION AND DESIGN APPROVAL

PROJECT: CM-85-2(176) GWINNETT COUNTY P. I. NO. 110720

Notice is hereby given in compliance with Georgia Code 22-2-109 that the Georgia Department of Transportation has approved the Location and Design of the above projects.

Date of Location and Design Approval: _____

Project CM-85-2(176) in Gwinnett County consists of expanding the NaviGator system on I-85 from the SR 316 to the SR 20 interchanges. Complete CCTV and VDS coverage will provide roadway condition information to the NaviGator system. In turn, CMS are to be installed to allow NaviGator operators to communicate roadway condition information back to drivers. The project begins at Hub D located at the I-85/Pleasant Hill Road interchange. Along I-85 from Pleasant Hill Road to the SR 316 interchange, fiber optic cables will be installed in existing conduit duct bank, but no new devices will be installed. From the SR 316 interchange to SR 20, conduit duct bank will be installed on northbound and southbound I-85. The project ends at the I-85/SR 20 interchange; however, a new southbound CMS and corresponding CCTV camera will be installed 1.6 miles north of the SR 20 interchange to inform southbound drivers of traffic conditions as they enter NaviGator coverage. Poles or other mounting apparatus for the devices are included in this project.

Drawings of the proposed project, as approved, are on file and are available for public inspection at the Georgia Department of Transportation:

Mr. Jim Tolson, Traffic Design Manager
935 E. Confederate Avenue
Wayne Shackelford Building
Atlanta, GA 30316
(404) 635-8139
email: jim.tolson@dot.state.ga.us

Any interested party may obtain a copy of the drawings or portions thereof by paying a nominal fee and requesting in writing to:

Keith Golden, P.E.
Office of Traffic Safety & Design
935 E. Confederate Avenue
Building 24
Atlanta, GA 30316
email: keith.golden@dot.state.ga.us

Any written request or communication in reference to this project or notice should include the Project and P.I. Number as noted at the top of this notice.