

D.O.T. 66

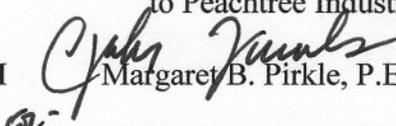
**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE P. I. No. 0004430, Gwinnett County
MSL-004-00(430)
SR 20/Cumming Highway from near Burnette Trail
to Peachtree Industrial Boulevard

OFFICE Preconstruction

DATE February 17, 2006

FROM  Margaret B. Pirkle, P.E., Assistant Director of Preconstruction

TO  SEE DISTRIBUTION

SUBJECT **APPROVED PROJECT CONCEPT REPORT**

Attached for your files is the approval for subject project.

MBP/cj

Attachment

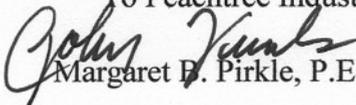
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**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. 0004430, Gwinnett County **OFFICE** Preconstruction
MSL-004-00(430)
SR 20/Cumming Highway from Near Burnette Trail
To Peachtree Industrial Boulevard **DATE** February 8, 2006

FROM  Margaret B. Pirkle, P.E., Assistant Director of Preconstruction

TO  David E. Studstill, Jr., P.E., Chief Engineer

SUBJECT PROJECT CONCEPT REPORT

This project is the widening and reconstruction of SR 20 from 500'± east of Burnette Trail to Peachtree Industrial Boulevard in Gwinnett County. The purpose of the project is to improve east-west mobility along SR 20, which is classified as an urban principal arterial. With SR 20 currently experiencing high traffic volumes, the widening of this section of the roadway and the adjacent section in Forsyth County will enhance traffic movement and improve vehicle and pedestrian safety on this important east-west arterial. The existing typical section consists of two, 12' lanes, 2' paved shoulders, 2' to 6' grassed shoulders and 100' of existing right-of-way. The posted speed varies from 45 MPH to 55 MPH. A capacity analysis of the existing roadway was conducted using the procedures of the 2002 Highway Capacity Manual - Two Lane Highway Segment Analysis. This analysis indicates the roadway is currently operating at level of service (LOS) "F." Analyses were also conducted for future conditions as a four lane facility. The four lane roadway will operate at a LOS "B" in 2008 and LOS "C" in 2028.

The proposed construction will provide four, 12' through lanes, a 44' grassed median, 16' shoulders, curb and gutter on the outside pavement edges, and 5' sidewalk on both sides of the roadway. The design will accommodate for the future widening of two additional lanes. The project will begin 500'± east of Burnette Trail (ML 0.49) where it will connect onto project BRST-054-1(63) Forsyth-Gwinnett Counties, P.I. No. 132985 for the proposed widening of CR 20 over the Chattahoochee River.

Environmental concerns include requiring a COE 404 Permit; an Environmental Assessment is anticipated; a public hearing open house will be held; time saving procedures are not appropriate.

David Studstill

Page 2

P. I. No. 0004430, Gwinnett

February 8, 2006

The estimated costs for this project are:

	<u>PROPOSED</u>	<u>APPROVED</u>	<u>FUNDING</u>	<u>PROG DATE</u>
Construction (includes E&C and inflation)	\$20,057,000	\$13,100,000	RRB	2008
Right-of-Way	\$15,200,000	\$ 5,000,000	RRB	2007
Utilities*	\$ 1,500,000	-----		

*Gwinnett County signed PMA on 4-20-04 for PE, right-of-way, utilities and construction.

I recommend this project concept be approved.

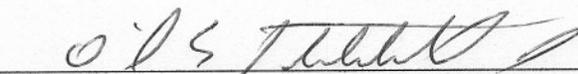
MBP:JDQ/cj

Attachment

CONCUR


Buddy Gratton, P.E., Director of Preconstruction

APPROVE


David E. Studstill, Jr., P.E., Chief Engineer

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

Office of Road Design

PROJECT CONCEPT REPORT

Project Number: ^{MSL 4} ~~MS~~S-000-00(430)
County: Gwinnett County
P. I. Number: 0004430

Federal Route Number: N/A
State Route Number: SR 20

Recommendation for approval:

Date Project Manager

Date Office Head/District Engineer

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

Date State Transportation Planning Administrator

Date State Transportation Financial Management Administrator

Date State Environmental/Location Engineer

12-28-05

Date State Traffic Safety & Design Engineer

Date District Engineer

Date Project Review Engineer

Date State Bridge & Structural Engineer

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

Office of Program Delivery and Consultant Design

PROJECT CONCEPT REPORT

Project Number: ^{MSL 4} ~~MS-000~~-00(430)
County: Gwinnett County
P. I. Number: 0004430

Federal Route Number: N/A
State Route Number: SR 20

Recommendation for approval:

12-22-05
Date
12-22-05
Date

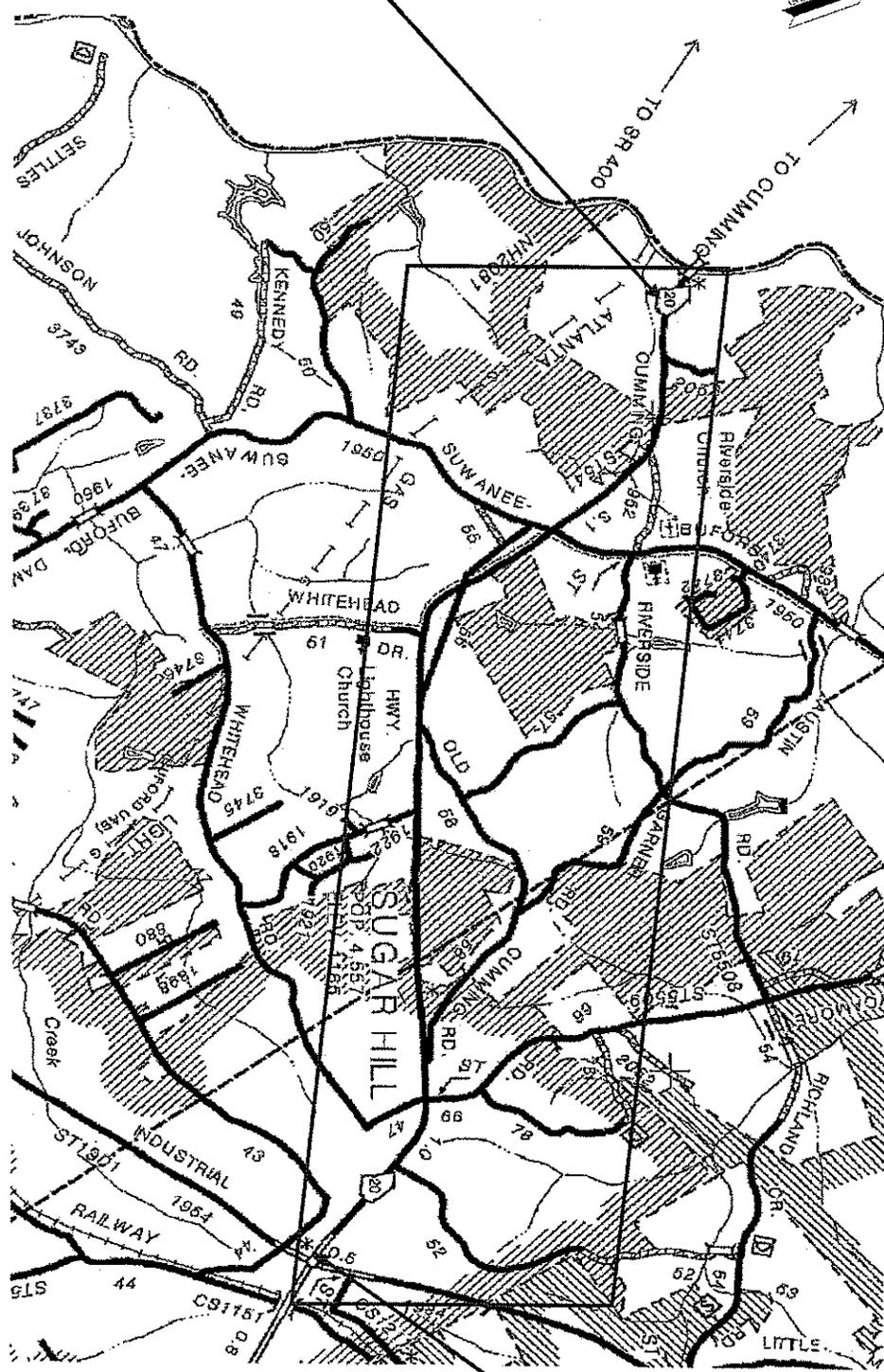
Stanley Hill
Project Manager
M. Shaker Akbarian
Office Head/District Engineer

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

_____	_____
Date	State Transportation Planning Administrator
_____	_____
Date	State Transportation Financial Management Administrator
_____	_____
Date	State Environmental/Location Engineer
_____	_____
Date	State Traffic Safety & Design Engineer
_____	_____
Date	District Engineer
_____	_____
Date	Project Review Engineer
_____	_____
Date	State Bridge & Structural Engineer

Location Map

Begin Project PI 0004430



End Project PI 0004430

Need and Purpose:

The proposed project would widen SR 20 from a two-lane rural section to a four-lane urban section from west of Mountain Ridge Road to Peachtree Industrial Boulevard (P.I.B.) in Gwinnett County, Georgia. The purpose of the project is to improve east-west mobility along SR 20, which is classified as an Urban Principal Arterial; and as of June 23, 2005, it is designated by the Federal Highway Administration as part of the National Highway System from I-75 in Bartow County to SR 316 in Gwinnett County. With SR 20 currently experiencing high traffic volumes, the widening of this section of the roadway and the adjacent section in Forsyth County will enhance traffic movement and improve vehicle and pedestrian safety on this important east-west arterial. The existing typical section is consisting of two twelve-foot lanes, two-foot paved shoulders, two-foot to six-foot grassed shoulders and one hundred-foot existing right-of-way. The posted speed varies from 45 MPH to 55 MPH. Currently SR 20 is not a designated route in any bicycle or pedestrian plans.

Planning Background and Project History:

Gwinnett County's Comprehensive Transportation Plan (CTP) identifies SR 20 as a major east-west route connecting I-85, I-985 and SR 400. SR 20 also serves as a principal crossing over the Chattahoochee River, linking Gwinnett and Forsyth Counties south of Lake Lanier. SR 20 is currently a two-lane principal arterial roadway. The CTP lists SR 20 from Peachtree Industrial Boulevard to the Chattahoochee River as a significant project to add additional traffic capacity to the county roadway system. The County's CTP recommends that SR 20 be widened from two lanes to four lanes with a divided median. This project is also included in the Atlanta Regional Commission's (ARC) 2030 Regional Transportation Plan (RTP). The RTP model includes a four-lane section on SR 20. The project is listed as GW-020A1 in the RTP, with preliminary engineering programmed for 2005, right-of-way for 2007 and construction in 2008.

Land Use and Development Trends:

Intense residential and commercial development along the SR 20 corridor has driven a steady increase in traffic volumes over the past decade. This trend is expected to continue as development spreads northward to Gwinnett, Forsyth and Hall Counties, and available properties around Lake Lanier become built out. As outlined in the Gwinnett County 2020 Land Use Map and the Buford/GA 20 east sub area land use element in Forsyth County's Comprehensive Plan, much of the undeveloped and agricultural areas are expected to become commercial and residential by 2020. The Windermere mixed-use development along Windermere Parkway will be responsible for a significant portion of this growth, as it is only partially built out. This development and the Chattahoochee River Club residential community, which is mostly complete, are listed as Developments of Regional Impact (DRI). This level of residential growth will be followed by complementary retail developments along the SR 20 corridor.

Project Description:

The scope of improvements includes widening of SR 20/Cumming Highway from just east of the Chattahoochee River to Peachtree Industrial Boulevard. The typical section will include four-through lanes, a 44-foot grassed median, 16-foot shoulders, curb & gutter on the outside pavement edges, and five-foot concrete sidewalks on both sides of the roadway. Design will accommodate for the future widening of two additional lanes.

Logical Termini:

The project will begin approximately 500 feet east of Burnette Trail (ML 0.49), where it will connect onto project BRST-054-1(63) Forsyth/Gwinnett Counties PI No. 132985 for the proposed widening of SR 20 over the Chattahoochee River. The eastern terminus will be the existing western edge of pavement at Peachtree Industrial Boulevard (P.I.B.) in Gwinnett County (ML 4.20). Existing lane configuration of SR 20 at the intersection of P.I.B. includes two through lanes on each direction, dual lefts to north and southbound of P.I.B., and an eight-foot raised concrete median. Two of the SR 20 through lanes and the concrete median on the west side of the intersection are dropped approximately 500 foot west of the intersection. Since the existing and proposed lane configuration of SR 20 at the intersection of P.I.B. consists of two through lanes in each direction and within the proximity of a sixty-eight foot wide existing bridge over the Southern Railroad tracks on the east side of the intersection, this allows only two through lanes on each direction on SR 20. Therefore, the matching of the existing lane configuration on the west side of the intersection is the most logical location for terminating this project. It should be noted that due to the projected traffic volumes on SR 20 and P.I.B., the intersection of the two roadways would require a major upgrade in the future, at which point the bridge over the Southern Railroad tracks must be widened and additional lanes added on SR 20 on both directions.

Other Projects in the Area:

- SR 400 @ SR 20 Interchange Reconstruction
ARC TIP: FT-011, GDOT PI: 132630
This project would rebuild the interchange at SR 400 and tie into project PI 122250.
- SR 20/Canton Highway from Post Road (SR 371) to GA 400
ARC RTP: AR-920, GDOT PI: 0003682
This project widens SR 20 from Post Road (SR 371) east to GA 400. The typical section of SR 20 would include four through lanes.
- SR 20/Canton Highway from Greenwood Acres Road to Kelly Mill Road
ARC TIP: FT-061B, GDOT PI: 132430
This project widens SR 20 north of Greenwood Acres Road to Kelly Mill Road. The typical section of SR 20 would include four through lanes.
- SR 20/Buford Highway from Samples Road to James Burgess Road
ARC TIP: FT-, GDOT PI: 0002392
This project widens SR 20 west of James Burgess Road/CR 450 across the Gwinnett County line at the Chattahoochee River. The typical section of SR 20 would include four through lanes.
- SR 20/Cumming Highway @ Chattahoochee River @ Forsyth County Line
ARC TIP: GW-288, GDOT PI: 132985
This project involves replacement of the existing bridge to accommodate the future widening of SR 20 east of James Burgess Road/CR 450. Refer to project number BRST-054-1(63).

- SR 20 from SR 400 to Samples Road/CR 80
GDOT PI: 122250
SR 20 from SR 400 to Samples Road/CR 80 is currently being widened to four through lanes with a 44-foot grassed median. The northern terminus ties into an existing four-lane section, and the proposed reconstruction of the SR 400 interchange (refer to PI 132630). This segment of SR 20 has been designed to accommodate two additional through lanes as part of a future project.
- Windermere Parkway
Forsyth County Project
Windermere Parkway currently consists of a two-lane section extending south of SR 20 into the Windermere mixed-use development. This road is currently being extended further south to Mathis Airport Road to provide a continuous north-south arterial connection between SR 20 and SR 141. Although the existing section of Windermere Parkway has only two lanes, the road is graded for an anticipated two additional through lanes and a median as part of a future project.

Traffic Analysis:

Currently, there are four existing traffic signals along SR 20 between the Chattahoochee River and Peachtree Industrial Boulevard. They are located at the intersections of Peachtree Industrial Boulevard, Hillcrest Drive, West Broad Street/Sycamore Road and Suwanee Dam Road. There are several other intersections with minor residential streets along the corridor, all with stop-sign control on the side streets.

The land use in the area is largely residential with some commercial development, mainly on the eastern and western ends of the corridor. There are also several recreational facilities in the area, including Lake Lanier and the Chattahoochee National Recreation Area.

SR 20 will be widened to a four-lane divided facility with a 44-foot median. Design will accommodate for the future widening of two additional lanes.

Reason for the Investigation:

The purpose of the study is to evaluate current and design year traffic conditions and to provide recommendations for intersection improvements.

Traffic Volumes:

The most recent traffic volumes available from GDOT count stations in the area are indicated below.

YEAR	SR 20 @ MP 2.4. Station TC 105 (vpd)	SR 20 @ MP 4.2. Station TC 109 (vpd)	Suwannee Dam Road Station TC 454 (vpd)
2004	22,460	27,240	3,700
2003	20,890	27,060	3,640
2002	20,025	23,198	2,028
2001	19,882	22,511	2,014
2000	19,384	21,686	1,740
1999	16,829	19,453	1,794

Additional counts for the year 2004 were obtained from the Gwinnett County Department of Transportation's general count program. These are indicated in Figure 1. Figure 1 also indicates the locations of the GDOT count stations. Recent turning movement counts were provided by Gwinnett DOT.

Analysis of these counts indicates the area has undergone significant traffic growth over the past several years. It is anticipated that this trend will continue as further residential and commercial development occur.

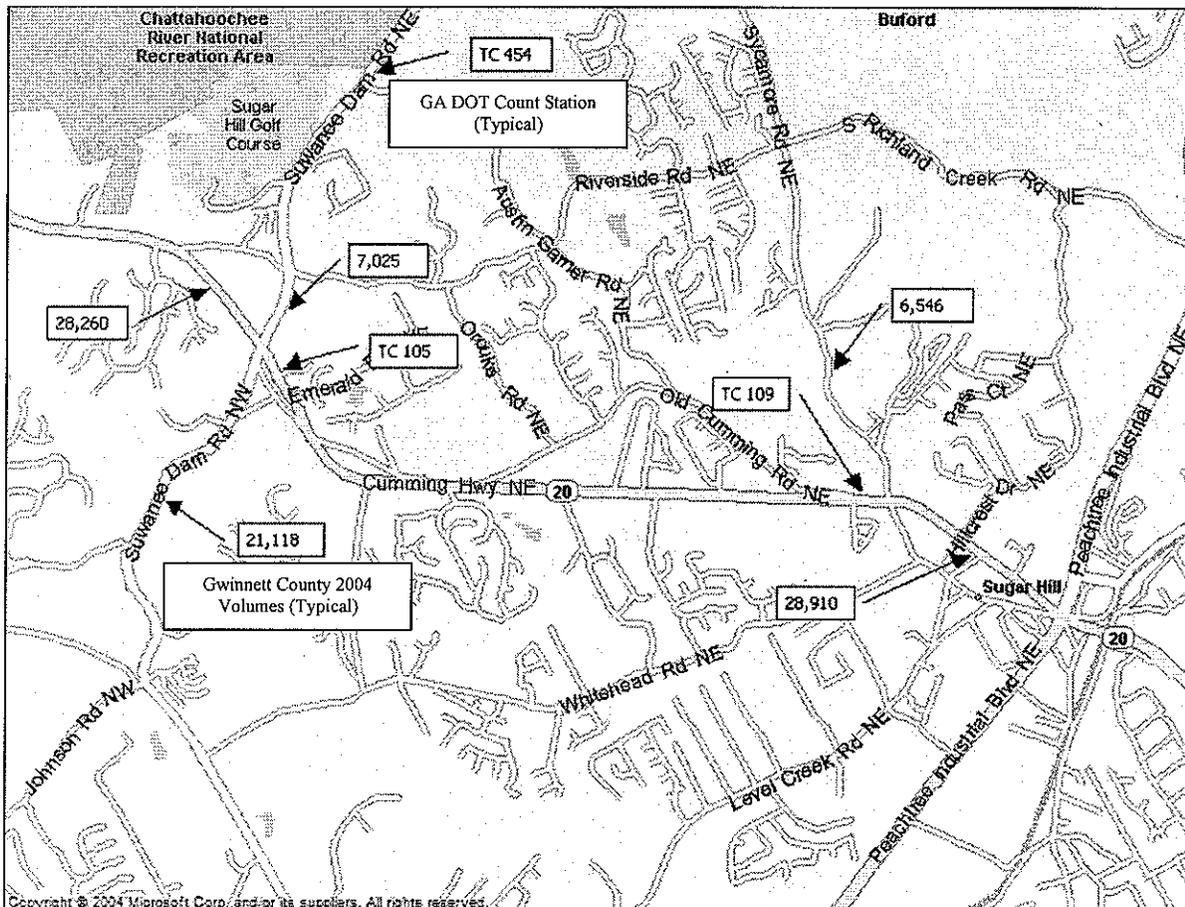


Figure 1 - GDOT Count Locations and 2004 Volumes

Future Traffic Volumes:

Projected traffic volumes for the year 2028 were based on several factors. Information provided by the Gwinnett DOT from their transportation planning model indicates the volume on SR 20 just west of Peachtree Industrial Boulevard will be 65,220 in 2030. This would be an average annual growth rate of 4.22 percent. Other projects in the area, including the widening of SR 20 in Forsyth County just to the west of this project, utilized a growth rate of two percent per year. To fall more closely in alignment with the adjacent project, a growth rate of two percent was used for this project. Projected volumes for the build year and design year are shown below.

Year	Projected Volume
2008	30,670
2028	43,665

Capacity Analysis:

A capacity analysis of the existing roadway was conducted using the procedures of the 2002 Highway Capacity Manual – Two-Lane Highway Segment Analysis. This analysis indicates the roadway is currently operating at Level of Service F. Analyses were also conducted for future conditions as a four-lane roadway. The four-lane roadway will operate at a Level of Service B in 2008 and Level of Service C in 2028. All of these analyses assume a straight-line average growth rate of two percent per year.

Capacity analyses were also conducted for each of the existing signalized intersections within the project. These were conducted for the years 2008 and 2028, again assuming a straight-line growth of two percent per year. The results indicate that with the exception of the intersection with Peachtree Industrial Boulevard, all intersections will operate at a satisfactory level through the year 2028. By 2028, the intersection of Peachtree Industrial and SR 20 is projected to operate at Level of Service D in the AM Peak and Level of Service F in the PM Peak. This indicates that some other form of traffic control, such as a grade separation, may be required at this location. Further discussion of this intersection is provided later in this report. AM and PM peak-hour levels of service for all intersections are provided in the table below.

Intersection	2008 No Build		2008 Four Lane		2028 Four Lane	
	AM	PM	AM	PM	AM	PM
Suwanee Dam	D	F	C	C	C	D
West Broad/Sycamore	B	D	B	B	B	C
Hillcrest	A	B	A	B	B	B
Peachtree Industrial	C	C	C	C	D	F

The detailed capacity analysis outputs for all intersections and conditions are provided in the attachments.

Crash Data:

Crash data for the past three years is provided in the table below. This is the most recent data currently available. This data was provided by the Georgia DOT.

Year	Accidents							Injury	Fatal
	Rear-end	Side-Swipe	Angle	Head-on	Struck Object	Run off the Road	Total		
2003	176	18	34	3	11	6	248	74	2
2002	140	20	36	1	15	13	225	53	0
2001	101	15	25	1	8	8	158	41	1

Analysis of the above data reveals several important factors. Rear-end accidents are by far the most prevalent type of accident. This is not uncommon for a high-volume two-lane road such as the existing SR 20. Widening the road to multiple lanes in each direction with turn lanes would help reduce this type of accident. There are also a large number of accidents at milepost 4.2, which is the intersection of SR 20 with Peachtree Industrial Boulevard (SR 141). A large percentage of these accidents is also rear-end accidents and is probably caused by congestion.

The table below shows the total number of accidents for the corridor along with the accident rate compared to the Statewide average rate for an urban principal arterial functional classification.

Year	Accidents			Injuries		
	Total	Rate	Statewide	Total	Rate	Statewide
2003	248	597	526	74	178	206
2002	225	633	588	53	149	233
2001	158	457	560	41	119	222

Rates per 100 Million Vehicle Miles

Intersection Recommendations:

Discussion of individual major intersections is provided below.

Suwanee Dam Road – This intersection is now operating near capacity. Recommended initial lane assignments are as follows:

- EB – 1 Left, 2 Through, 1 Right
- WB – 1 Left, 2 Through, 1 Right
- NB – 2 Left, 1 Through, 1 Right
- SB – 1 Left, 1 Through, 1 Right

The recommended configuration will improve operations to Level of Service C. The intersection will operate satisfactorily with this configuration through 2028 except for the PM Peak, which will operate at Level of Service D. This is primarily due to a problem with north-south traffic on Suwanee Dam Road. It is assumed at some point in time Suwanee Dam Road will have to be widened to four lanes. With the additional NB and SB through lane, the intersection would operate at Level of Service C during the PM Peak.

West Broad Street/Sycamore Road – Recommended lanes assignments are as follows:

EB – 1 Left, 2 Through, 1 Right
WB – 1 Left, 2 Through, 1 Right
NB – 1 Left, 1 Through, 1 Right
SB – 1 Left, 1 Through, 1 Right

The intersection will operate well with this configuration through the design year.

Hillcrest Drive – Recommended lanes assignments are as follows:

EB – 1 Left, 2 Through, 1 Right
WB – 1 Left, 2 Through, 1 Right
NB – 1 Left, 1 Through, 1 Right
SB – 1 Left, 1 Through, 1 Right

The intersection will operate well with this configuration through the design year.

Peachtree Industrial Boulevard – This intersection was upgraded as a part of the Peachtree Industrial widening project several years ago, and no improvements are being made as a part of this project. No further widening is feasible with the exception of adding EB and WB right-turn lanes. As indicated earlier, at some point in time, this intersection will be over capacity. Several scenarios of widening were analyzed including a six-lane section on SR 20, but the intersection still operates at Level of Service F during the PM Peak. Since there is very little opportunity for further widening, an interchange will be required in the future for this intersection to operate at a satisfactory level of service.

Description of the Proposed Project:

The project located in northern Gwinnett County will begin approximately 500 feet east of Burnette Trail (ML 0.49) where it will connect onto Georgia D.O.T. Project BRST-054-1(63) Forsyth/Gwinnett Counties P.I. No. 132985 for the proposed widening of SR 20 over the Chattahoochee River. The eastern terminus will be the existing western edge of pavement at Peachtree Industrial Boulevard in Gwinnett County (ML 4.2). Portions of the 3.71 mile project fall within the city limits of Sugar Hill at various locations. At the eastern terminus, the proposed improvements will tie into the existing intersection configuration of Peachtree Industrial Boulevard with a minimal adjustment to the existing conditions. The typical section will include a 140-foot right-of-way, four 12-foot through lanes, a 44-foot grassed median, 16-foot shoulders, curb and gutter on the outside pavement edges, and five-foot concrete sidewalks on both sides of the roadway. Design will accommodate for the future widening of two additional lanes. With four through lanes on SR 20 and some auxiliary lanes at the intersections, the operating level of service will be satisfactory through 2028.

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

This project is included in the Atlanta Regional Commission's 2030 RTP. The conforming plan's model description is to widen SR 20 from just east of the Chattahoochee River to Peachtree Industrial Blvd. from two to four lanes. The RTP lists a programmed construction year of 2008.

PDP Classification: Major Minor

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

Functional Classification: Urban Principal Arterial

U.S. Route Number(s): N/A State Route Number(s): SR20

Traffic (AADT): Current Year (2008): 30,670 Design Year (2028): 43,665

Existing design features:

- Typical Section: SR 20 currently includes one through lane in each direction. Turn lanes are in place at several intersections along the route. The existing rural section does not include sidewalks, curbs, or gutters.
- Posted speed 45-55 mph Maximum degree of curvature: 4°00'
- Maximum super-elevation rate for curve: 6.0 percent
- Maximum grade: 6.5%
- Width of right-of-way: Varies 80-150 ft.
- Major structures: None

- Major interchanges or intersections along the project: Suwanee Dam Road, Sycamore Road, and Peachtree Industrial Boulevard
- Existing length of roadway segment 3.71 miles
- Beginning and ending mile logs for each county segment.
 - Begin: ML 0.49 (East of Burnette Trail)
 - End: ML 4.20 (Peachtree Industrial Blvd.)

Proposed Design Features:

- Proposed typical section(s): The typical sections require a minimum right-of-way width of 140 feet. The section generally includes two 12-foot travel lanes in each direction, with a 44-foot grass median. This section includes six-foot inside shoulders consisting of two-foot paved and four-foot grassed, and 16-foot wide outside shoulders with curb and gutter. A five-foot wide sidewalk will be provided on both sides of SR 20. Type B median crossovers will be utilized for left-turn lanes where applicable.
- Proposed Design Speed Mainline 45 mph
- Proposed Posted Speed Mainline 45 mph
- Proposed Maximum grade Mainline 6 % Maximum grade 7%
- Proposed Maximum grade Side Street
45 MPH Posted Speed Limit 6 % Maximum grade 7%
(Suwanee Dam Road)
- 25 MPH Posted Speed Limit 9 % Maximum grade 12%
(All other side roads)
- Proposed Maximum grade driveway 12%
- Proposed Minimum radius for curve 1000' Minimum radius 711'
- Proposed Maximum super-elevation rate for curve: 4%
- Right of way
 - Width: Varies, 150 foot minimum
 - Easements: Temporary () , Permanent () , Utility () , Other () .
 - Type of access control: Full () , Partial () , By Permit () , Other () .
 - Number of parcels: 210
 - Number of displacements:
 - Business: 18
 - Residences: 22
 - Mobile homes: 6
 - Other: 1
- Structures:
 - Bridges: There are no bridges on the project
 - Culvert: Approximate 8'x 8' Concrete Box Culvert, 160' in length
@ M.L. 0.83 on tributary of Chattahoochee River.
Approximate 7'x 7' Concrete Box Culvert, 140' in length
@ M.L. 2.41 on tributary of level creek.
Approximate 6'x 6' Concrete Box Culvert, 140' in length
@ M.L. 2.59 on tributary of level creek.
 - Retaining walls: Minor Retaining walls may be required for Right of Way control

- Major intersections and interchanges: The project corridor includes major intersections at Suwanee Dam Road, Sycamore Road, Hillcrest Drive, and Peachtree Industrial Boulevard. All four intersections are currently signalized. Improvements proposed for the Suwanee Dam Road intersection include installing a second left-turn lane on the northbound approach and adding right-turn lanes on all approaches. At the Sycamore Road and Hillcrest Drive intersections, right and left-turn lanes will be added to all approaches. At Peachtree Industrial Boulevard intersection, a right-turn lane will be added to the eastbound approach.
- Traffic control during construction: Traffic control will consist of staged construction and will allow for the roadway to remain open during construction. Staged construction will be divided into phases to allow for partial width construction. Minor detours may be required to provide access to properties with frontage and current access to SR 20. Access will be maintained during all phases of construction for this project.
- Design Exceptions to controlling criteria anticipated:

	<u>UNDETERMINED</u>	<u>YES</u>	<u>NO</u>
HORIZONTAL ALIGNMENT:	()	()	(X)
ROADWAY WIDTH:	()	()	(X)
SHOULDER WIDTH:	()	()	(X)
VERTICAL GRADES:	()	()	(X)
CROSS SLOPES:	()	()	(X)
STOPPING SIGHT DISTANCE:	()	()	(X)
SUPERELEVATION RATES:	()	()	(X)
HORIZONTAL CLEARANCE:	()	()	(X)
DESIGN SPEED:	()	()	(X)
VERTICAL CLEARANCE:	()	()	(X)
BRIDGE WIDTH:	()	()	(X)
BRIDGE STRUCTURAL CAPACITY:	()	()	(X)

- Design Variances: None Anticipated.
- Environmental concerns: An environmental screening was performed for the project. The widening of SR 20 will cause stream impacts to several small perennial streams along the length of the project. Environmental screening did not identify any low income or minority populations or communities in the study area. An in-depth study of environmental justice communities will be performed as part of the environmental assessment (EA) currently underway. It is anticipated that a Section 404 Nationwide Permit Application from the Corps of Engineers (COE) will be needed for this widening project. Based on the environmental screening, there are no historic properties. The underground storage tanks (USTs) are located in the following locations:
 - M.L. 1.17 left side TEACO Gas Station/Convenience Store.
 - M.L. 1.22 right side Amoco Gas Station/Convenience Store.
 - M.L. 3.42 left side Citgo Gas Station/Convenience Store.
 - M.L. 3.53 right side Sugar Hill Convenience Store.

- Level of environmental analysis:
 - Are Time Savings Procedures appropriate? Yes (), No (X),
 - GEPA Type B Letter ()
 - Categorical exclusion (),
 - Environmental Assessment/Finding of No Significant Impact (FONSI) (X), or Environmental Impact Statement (EIS) ().

Utility Involvements:

The following is a list of utilities and contact person (if available) with facilities within the project area:

<u>UTILITY</u>	<u>CONTACT</u>	<u>TELEPHONE</u>
City of Sugar Hill Gas	Johnny Upchurch	770-271-2137
BellSouth	Eddie King	770-493-2006
Gwinnett County Water and Sewer	Shannon Hebb	678-376-7135
Georgia Power	Jerry Wylie	770-806-9973
Adelphia Cable	Ashley Grimes	770-307-0813
Sawnee EMC	Tim Kohler	770-887-2363
Charter Cable	Jimmy Price	770-806-706

Project Responsibilities:

- Design: Gwinnett County (100%)
 - The design is being completed by Precision Planning, Inc.
 - Environmental analysis and permitting will be performed by Moreland Altobelli Associates, Inc.
- Right of Way Acquisition: Gwinnett County DOT
- Relocation of Utilities: Gwinnett County DOT
- Letting to contract: Gwinnett County DOT
- Supervision of construction: Gwinnett County DOT
- Providing material pits: Contractor (if required)
- Providing detours: Gwinnett County DOT

Scheduling – Responsible Parties’ Estimate:

- Time to complete the environmental process: 12 Months
- Time to complete the preliminary construction plans: 10 Months
- Time to complete right-of-way plans: 7 Months
- Time to complete the Section 404 Permit: 6 Months
- Time to complete final construction plans: 7 Months
- Time to complete purchasing right-of-way: 18 Months

Other Alternates Considered:

No-Build Alternative

The no-build alternative would include no improvements along SR 20 east of the Chattahoochee River, which would maintain an operating Level of Service F along this portion of the roadway. The analysis of the no-build alternative also took into account ongoing projects impacting the SR 20 corridor, including the widening of SR 20 west of the Chattahoochee River in Forsyth County. This alternative is not prudent because SR 20 would not be capable of handling the projected increase in traffic over the next 23 years. This would result in excessive delays and extremely poor Levels of Service on the study corridor.

Another reason justifying the widening of S.R. 20 is the suspension of the Georgia DOT Northern Arc Project which would have been a limited access highway paralleling S.R. 20 within one to two miles of existing S.R. 20 in Gwinnett County.

Proposed Alternative

Proposed alignment for this project will begin at M.L. 0.49 approximately 2,500 feet east of Chattahoochee River, where it will tie to the proposed alignment for Georgia DOT Project No. BRST-054-1(63) for the widening of the bridge over Chattahoochee River. At this location, the proposed centerline is shifted 35 feet to the north of the existing centerline to accommodate the alignment for Project No. BRST-054-1(63). Centerline will shift back to match the existing centerline at M.L. 0.83. Alignment will follow the existing S.R. 20 alignment up to M.L. 1.86 on the west side of Suwanee Dam Road intersection. By following the existing alignment in this area, the right-of-way impact on adjacent properties will be limited and proportional. The existing roadway will remain operational during the first phase of construction until two new lanes are constructed, at which point traffic can be shifted to the newly-constructed lanes after which the median and two other lanes can be constructed.

Starting at M.L. 1.06 traveling easterly, the alignment begins a transitional shift to the south side of the existing alignment to minimize the impact on some of the existing commercial developments on the north side of S.R. 20 at the intersection of Suwanee Dam Road. There are three commercial and two residential displacements on the south side of S.R. 20 in this area. Leaving the alignment on the existing location would require the five displacements on the south side and one more displacement in the north side of S.R. 20 (Eckerd Drugs). It would also impact the parking lots for four retail establishments in this vicinity.

The proposed alignment will shift to the north side of S.R. 20 at M.L. 1.48 just east of Emerald Parkway to match the land set aside for the widening by a mixed development of residential and commercial properties called Bellagio South which is currently under construction on the south side of S.R. 20 and should open before S.R. 20 construction begins in 2008.

The proposed alignment will remain in the north side of the existing roadway through M.L. 2.68 at Pinedale Circle due to the proximity of three residents and recreational facilities for Arbor Clos subdivision at M.L. 2.04. It is economically sensible to shift the proposed alignment to the north in this area to reduce the impact on the subdivision. There are four houses (three converted to commercial) on the north side of the existing S.R. 20 at this location which must be displaced. The impact on these houses will not change if the proposed alignment follows the existing roadway centerline. The alignment shifts to the south side of S.R. 20 at M.L. 2.68 and will remain in the south side of the existing roadway through M.L. 3.71 on the west side of Hill Crest Drive. This shift is necessary to minimize the impact on residential and commercial properties which are more concentrated on the north side of the roadway. From M.L. 3.71 on the west side of Hill Crest Drive to M.L. 4.20 at Peachtree Industrial Boulevard. The proposed alignment will follow the existing centerline of the roadway. This will facilitate the use of existing pavement and tie-in to the western edge of pavement at Peachtree Industrial Boulevard.

Comments:

- Attachments

- ARC Model

- Cost Estimate

- Typical Sections

- Traffic Diagrams

- HCS Run

- See Attached Minutes

- Minutes of Initial Concept Team Meeting Dated 5-24-05

- Minutes of Concept Team Meeting Dated 12-2-05

**COST ESTIMATE
GEORGIA DEPARTMENT OF TRANSPORTATION**

GDOT Project No. MLS-000-00(430) Date 9/21/05
 Local Agency Project No. 3146 Revised 12/6/05
 PPI Project No. T03-265

Project Description SR 20 (CUMMING HWY) WIDENING FROM BURNETTE TRAIL TO PIB
 Project Phase CONCEPT
 Quantities Prepared By Adam D. Smith & E. Michael Magathan
 Checked By Asad Hadadzadeh Date Checked 9/22/05

Assumptions Used the GDOT Item Mean Summary dated 7/5/05 and Revised Pavement Unit Prices per Charles Ivey of GDOT Contract Administration on 12/6/05. Used the weighted average cost.

PAY ITEM NUMBER	DESCRIPTION	QTY	UNIT	UNIT COST	COST
ROADWAY ITEMS					
150-1000	TRAFFIC CONTROL	1	LS	\$180,000	\$180,000
151-1000	MOBILIZATION	1	LS	\$150,000	\$150,000
153-1300	FIELD ENGINEERS OFFICE, TP 3	1	EA	\$58,000	\$58,000
210-0100	GRADING COMPLETE-GDOT PROJ. #MLS-000-00(430)	1	LS	\$2,500,000	\$2,500,000
310-5120	GR AGGR BASE CRS, 12 INCH, INCL MATL	167911	SY	\$13.89	\$2,332,285
318-3000	AGGREGATE SURFACE COURSE	5250	TN	\$21.99	\$115,448
402-1802	RECYCLED ASPH CONC PATCHING, INCL BITUM MATL & H LIME	600	TN	\$98.46	\$59,076
402-1812	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	1800	TN	\$57.43	\$103,374
402-3121	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	36940	TN	\$56.19	\$2,075,684
402-3130	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY INCL BITUM	13853	TN	\$57.31	\$793,896
402-3190	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	18470	TN	\$63.34	\$1,169,904
413-1000	BITUM TACK COAT	11754	GL	\$1.07	\$12,577
441-0016	DRIVEWAY CONC, 6 IN TK	7350	SY	\$25.87	\$190,145
441-0104	CONC SIDEWALK, 4 IN	25000	SY	\$30.67	\$766,750
441-0204	PLAIN CONC DITCH PAVING, 4 IN	2520	SY	\$28.37	\$71,492
441-0748	CONCRETE MEDIAN, 6 IN	1100	SY	\$20.79	\$22,869
441-4030	CONC VALLEY GUTTER, 8 IN	5000	SY	\$39.30	\$196,500
441-6222	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	47315	LF	\$15.58	\$737,168
500-3101	CLASS A CONCRETE	380	CY	\$513.56	\$195,153
500-3201	CLASS B CONCRETE, RETAINING WALL	150	CY	\$584.71	\$87,707
500-9999	CLASS B CONCRETE, BASE OR PVMT WIDENING	500	CY	\$154.49	\$77,245
511-1000	BAR REINF STEEL	56438	LB	\$0.81	\$45,715
627-1000	MSE WALL FACE, 1-10 FT. HT	10000	SF	\$35.19	\$351,900
634-1200	RIGHT OF WAY MARKERS	120	EA	\$82.85	\$9,942
641-1200	GUARDRAIL, TP W	2500	LF	\$15.67	\$39,175
641-5001	GUARDRAIL ANCH TP. 1	15	EA	\$521.77	\$7,827
641-5012	GUARDRAIL ANCH TP. 12	10	EA	\$1,759.70	\$17,597
DRAINAGE					
207-0203	FOUNDATION BACKFILL MATERIAL, TP II	142	CY	\$35.57	\$5,051
550-1180	STORM DRAIN PIPE, 18 IN, H 1-10	16387	LF	\$28.31	\$463,916
550-1240	STORM DRAIN PIPE, 24 IN, H 1-10	4506	LF	\$33.98	\$153,114
550-1300	STORM DRAIN PIPE, 30 IN, H 1-10	2500	LF	\$45.64	\$114,100
550-1360	STORM DRAIN PIPE, 36 IN, H 1-10	1550	LF	\$50.00	\$77,500
550-1420	STORM DRAIN PIPE, 42 IN, H 1-10	600	LF	\$80.63	\$48,378
550-1480	STORM DRAIN PIPE, 48 IN, H 1-10	600	LF	\$81.38	\$48,828
550-2180	SIDE DRAIN PIPE 18 IN, SIDE DRAIN, H 1-10	1200	LF	\$23.92	\$28,704
550-3618	SAFETY END SECTION 18 IN, SIDE DRAIN, 6:1 SLOPE	60	EA	\$624.89	\$37,493
550-4218	FLARED END SECTION 18 IN, STORM DRAIN	1	EA	\$446.86	\$447

**COST ESTIMATE
GEORGIA DEPARTMENT OF TRANSPORTATION**

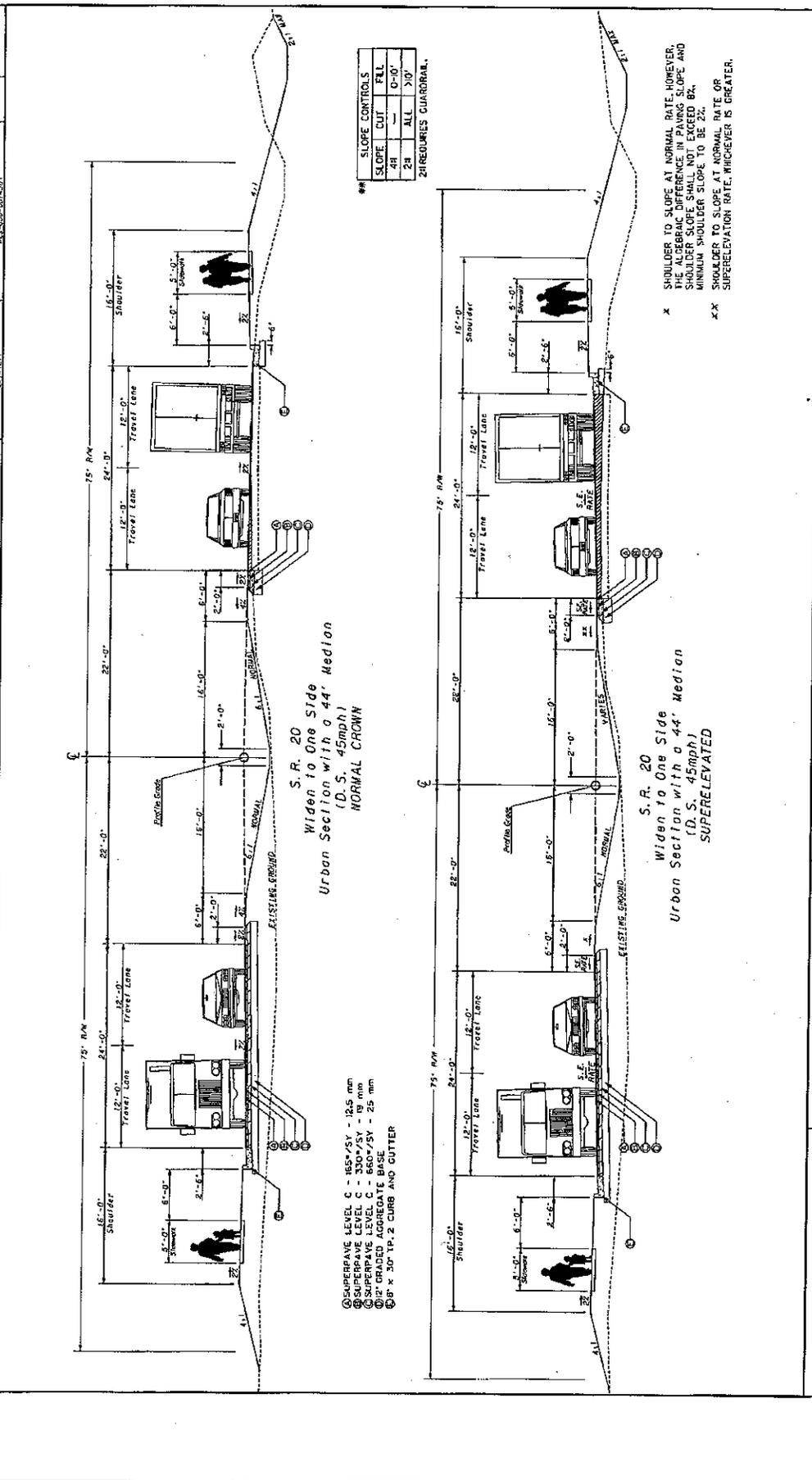
GDOT Project No. MLS-000-00(430)
 Local Agency Project No. 3146
 PPI Project No. T03-265

Date 9/21/05
 Revised 12/6/05

Project Description SR 20 (CUMMING HWY) WIDENING FROM BURNETTE TRAIL TO PIB
 Project Phase CONCEPT
 Quantities Prepared By Adam D. Smith & E. Michael Magathan
 Checked By Asad Hadadzadeh Date Checked 9/22/05

Assumptions Used the GDOT Item Mean Summary dated 7/5/05 and Revised Pavement Unit Prices per Charles Ivey of GDOT Contract Administration on 12/6/05. Used the weighted average cost.

PAY ITEM NUMBER	DESCRIPTION	QTY	UNIT	UNIT COST	COST
550-4224	FLARED END SECTION 24 IN, STORM DRAIN	2	EA	\$509.53	\$1,019
550-4230	FLARED END SECTION 30 IN, STORM DRAIN	2	EA	\$697.34	\$1,395
550-4236	FLARED END SECTION 36 IN, STORM DRAIN	2	EA	\$937.60	\$1,875
573-2006	UNDERDRAIN PIPE INCL DRAINAGE AGGREGATE, 6 IN	1800	LF	\$14.04	\$25,272
668-1100	CATCH BASIN, GROUP 1	198	EA	\$1,670.41	\$330,741
668-2100	DROP INLET, GROUP 1	47	EA	\$2,262.43	\$106,334
EROSION CONTROL					
162-1300	EROSION CONTROL CHECK DAMS	343.33	50	\$343.33	\$117,875
163-0232	TEMPORARY GRASSING	180	AC	\$515.98	\$92,876
163-0240	MULCH	3000	TN	\$188.70	\$566,100
163-0520	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	2275	LF	\$12.73	\$28,961
163-0531	CONSTRUCT AND REMOVE SEDIMENT BASIN TP 1	12	EA	\$8,135.00	\$97,620
163-0550	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	245	EA	\$191.03	\$46,802
165-0030	MAINTENANCE OF TEMPORARY SILT FENCE, TYPE C	28372	LF	\$1.19	\$33,763
165-0105	MAINTENANCE OF INLET SEDIMENT TRAP	245	EA	\$89.18	\$21,849
167-1000	WATER QUALITY MONITORING & SAMPLING	2	EA	\$869.54	\$1,739
167-1500	WATER QUALITY INSPECTIONS	18	MO	\$831.44	\$14,966
171-0030	TEMPORARY SILT FENCE, TYPE C	56744	LF	\$3.03	\$171,934
603-2024	STN DUMPED RIP RAP, TP 1, 24IN	160	SY	\$47.70	\$7,632
603-2181	STN DUMPED RIP RAP, TP 3, 18IN	200	SY	\$38.71	\$7,742
603-7000	PLASTIC FILTER FABRIC	360	SY	\$4.37	\$1,573
700-6910	PERMANENT GRASSING	120	AC	\$789.36	\$94,723
700-7000	AGRICULTURAL LIME	20	TN	\$59.33	\$1,187
700-8000	FERTILIZER, MIXED GRADE	108	TN	\$269.75	\$29,133
716-2000	EROSION CONTROL MATS SLOPES	303333	SY	\$1.12	\$339,733
SIGNING AND MARKING					
636-1020	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	200	SF	\$14.51	\$2,902
636-1031	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 6	300	SF	\$16.59	\$4,977
636-2030	GALV STEEL POSTS, TP 3	1625	LF	\$5.86	\$9,523
652-9001	TRAFFIC STRIPE WHITE	15019	SY	\$1.94	\$29,136
652-9002	TRAFFIC STRIPE YELLOW	2554	SY	\$1.53	\$3,907
653-0120	PAVEMENT MARKING, ARROW, TP 2	127	EA	\$57.07	\$7,248
653-0160	PAVEMENT MARKING, ARROW, TP 6	21	EA	\$48.40	\$1,016
653-0170	PAVEMENT MARKING, ARROW, TP 7	15	EA	\$73.56	\$1,103
653-1501	THERMOPLASTIC SOLID TRAFFIC STRIPE, 5 IN, WHITE	52022	LF	\$0.29	\$15,086
653-1502	THERMOPLASTIC SOLID TRAFFIC STRIPE, 5 IN, YELLOW	39000	LF	\$0.25	\$9,750
653-3501	THERMOPLASTIC SKIP TRAFFIC STRIPE, 5 IN, WHITE	39000	LF	\$0.15	\$5,850
654-1001	RAISED PAVEMENT MARKERS, TP 1	170	EA	\$3.59	\$610
654-1003	RAISED PAVEMENT MARKERS, TP 3	1139	EA	\$3.45	\$3,930
TRAFFIC SIGNAL					
647-1000	TRAFFIC SIGNAL INSTALLATION	4	LS	\$42,029.13	\$168,117
TOTAL CONSTRUCTION COST					\$15,750,959
RIGHT-OF-WAY					\$15,200,000
REIMBURSABLE UTILITIES					\$1,500,000
INFLATION (5% FOR 3 YEARS)					\$2,482,745
10% E & C					\$1,823,370
TOTAL PROJECT COST					\$36,757,074



*** SLOPE CONTROLS ***

SLOPE	CUT	FILL
4:1	1:1	3:1
2:1	ALL	3:1

2 REQUIRES GUARDRAIL.

- ① SUPERPAVE LEVEL C - 165#/SY - 12.5 mm
- ② SUPERPAVE LEVEL C - 330#/SY - 19 mm
- ③ 1.5" MIN. THICKNESS
- ④ 2" GRADED AGGREGATE BASE
- ⑤ 8" x 30" TP. 2 CURB AND CUTTER

* SHOULDER TO SLOPE AT NORMAL RATE, HOWEVER THE ALGEBRAIC DIFFERENCE IN PAVING SLOPE AND SHOULDER SLOPE SHALL NOT EXCEED 8%.
 MINIMUM SHOULDER SLOPE TO BE 2%.

** SHOULDER TO SLOPE AT NORMAL RATE OR SUPERELEVATION RATE, WHICHEVER IS GREATER.

PRECISION PLANNING, INC.
 PLANNING, ENGINEERING AND TRAFFIC SERVICES
 1000 W. UNIVERSITY BLVD.
 SUITE 100
 WASHINGTON, DC 20004
 (703) 531-1000

NOT TO SCALE

REVISION DATES

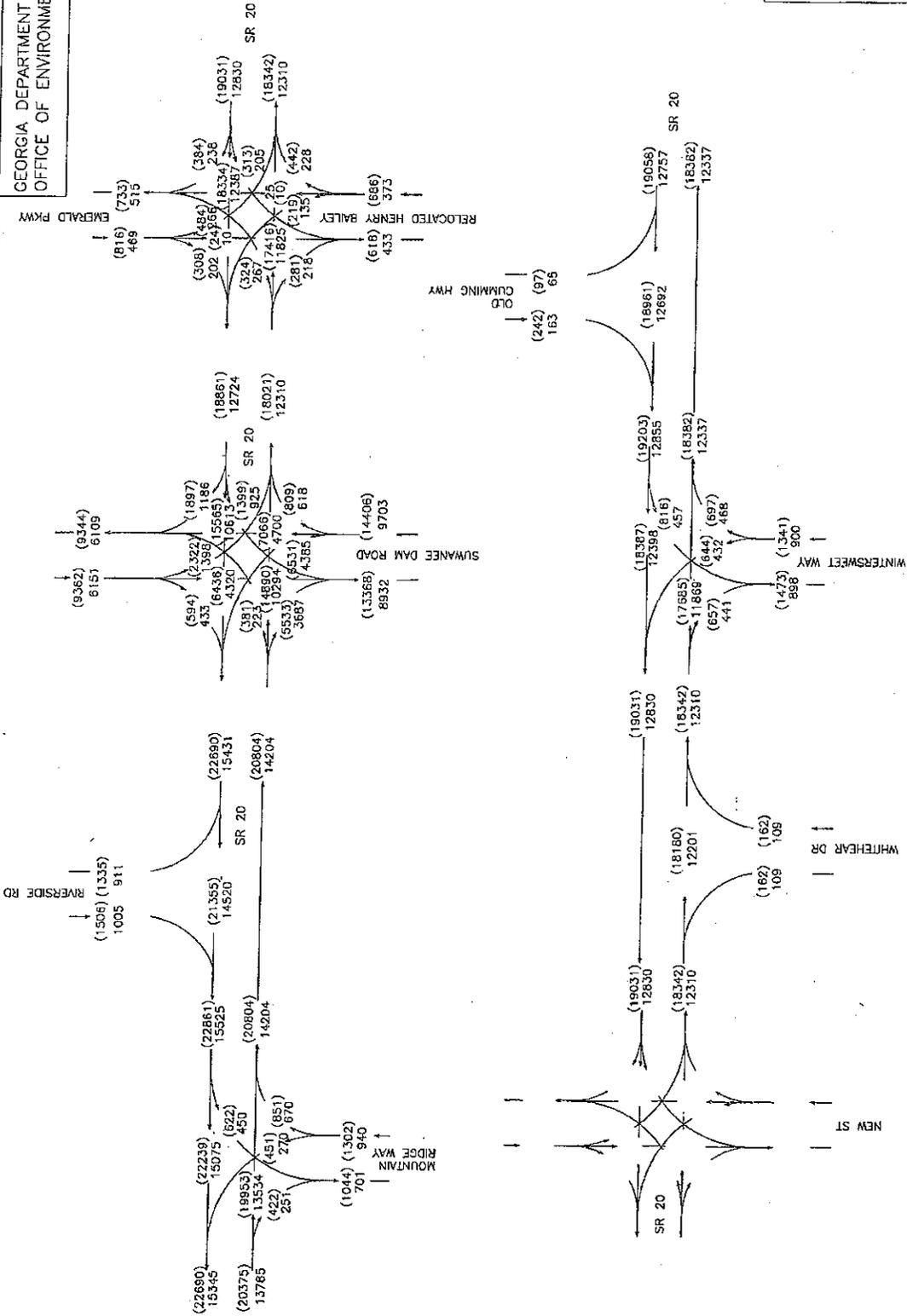
STATE OF GEORGIA
 DEPARTMENT OF TRANSPORTATION
 OFFICE ROAD DESIGN

TYPICAL SECTIONS

S. R. 20 / CUMMING HWY.
 IMPROVEMENTS

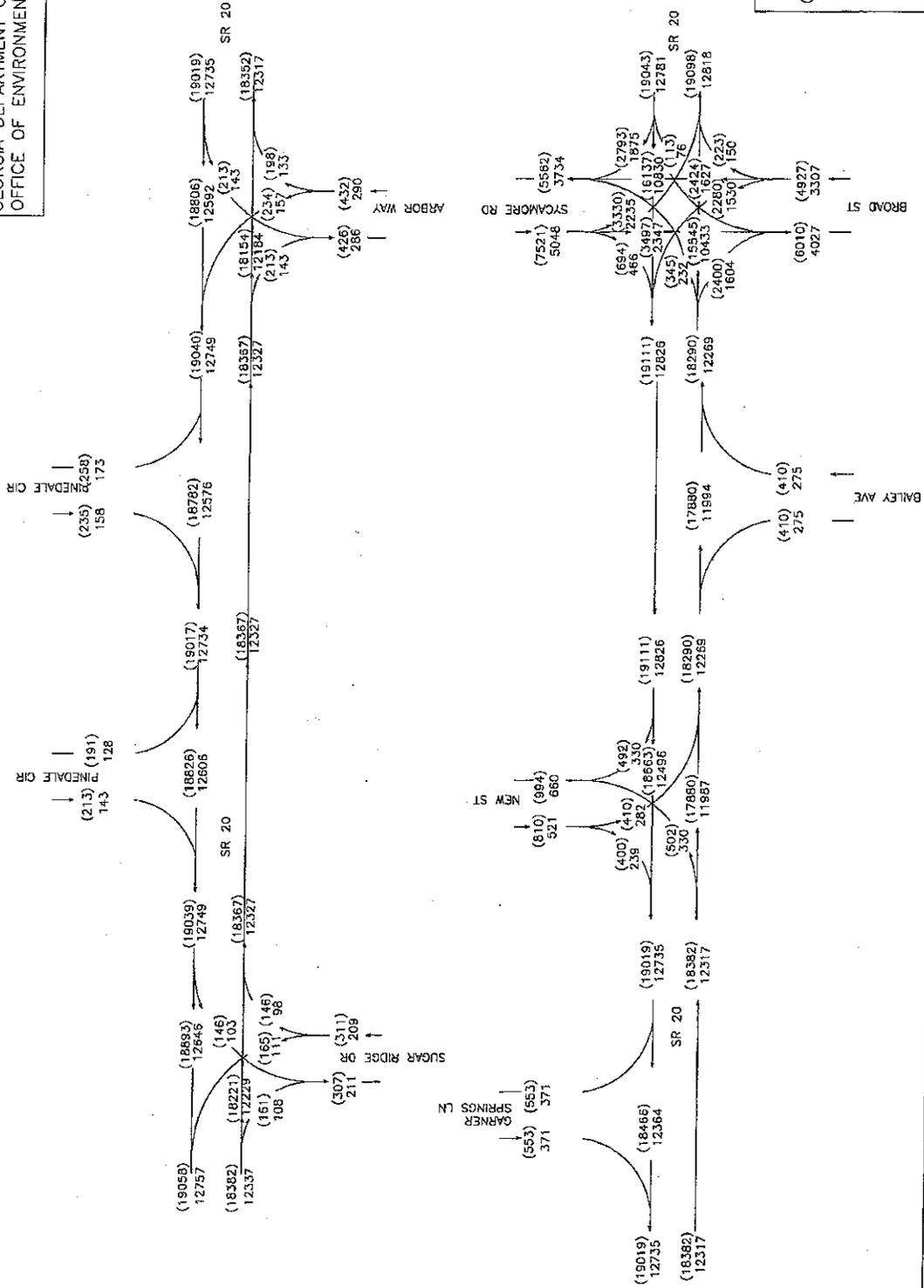
5-02

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION



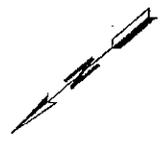
STP-0000-00(430)
P.I.# 0004430
GWINNETT COUNTY
S.R. 20
2008 ADT = 000
2028 ADT = (000)
24 HR. T = 14%
S.U. = 8%
COMB. = 5%
SHEET 1 OF 5

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION

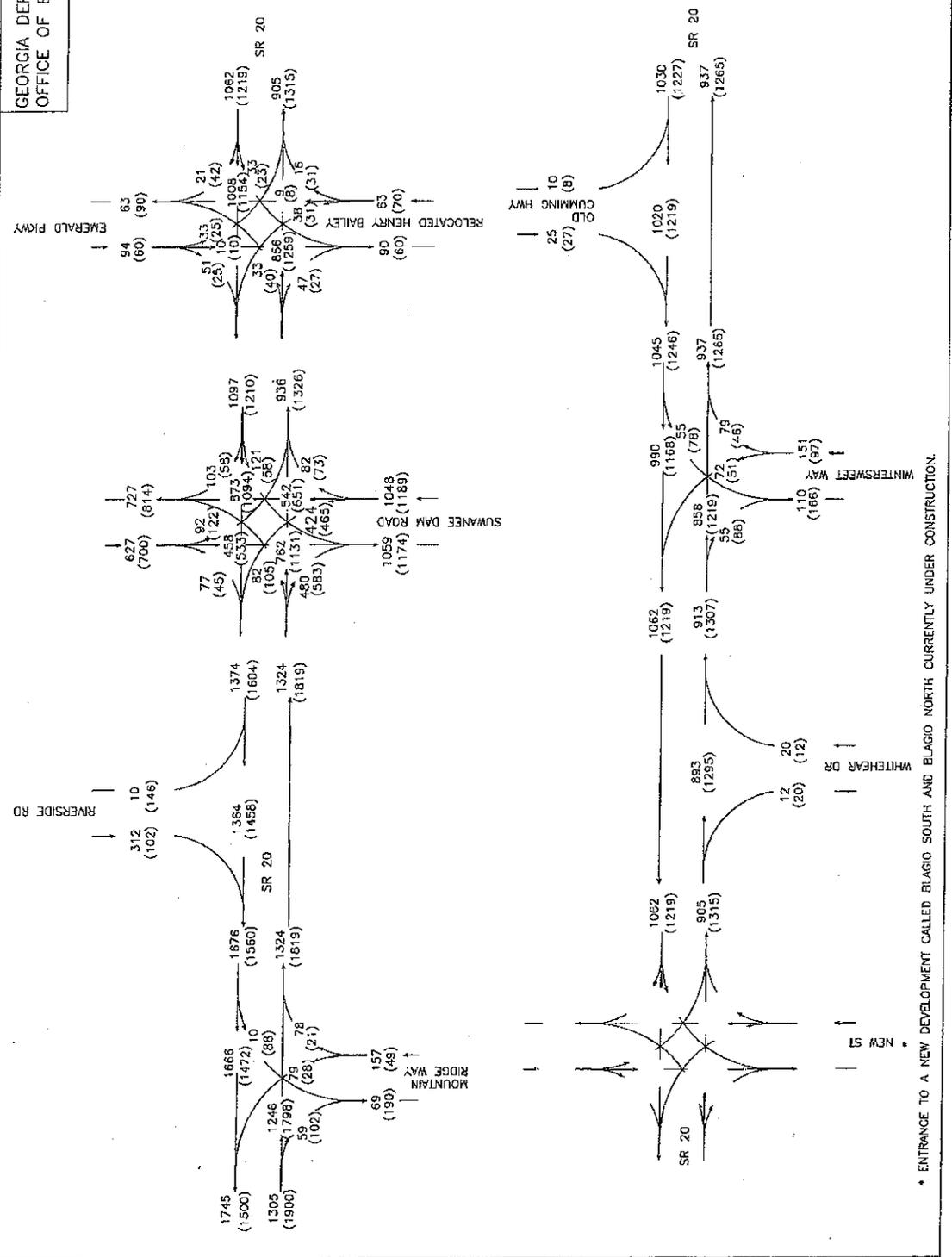


STP-0000-00(430)
P.I.# 0004430
GWINNETT COUNTY
S.R. 20
2008 ADT = 000
2028 ADT = (000)
24 HR. T = 1.4%
S.U. = 8%
COMB. = 5%
SHEET 2 OF 6

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION

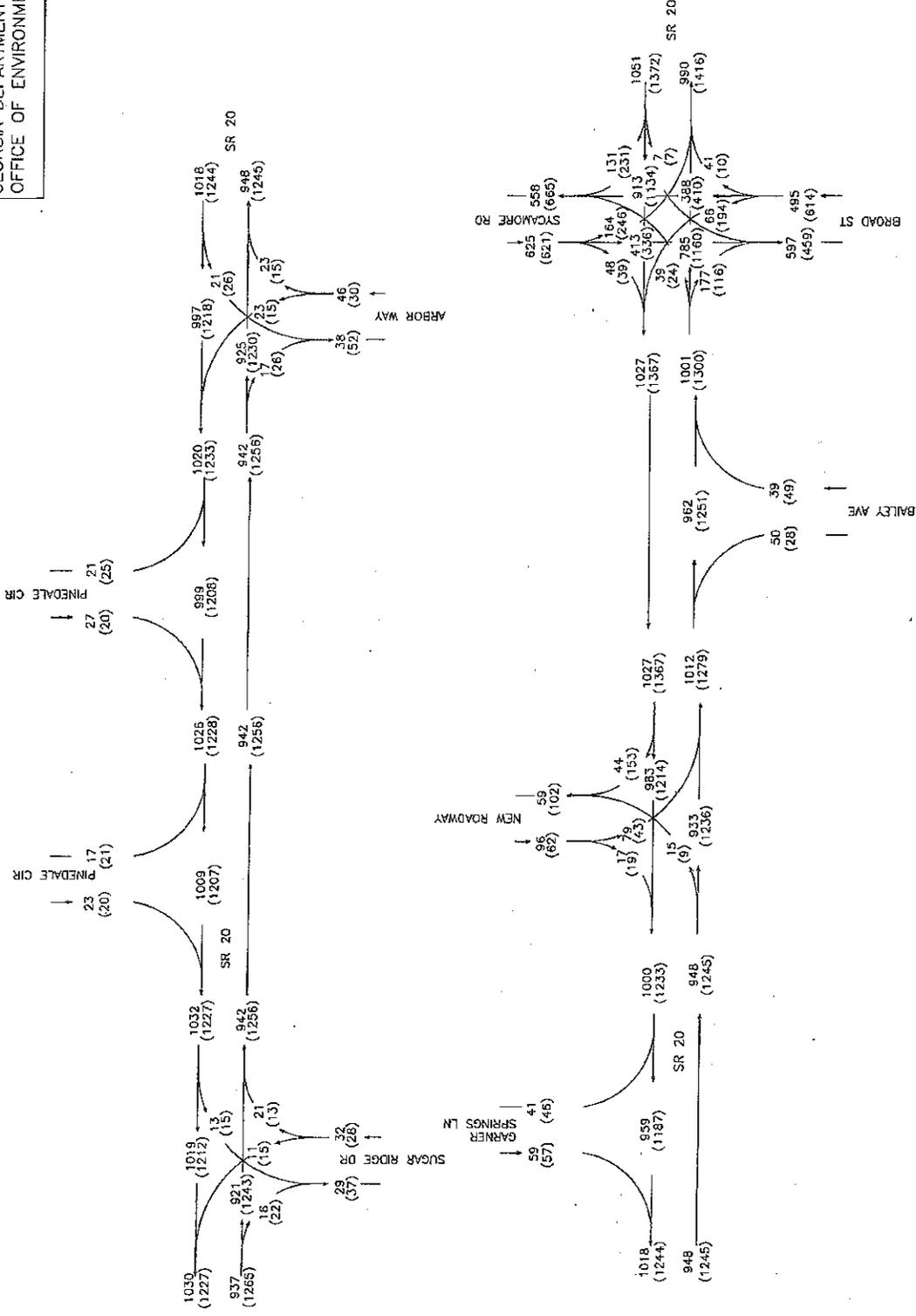


STP-0000-00(430)
P.I.# 0004430
GWINNETT COUNTY
S.R. 20
2028 AM DHV = 000
2028 PM DHV = (000)
T = 7.5%



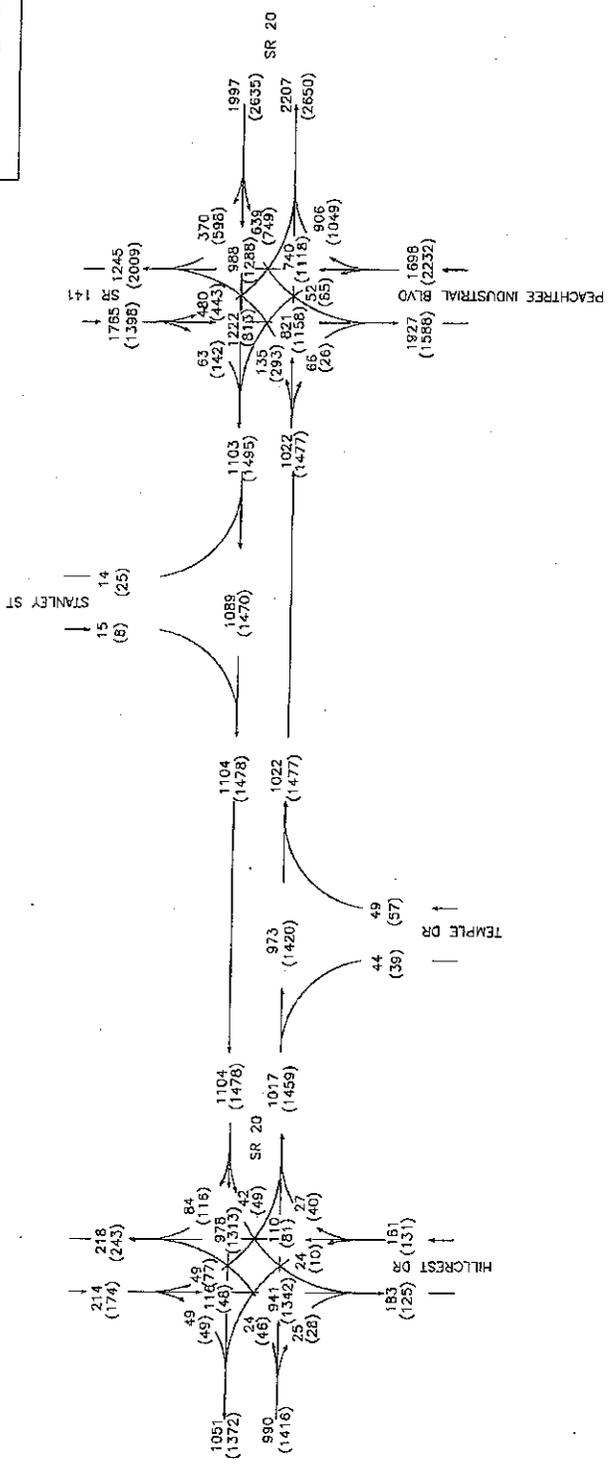
* ENTRANCE TO A NEW DEVELOPMENT CALLED BLAGIO SOUTH AND BLAGIO NORTH CURRENTLY UNDER CONSTRUCTION.

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION



STP-0000-00(430)
P.I.# 0004430
GWINNETT COUNTY
S.R. 20
2028 AM DHV = 000
2028 PM DHV = (000)
I = 7.5%

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENT/LOCATION



STP-0000-00(430)
P.L.# 0004430
GWINNETT COUNTY
S.R. 20
2028 AM DHV = 000
2028 PM DHV = (000)
T = 7.5%

HCS2000: Two-Lane Highways Release 4.1d

James M. Pohlman
Pohlman Engineering Inc.

Phone: Fax:
E-Mail:

Two-Way Two-Lane Highway Segment Analysis

Analyst
Agency/Co.
Date Performed 11/10/2004
Analysis Time Period PM
Highway SR 20
From/To PIB to Forsyth Co. Line
Jurisdiction Gwinnett County
Analysis Year 2004
Description

Input Data

Highway class	Class 1				
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	5	%
Segment length	4.2	mi	% Recreational vehicles	1	%
Terrain type	Rolling		% No-passing zones	75	%
Grade: Length		mi	Access points/mi	10	/mi
Up/down		%			
Two-way hourly volume, V	2151	veh/h			
Directional split	53 / 47	%			

Average Travel Speed

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.975	
Two-way flow rate, (note-1) vp	2477	pc/h
Highest directional split proportion (note-2)	1313	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, VF	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	55.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.5	mi/h
Free-flow speed, FFS	52.5	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATS	32.4	mi/h

Percent Time-Spent-Following

Grade adjustment factor, EG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate, (note-1) vp	2390	pc/h
Highest directional split proportion (note-2)	1267	
Base percent time-spent-following, BPTSF	87.8	%
Adj. for directional distribution and no-passing zones, fd/np	2.8	
Percent time-spent-following, PTSF	90.6	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.77	
Peak 15-min vehicle-miles of travel, VMT15	2509	veh-mi
Peak-hour vehicle-miles of travel, VMT60	9034	veh-mi
Peak 15-min total travel time, TT15	77.4	veh-h

Notes:

1. If $vp \geq 3200$ pc/h, terminate analysis-the LOS is F.
2. If highest directional split $vp \geq 1700$ pc/h, terminate analysis-the LOS is F.

HCS2000: Two-Lane Highways Release 4.1d

James M. Pohlman
Pohlman Engineering Inc.

Phone:
E-Mail:

Fax:

Two-Way Two-Lane Highway Segment Analysis

Analyst
Agency/Co.
Date Performed 11/10/2004
Analysis Time Period PM
Highway SR 20
From/To PIB to Forsyth Co. Line
Jurisdiction Gwinnett County
Analysis Year 2008 No Build
Description

Input Data

Highway class	Class 1				
Shoulder width	6.0	ft	Peak-hour factor, PHF	0.90	
Lane width	12.0	ft	% Trucks and buses	5	%
Segment length	4.2	mi	% Recreational vehicles	1	%
Terrain type	Rolling		% No-passing zones	85	%
Grade: Length		mi	Access points/mi	10	/mi
Up/down		%			
Two-way hourly volume, V	2538	veh/h			
Directional split	53 / 47	%			

Average Travel Speed

Grade adjustment factor, fG	0.99	
PCE for trucks, ET	1.5	
PCE for RVs, ER	1.1	
Heavy-vehicle adjustment factor,	0.975	
Two-way flow rate, (note-1) vp	2923	pc/h
Highest directional split proportion (note-2)	1549	pc/h
Free-Flow Speed from Field Measurement:		
Field measured speed, SFM	-	mi/h
Observed volume, VF	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, BFFS	55.0	mi/h
Adj. for lane and shoulder width, fLS	0.0	mi/h
Adj. for access points, fA	2.5	mi/h
Free-flow speed, FFS	52.5	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATS	29.1	mi/h

Percent Time-Spent-Following

Grade adjustment factor, fG	1.00	
PCE for trucks, ET	1.0	
PCE for RVs, ER	1.0	
Heavy-vehicle adjustment factor, fHV	1.000	
Two-way flow rate, (note-1) vp	2820	pc/h
Highest directional split proportion (note-2)	1495	
Base percent time-spent-following, BPTSF	91.6	%
Adj. for directional distribution and no-passing zones, fd/np	2.0	
Percent time-spent-following, PTSF	93.6	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.91	
Peak 15-min vehicle-miles of travel, VMT15	2961	veh-mi
Peak-hour vehicle-miles of travel, VMT60	10660	veh-mi
Peak 15-min total travel time, TT15	101.9	veh-h

Notes:

1. If vp \geq 3200 pc/h, terminate analysis-the LOS is F.
2. If highest directional split vp \geq 1700 pc/h, terminate analysis-the LOS is F.

HCS2000: Multilane Highways Release 4.1d

James M. Pohlman
Pohlman Engineering Inc.

Phone:
E-mail:

Fax:

OPERATIONAL ANALYSIS

Analyst:
Agency/Co:
Date: 11/26/2004
Analysis Period: PM
Highway: SR 20
From/To: PIB to Forsyth Co. Line
Jurisdiction: Gwinnett County
Analysis Year: 2008
Project ID:

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		10		10	
Median type		Divided		Divided	
Free-flow speed:		Base		Base	
FFS or BFFS		55.0	mph	55.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		0.0	mph	0.0	mph
Access points adjustment, FA		2.5	mph	2.5	mph
Free-flow speed		52.5	mph	52.5	mph

VOLUME

	Direction	1		2	
Volume, V		1365	vph	1172	vph
Peak-hour factor, PHF		0.90		0.90	
Peak 15-minute volume, v15		379		326	
Trucks and buses		5	%	5	%
Recreational vehicles		1	%	1	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, FP		1.00		1.00	
Trucks and buses PCR, ET		2.5		2.5	
Recreational vehicles PCR, FR		2.0		2.0	
Heavy vehicle adjustment, FHV		0.922		0.922	
Flow rate, vp		822	pcphpl	706	pcphpl

RESULTS

	Direction	1		2	
Flow rate, vp		822	pcphpl	706	pcphpl
Free-flow speed, FFS		52.5	mph	52.5	mph
Avg. passenger-car travel speed, S		52.5	mph	52.5	mph
Level of service, LOS		B		B	
Density, D		15.7	pc/mi/ln	13.4	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1d

James M. Pohlman
Pohlman Engineering Inc.

Phone:
E-mail:

Fax:

OPERATIONAL ANALYSIS

Analyst:
Agency/Co:
Date: 11/26/2004
Analysis Period: PM
Highway: SR 20
From/To: PIB to Forsyth Co. Line
Jurisdiction: Gwinnett County
Analysis Year: 2018
Project ID: 4 Lane

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		10		10	
Median type		Divided		Divided	
Free-flow speed:		Base		Base	
FFS or BFFS		55.0	mph	55.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		0.0	mph	0.0	mph
Access points adjustment, FA		2.5	mph	2.5	mph
Free-flow speed		52.5	mph	52.5	mph

VOLUME

	Direction	1		2	
Volume, V		2059	vph	1769	vph
Peak-hour factor, PHF		0.90		0.90	
Peak 15-minute volume, v15		572		491	
Trucks and buses		5	%	5	%
Recreational vehicles		1	%	1	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.922		0.922	
Flow rate, vp		1241	pcphpl	1066	pcphpl

RESULTS

	Direction	1		2	
Flow rate, vp		1241	pcphpl	1066	pcphpl
Free-flow speed, FFS		52.5	mph	52.5	mph
Avg. passenger-car travel speed, S		52.5	mph	52.5	mph
Level of service, LOS		C		C	
Density, D		23.6	pc/mi/ln	20.3	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1d

James M. Pohlman
Pohlman Engineering Inc.

Phone:
E-mail:

Fax:

OPERATIONAL ANALYSIS

Analyst:
Agency/Co:
Date: 11/26/2004
Analysis Period: PM
Highway: SR 20
From/To: PIB to Forsyth Co. Line
Jurisdiction: Gwinnett County
Analysis Year: 2028
Project ID: 4 Lane

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		10		10	
Median type		Divided		Divided	
Free-flow speed:		Base		Base	
FFS or BFFS		55.0	mph	55.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		0.0	mph	0.0	mph
Access points adjustment, FA		2.5	mph	2.5	mph
Free-flow speed		52.5	mph	52.5	mph

VOLUME

	Direction	1		2	
Volume, V		3123	vph	2638	vph
Peak-hour factor, PHF		0.90		0.90	
Peak 15-minute volume, v15		868		733	
Trucks and buses		5	%	5	%
Recreational vehicles		1	%	1	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		2		2	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, fHV		0.922		0.922	
Flow rate, vp		1882	pcphpl	1590	pcphpl

RESULTS

	Direction	1		2	
Flow rate, vp		1882	pcphpl	1590	pcphpl
Free-flow speed, FFS		52.5	mph	52.5	mph
Avg. passenger-car travel speed, S		50.1	mph	51.8	mph
Level of service, LOS		E		D	
Density, D		37.6	pc/mi/ln	30.7	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

HCS2000: Multilane Highways Release 4.1d

James M. Pohlman
Pohlman Engineering Inc.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:
Agency/Co:
Date: 11/26/2004
Analysis Period: PM
Highway: SR 20
From/To: PIB to Forsyth Co. Line
Jurisdiction: Gwinnett County
Analysis Year: 2028
Project ID: 6 Lane

FREE-FLOW SPEED

	Direction	1		2	
Lane width		12.0	ft	12.0	ft
Lateral clearance:					
Right edge		6.0	ft	6.0	ft
Left edge		6.0	ft	6.0	ft
Total lateral clearance		12.0	ft	12.0	ft
Access points per mile		10		10	
Median type		Divided		Divided	
Free-flow speed:		Base		Base	
FFS or BFFS		55.0	mph	55.0	mph
Lane width adjustment, FLW		0.0	mph	0.0	mph
Lateral clearance adjustment, FLC		0.0	mph	0.0	mph
Median type adjustment, FM		0.0	mph	0.0	mph
Access points adjustment, FA		2.5	mph	2.5	mph
Free-flow speed		52.5	mph	52.5	mph

VOLUME

	Direction	1		2	
Volume, V		3123	vph	2638	vph
Peak-hour factor, PHF		0.90		0.90	
Peak 15-minute volume, v15		868		733	
Trucks and buses		5	%	5	%
Recreational vehicles		1	%	1	%
Terrain type		Rolling		Rolling	
Grade		0.00	%	0.00	%
Segment length		0.00	mi	0.00	mi
Number of lanes		3		3	
Driver population adjustment, fP		1.00		1.00	
Trucks and buses PCE, ET		2.5		2.5	
Recreational vehicles PCE, ER		2.0		2.0	
Heavy vehicle adjustment, IHV		0.922		0.922	
Flow rate, vp		1254	pcphpl	1060	pcphpl

RESULTS

	Direction	1		2	
Flow rate, vp		1254	pcphpl	1060	pcphpl
Free-flow speed, FFS		52.5	mph	52.5	mph
Avg. passenger-car travel speed, S		52.5	mph	52.5	mph
Level of service, LOS		C		C	
Density, D		23.9	pc/mi/ln	20.2	pc/mi/ln

Overall results are not computed when free-flow speed is less than 45 mph.

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & Suwanee Dam Road					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/16/2004					Jurisdiction						
Time Period	AM					Analysis Year	No Build (2008) AM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Lane group	L	TR		L	TR		L	TR		L	TR	
Volume (vph)	17	586	270	35	926	33	309	293	12	60	261	27
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Arrival type	3	3		3	3		3	3		3	3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0		0	0	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Phasing	EW Perm	02	03	04	NB Only	NS Perm	07	08				
Timing	G = 57.0	G =	G =	G =	G = 14.0	G = 17.0	G =	G =				
	Y = 4	Y =	Y =	Y =	Y = 4	Y = 4	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 100.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	18	930		38	1043		336	331		65	313	
Lane group cap.	75	1012		90	1056		323	648		178	312	
w/c ratio	0.24	0.92		0.42	0.99		1.04	0.51		0.37	1.00	
Green ratio	0.57	0.57		0.57	0.57		0.35	0.35		0.17	0.17	
Unif. delay d1	10.7	19.4		12.2	21.2		27.6	25.7		36.7	41.5	
Delay factor k	0.11	0.44		0.11	0.49		0.50	0.12		0.11	0.50	
Increment. delay d2	1.7	13.0		3.2	24.6		60.9	0.7		1.3	51.8	
PF factor	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Control delay	12.4	32.4		15.4	45.8		88.5	26.4		38.0	93.3	
Lane group LOS	B	C		B	D		F	C		D	F	
Approch. delay	32.0			44.7			57.7			83.8		
Approach LOS	C			D			E			F		
Intersec. delay	48.4			Intersection LOS						D		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & W Broad/Sycamore					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/16/2004					Jurisdiction						
Time Period	AM					Analysis Year	No Build (2008) AM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Lane group	LTR			LTR			LTR			LTR		
Volume (vph)	9	543	123	5	503	96	34	64	5	119	214	15
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0			2.0			2.0			2.0		
Ext. eff. green	2.0			2.0			2.0			2.0		
Arrival type	3			3			3			3		
Unit Extension	3.0			3.0			3.0			3.0		
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0			12.0			12.0			12.0		
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0			0			0			0		
Unit Extension	3.0			3.0			3.0			3.0		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08				
Timing	G = 22.5	G =	G =	G =	G = 14.8	G =	G =	G =				
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 45.3						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	734			656			112			378		
Lane group cap.	895			901			520			514		
v/c ratio	0.82			0.73			0.22			0.74		
Green ratio	0.50			0.50			0.33			0.33		
Unif. delay d1	9.7			9.0			11.0			13.5		
Delay factor k	0.38			0.29			0.11			0.29		
Increm. delay d2	6.1			3.0			0.2			5.5		
PF factor	1.000			1.000			1.000			1.000		
Control delay	15.8			12.0			11.3			19.0		
Lane group LOS	B			B			B			B		
Approch. delay	15.8			12.0			11.3			19.0		
Approach LOS	B			B			B			B		
Intersec. delay	14.8			Intersection LOS						B		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & Hillcrest					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	AM					Jurisdiction						
Time Period						Analysis Year	No Build (2008) AM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	5	673	1	6	603	28	4	7	2	37	12	14
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		3	3			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Phasing	EW Perm	02	03	04	NS Perm	05	06	07	08			
Timing	G = 18.4	G =	G =	G =	G = 7.1	G =	G =	G =	G =			
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =	Y =			
Duration of Analysis (hrs) = 0.25						Cycle Length C = 33.5						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	5	733		7	683			14			68	
Lane group cap.	297	1023		259	1017			356			316	
v/c ratio	0.02	0.72		0.03	0.67			0.04			0.22	
Green ratio	0.55	0.55		0.55	0.55			0.21			0.21	
Unif. delay d1	3.4	5.6		3.5	5.4			10.5			10.9	
Delay factor k	0.11	0.28		0.11	0.24			0.11			0.11	
Incrom. delay d2	0.0	2.4		0.0	1.7			0.0			0.3	
PF factor	1.000	1.000		1.000	1.000			1.000			1.000	
Control delay	3.5	8.0		3.5	7.1			10.5			11.2	
Lane group LOS	A	A		A	A			B			B	
Approch. delay	8.0			7.1			10.5			11.2		
Approach LOS	A			A			B			B		
Intersec. delay	7.8			Intersection LOS						A		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & PIB					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	AM					Jurisdiction	No Build (2008) AM					
Time Period						Analysis Year						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	2	2	0	2	2	0	2	3	1	2	3	1
Lane group	L	TR		L	TR		L	T	R	L	T	R
Volume (vph)	116	890	57	393	728	124	38	321	514	204	526	47
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3		3	3		3	3	3	3	3	3
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0	0	0	0	0
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	WB Only	Thru & RT	04	Excl. Left	Thru & RT	07	08				
Timing	G = 4.1	G = 5.7	G = 23.0	G =	G = 5.4	G = 10.8	G =	G =				
	Y = 4	Y = 4	Y = 4	Y =	Y = 4	Y = 4	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 69.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	126	1029		427	926		41	349	559	222	572	51
Lane group cap.	204	1172		687	1644		269	794	656	269	794	248
v/c ratio	0.62	0.88		0.62	0.56		0.15	0.44	0.85	0.83	0.72	0.21
Green ratio	0.06	0.33		0.20	0.47		0.08	0.16	0.41	0.08	0.16	0.16
Unif. delay d1	31.7	21.7		25.2	13.0		29.7	26.4	18.3	31.3	27.7	25.4
Delay factor k	0.20	0.40		0.20	0.16		0.11	0.11	0.38	0.36	0.28	0.11
Incram. delay d2	5.6	7.8		1.7	0.4		0.3	0.4	10.5	18.6	3.2	0.4
PF factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Control delay	37.3	29.5		27.0	13.5		29.9	26.7	28.8	49.9	30.9	25.8
Lane group LOS	D	C		C	B		C	C	C	D	C	C
Apprch. delay	30.4			17.7			28.1			35.6		
Approach LOS	C			B			C			D		
Intersac. delay	26.9			Intersection LOS						C		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & Suwanee Dam Road					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/16/2004					Jurisdiction						
Time Period	PM					Analysis Year	No Build (2008) PM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	1	1	0	1	1	0	1	1	0
Lane group	L	TR		L	TR		L	TR		L	TR	
Volume (vph)	26	800	355	78	651	46	349	401	47	114	315	44
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Arrival type	3	3		3	3		3	3		3	3	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0		0	0	
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Phasing	EW Perm	02	03	04	NB Only	NS Perm	07	08				
Timing	G = 57.0	G =	G =	G =	G = 14.0	G = 17.0	G =	G =				
	Y = 4	Y =	Y =	Y =	Y = 4	Y = 4	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 100.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	28	1256		85	758		379	487		124	390	
Lane group cap.	209	1013		75	1051		323	642		135	311	
w/c ratio	0.13	1.24		1.13	0.72		1.17	0.76		0.92	1.25	
Green ratio	0.57	0.57		0.57	0.57		0.35	0.35		0.17	0.17	
Unif. delay d1	10.0	21.5		21.5	15.7		27.6	28.8		40.8	41.5	
Delay factor k	0.11	0.50		0.50	0.28		0.50	0.31		0.44	0.50	
Increm. delay d2	0.3	116.5		144.6	2.5		105.8	5.2		53.4	138.0	
PF factor	1.000	1.000		1.000	1.000		1.000	1.000		1.000	1.000	
Control delay	10.3	138.0		166.1	18.2		133.4	34.0		94.2	179.5	
Lane group LOS	B	F		F	B		F	C		F	F	
Approch. delay	135.2			33.1			77.5			158.9		
Approach LOS	F			C			E			F		
Intorsec. delay	98.9			Intersection LOS						F		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & W. Broad/Sycamore					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/16/2004					Jurisdiction						
Time Period	PM					Analysis Year	No Build (2008) PM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Lane group	LTR			LTR			LTR			LTR		
Volume (vph)	21	845	91	5	812	169	142	153	2	179	99	12
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0			2.0			2.0			2.0		
Ext. eff. green	2.0			2.0			2.0			2.0		
Arrival type	3			3			3			3		
Unit Extension	3.0			3.0			3.0			3.0		
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0			12.0			12.0			12.0		
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0			0			0			0		
Unit Extension	3.0			3.0			3.0			3.0		
Phasing	EW Perm	02	03	04	NS Perm	06	07	08				
Timing	G = 35.0	G =	G =	G =	G = 17.0	G =	G =	G =				
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 60.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	1040			1072			322			316		
Lane group cap.	1040			1058			389			332		
v/c ratio	1.00			1.01			0.83			0.95		
Green ratio	0.58			0.58			0.28			0.28		
Unif. delay d1	12.5			12.5			20.1			21.1		
Delay factor k	0.50			0.50			0.37			0.46		
Increm. delay d2	27.9			31.0			13.8			36.8		
PF factor	1.000			1.000			1.000			1.000		
Control delay	40.4			43.5			33.9			57.8		
Lane group LOS	D			D			C			E		
Approch. delay	40.4			43.5			33.9			57.8		
Approach LOS	D			D			C			E		
Intersec. delay	42.9			Intersection LOS						D		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & Hillcrest					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	PM					Jurisdiction						
Time Period						Analysis Year	No Build (2008) PM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	1	0	1	1	0	0	1	0	0	1	0
Lane group	L	TR		L	TR			LTR			LTR	
Volume (vph)	25	994	13	22	971	83	7	52	21	61	20	21
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0			2.0			2.0	
Ext. eff. green	2.0	2.0		2.0	2.0			2.0			2.0	
Arrival type	3	3		3	3			3			3	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0			12.0			12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0			0			0	
Unit Extension	3.0	3.0		3.0	3.0			3.0			3.0	
Phasing	EW Perm	02	03	04	NS Perm	06	07	08				
Timing	G = 36.1	G =	G =	G =	G = 8.8	G =	G =	G =				
	Y = 4	Y =	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 52.9						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	27	1094		24	1145			88			111	
Lane group cap.	141	1269		141	1256			290			239	
v/c ratio	0.19	0.86		0.17	0.91			0.30			0.46	
Green ratio	0.68	0.68		0.68	0.68			0.17			0.17	
Unif. delay d1	3.1	6.5		3.0	7.1			19.4			19.9	
Delay factor k	0.11	0.39		0.11	0.43			0.11			0.11	
Increm. delay d2	0.7	6.3		0.6	10.2			0.6			1.4	
PF factor	1.000	1.000		1.000	1.000			1.000			1.000	
Control delay	3.7	12.8		3.6	17.2			20.0			21.3	
Lane group LOS	A	B		A	B			B			C	
Approch. delay	12.6			16.9			20.0			21.3		
Approach LOS	B			B			B			C		
Intersec. delay	15.3			Intersection LOS						B		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & PIB					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	PM					Jurisdiction						
Time Period						Analysis Year	No Build (2008) PM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	2	2	0	2	2	0	2	3	1	2	3	1
Lane group	L	TR		L	TR		L	T	R	L	T	R
Volume (vph)	222	976	19	473	990	217	47	596	618	177	373	112
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3		3	3		3	3	3	3	3	3
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Fed/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0		0	0		0	0	0	0	0	0
Unit Extension	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	WB Only	Thru & RT	04			Excl. Left	Thru & RT	07 08			
Timing	G = 9.1	G = 4.9	G = 30.1	G =	G = 6.0	G = 13.9	G =	G =				
	Y = 4	Y = 4	Y = 4	Y =	Y = 4	Y = 4	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 84.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
Adj. flow rate	241	1082		514	1312		51	648	672	192	405	122
Lane group cap.	372	1267		737	1502		246	640	677	246	640	262
v/c ratio	0.65	0.85		0.70	0.82		0.21	0.77	0.99	0.78	0.48	0.47
Green ratio	0.11	0.36		0.21	0.46		0.07	0.17	0.43	0.07	0.17	0.17
Unif. delay d1	35.9	24.9		30.5	19.4		36.8	33.5	23.9	38.4	31.8	31.7
Delay factor k	0.23	0.39		0.26	0.36		0.11	0.32	0.49	0.33	0.11	0.11
Incrém. delay d2	3.9	5.9		2.9	3.5		0.4	4.5	32.6	14.9	0.4	1.3
PF factor	1.000	1.000		1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Control delay	39.8	30.8		33.4	22.9		37.2	38.0	56.6	53.2	32.2	33.0
Lane group LOS	D	C		C	C		D	D	E	D	C	C
Approch. delay	32.5			25.9			47.1			38.0		
Approach LOS	C			C			D			D		
Intersec. delay	34.7			Intersection LOS						C		

SHORT REPORT													
General Information						Site Information							
Analyst	Gwinnett County					Intersection	SR 20 & Suwanee Dam Road						
Agency or Co.	11/16/2004					Area Type	All other areas						
Date Performed	AM					Jurisdiction							
Time Period						Analysis Year	4 Lane (2008) AM						
Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1	
Lane group	L	T	R	L	T	R	L	T	R	L	T	R	
Volume (vph)	17	586	270	35	926	33	309	293	12	60	261	27	
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2	
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A	
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking/hr													
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Phasing	Excl. Left	Thru & RT	03	04	NB Only	NS Perm	07	08					
Timing	G = 1.2	G = 21.0	G =	G =	G = 10.5	G = 12.9	G =	G =					
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =					
Duration of Analysis (hrs) = 0.25						Cycle Length C = 61.6							
Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
Adj. flow rate	18	637	293	38	1007	36	336	318	13	65	284	28	
Lane group cap.	34	1209	540	34	1209	540	440	829	704	221	390	332	
v/c ratio	0.53	0.53	0.54	1.12	0.83	0.07	0.76	0.38	0.02	0.29	0.73	0.09	
Green ratio	0.02	0.34	0.34	0.02	0.34	0.34	0.44	0.44	0.44	0.21	0.21	0.21	
Unif. delay d1	29.9	16.3	16.4	30.2	18.7	13.7	12.7	11.4	9.6	20.5	22.7	19.6	
Delay factor k	0.13	0.13	0.14	0.50	0.37	0.11	0.32	0.11	0.11	0.11	0.29	0.11	
Increm. delay d2	14.8	0.4	1.1	191.8	5.1	0.1	7.8	0.3	0.0	0.7	6.8	0.1	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	44.7	16.7	17.5	222.0	23.8	13.7	20.5	11.7	9.6	21.3	29.5	19.7	
Lane group LOS	D	B	B	F	C	B	C	B	A	C	C	B	
Approch. delay	17.5			30.5			16.1			27.3			
Approach LOS	B			C			B			C			
Intersec. delay	23.0			Intersection LOS									C

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & W. Broad/Sycamore					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/19/2004					Jurisdiction						
Time Period	AM					Analysis Year	4 Lane (2008) AM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume (vph)	9	543	123	5	503	96	34	64	5	119	214	15
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08				
Timing	G = 7.0	G = 35.0	G =	G =	G = 17.0	G =	G =	G =				
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 71.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	10	590	134	5	547	104	37	70	5	129	233	16
Lane group cap.	175	1749	780	175	1749	780	209	446	379	317	446	379
w/c ratio	0.06	0.34	0.17	0.03	0.31	0.13	0.18	0.16	0.01	0.41	0.52	0.04
Green ratio	0.10	0.49	0.49	0.10	0.49	0.49	0.24	0.24	0.24	0.24	0.24	0.24
Unif. delay d1	29.0	10.9	10.0	28.9	10.8	9.8	21.4	21.3	20.6	22.8	23.5	20.7
Delay factor k	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.13	0.11
Increm. delay d2	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.0	0.9	1.1	0.0
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	29.1	11.1	10.1	29.0	10.9	9.8	21.9	21.5	20.6	23.6	24.6	20.8
Lane group LOS	C	B	B	C	B	A	C	C	C	C	C	C
Approch. delay	11.1			10.9			21.6			24.1		
Approach LOS	B			B			C			C		
Intersec. delay	14.3			Intersection LOS						B		

SHORT REPORT													
General Information						Site Information							
Analyst						Intersection	SR 20 & Hillcrest						
Agency or Co.						Area Type	All other areas						
Date Performed	11/16/2004					Jurisdiction							
Time Period	5:00 pm					Analysis Year	4 Lane (2008) AM						
Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1	
Lane group	L	T	R	L	T	R	L	T	R	L	T	R	
Volume (vph)	5	673	1	6	603	26	4	7	2	37	12	14	
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2	
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A	
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking/hr													
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Phasing	Excl. Left	Thru & RT	03		04		NS Perm		06		07		08
Timing	G = 7.0	G = 30.0	G =	G =	G = 10.0		G =	G =	G =		G =		
	Y = 4	Y = 4	Y =	Y =	Y = 4		Y =	Y =	Y =		Y =		
Duration of Analysis (hrs) = 0.25							Cycle Length C = 59.0						
Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adj. flow rate	5	732	1	7	655	28	4	8	2	40	13	15	
Lane group cap.	210	1804	805	210	1804	805	236	316	268	238	316	268	
v/c ratio	0.02	0.41	0.00	0.03	0.36	0.03	0.02	0.03	0.01	0.17	0.04	0.06	
Green ratio	0.12	0.51	0.51	0.12	0.51	0.51	0.17	0.17	0.17	0.17	0.17	0.17	
Unif. delay d1	23.0	9.0	7.1	23.0	8.7	7.3	20.4	20.4	20.4	20.9	20.5	20.5	
Delay factor k	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Increm. delay d2	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.1	0.1	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	23.0	9.1	7.1	23.1	8.9	7.3	20.4	20.5	20.4	21.3	20.5	20.6	
Lane group LOS	C	A	A	C	A	A	C	C	C	C	C	C	
Approch. delay	9.2			8.9			20.4			21.0			
Approach LOS	A			A			C			C			
Intersec. delay	9.7			Intersection LOS						A			

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & PIB					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	AM					Jurisdiction	4 Lane (2008) AM					
Time Period						Analysis Year						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	2	2	1	2	2	0	2	3	1	2	3	1
Lane group	L	T	R	L	TR		L	T	R	L	T	R
Volume (vph)	116	890	57	393	728	124	38	321	514	204	526	47
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3		3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0		0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	WB Only	Thru & RT	04			Excl. Left	Thru & RT	07			08
Timing	G = 8.0	G = 3.3	G = 32.0	G =			G = 9.0	G = 24.5	G =			G =
	Y = 4	Y = 4	Y = 4	Y =			Y = 4	Y = 4	Y =			Y =
Duration of Analysis (hrs) = 0.25							Cycle Length C = 96.8					
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	126	967	62	427	926		41	349	559	222	572	51
Lane group cap.	284	1173	523	543	1408		320	1284	716	320	1284	401
v/c ratio	0.44	0.82	0.12	0.79	0.66		0.13	0.27	0.78	0.69	0.45	0.13
Green ratio	0.08	0.33	0.33	0.16	0.41		0.09	0.25	0.45	0.09	0.25	0.25
Unif. delay d1	42.3	29.8	22.6	39.2	23.3		40.3	29.0	22.4	42.6	30.4	27.9
Delay factor k	0.11	0.36	0.11	0.33	0.23		0.11	0.11	0.33	0.26	0.11	0.11
Incram. delay d2	1.1	4.9	0.1	7.5	1.1		0.2	0.1	5.6	6.4	0.2	0.1
PF factor	1.000	1.000	1.000	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Control delay	43.4	34.7	22.7	46.7	24.4		40.5	29.1	28.0	48.9	30.7	28.0
Lane group LOS	D	C	C	D	C		D	C	C	D	C	C
Approch. delay	35.0			31.5			29.0			35.3		
Approach LOS	D			C			C			D		
Intorsec. delay	32.6			Intersection LOS						C		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & Suwanee Dam Road					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/18/2004					Jurisdiction						
Time Period	PM					Analysis Year	4 Lane (2008) PM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	1	2	1	1	1	1	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume (vph)	26	800	355	78	651	46	349	401	47	114	315	44
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	Thru & RT	03	04	NB Only	NS Perm	07	08				
Timing	G = 6.3	G = 25.5	G =	G =	G = 15.0	G = 15.0	G =	G =				
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y = 4	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 78.8						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	28	870	386	85	708	50	379	436	51	124	342	48
Lane group cap.	142	1148	512	142	1148	512	654	827	703	193	378	321
v/c ratio	0.20	0.78	0.75	0.60	0.62	0.10	0.58	0.53	0.07	0.64	0.90	0.15
Green ratio	0.08	0.32	0.32	0.08	0.32	0.32	0.19	0.44	0.44	0.20	0.20	0.20
Unif. delay d1	33.9	23.9	23.8	35.0	22.5	18.6	29.0	15.9	12.6	28.8	30.7	25.8
Delay factor k	0.11	0.31	0.31	0.19	0.20	0.11	0.17	0.13	0.11	0.22	0.43	0.11
Increment. delay d2	0.7	3.0	6.3	6.8	1.0	0.1	1.9	0.6	0.0	7.1	24.5	0.2
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	34.6	26.9	30.1	41.8	23.5	18.7	30.3	16.5	12.6	35.9	55.2	26.0
Lane group LOS	C	C	C	D	C	B	C	B	B	D	E	C
Approch. delay	28.0			25.1			22.3			47.8		
Approach LOS	C			C			C			D		
Intersec. delay	28.8			Intersection LOS						C		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & W. Broad/Sycamore					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	PM					Jurisdiction	4 Lane (2008) PM					
Time Period						Analysis Year						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume (vph)	21	845	91	5	812	169	142	153	2	179	99	12
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08				
Timing	G = 5.0	G = 24.0	G =	G =	G = 20.0	G =	G =	G =				
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 61.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	23	918	99	5	883	164	154	168	2	195	108	13
Lane group cap.	145	1396	623	145	1396	623	420	611	519	395	611	519
v/c ratio	0.16	0.66	0.16	0.03	0.63	0.30	0.37	0.27	0.00	0.49	0.18	0.03
Green ratio	0.08	0.39	0.39	0.08	0.39	0.39	0.33	0.33	0.33	0.33	0.33	0.33
Unif. delay d1	26.0	15.1	12.0	25.8	14.9	12.7	15.7	15.1	13.8	16.4	14.6	13.9
Delay factor k	0.11	0.23	0.11	0.11	0.21	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Increm. delay d2	0.5	1.1	0.1	0.1	0.9	0.3	0.5	0.2	0.0	1.0	0.1	0.0
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	26.6	16.3	12.1	25.9	15.9	13.0	16.2	15.4	13.8	17.4	14.8	13.9
Lane group LOS	C	B	B	C	B	B	B	B	B	B	B	B
Approch. delay	16.1			15.4			15.8			16.4		
Approach LOS	B			B			B			B		
Intersec. delay	15.8			Intersection LOS						B		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & Hillcrest					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	PM					Jurisdiction	4 Lane (2008) PM					
Time Period						Analysis Year						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume (vph)	25	994	13	22	971	83	7	52	21	61	20	21
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	Thru & RT	03	04	NS Perm	08	07	08				
Timing	G = 5.0	G = 24.0	G =	G =	G = 15.0	G =	G =	G =				
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 56.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	27	1080	14	24	1055	90	8	57	23	66	22	23
Lane group cap.	158	1520	678	158	1520	678	371	499	424	369	499	424
v/c ratio	0.17	0.71	0.02	0.15	0.69	0.13	0.02	0.11	0.05	0.18	0.04	0.05
Green ratio	0.09	0.43	0.43	0.09	0.43	0.43	0.27	0.27	0.27	0.27	0.27	0.27
Unif. delay d1	23.6	13.1	9.2	23.5	13.0	9.7	15.1	15.5	15.2	15.8	15.2	15.2
Delay factor k	0.11	0.27	0.11	0.11	0.26	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Increm. delay d2	0.5	1.6	0.0	0.4	1.4	0.1	0.0	0.1	0.1	0.2	0.0	0.1
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	24.1	14.7	9.2	24.0	14.4	9.8	15.1	15.6	15.3	16.0	15.2	15.3
Lane group LOS	C	B	A	C	B	A	B	B	B	B	B	B
Approch. delay	14.9			14.2			15.5			15.7		
Approach LOS	B			B			B			B		
Intersec. delay	14.6			Intersection LOS						B		

SHORT REPORT												
General Information						Site Information						
Analyst						Intersection	SR 20 & PIB					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/16/2004					Jurisdiction						
Time Period	PM					Analysis Year	4 Lane (2008) PM					
Volumes and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	2	2	1	2	2	0	2	3	1	2	3	1
Lane group	L	T	R	L	TR		L	T	R	L	T	R
Volume (vph)	222	976	19	473	990	217	47	596	618	177	373	112
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3		3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0		0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	WB Only	Thru & RT	04			Excl. Left	Thru & RT	07			08
Timing	G = 9.7	G = 4.9	G = 30.1	G =	G = 6.0	G = 13.9	G =	G =	G =			
	Y = 4	Y = 4	Y = 4	Y =	Y = 4	Y = 4	Y =	Y =	Y =			
Duration of Analysis (hrs) = 0.25						Cycle Length C = 84.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	241	1061	21	514	1312		51	648	672	192	405	122
Lane group cap.	372	1271	567	737	1602		246	840	677	246	840	262
v/c ratio	0.65	0.83	0.04	0.70	0.82		0.21	0.77	0.99	0.78	0.48	0.47
Green ratio	0.11	0.36	0.36	0.21	0.46		0.07	0.17	0.43	0.07	0.17	0.17
Unif. delay d1	35.9	24.7	17.5	30.5	19.4		36.8	33.5	23.9	38.4	31.8	31.7
Delay factor k	0.23	0.37	0.11	0.26	0.36		0.11	0.32	0.49	0.33	0.11	0.11
Increment. delay d2	3.9	5.0	0.0	2.9	3.5		0.4	4.5	32.6	14.9	0.4	1.3
PF factor	1.000	1.000	1.000	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Control delay	39.8	29.7	17.6	33.4	22.9		37.2	38.0	56.6	53.2	32.2	33.0
Lane group LOS	D	C	B	C	C		D	D	E	D	C	C
Approch. delay	31.3			25.9			47.1			38.0		
Approach LOS	C			C			D			D		
Intersec. delay	34.5			Intersection LOS						C		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & Suwanee Dam Road					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/16/2004					Jurisdiction	4 Lane (202B) AM					
Time Period	AM					Analysis Year	4 Lane (202B) AM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	1	2	2	1	1	2	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume (vph)	62	842	420	111	913	73	422	402	22	72	358	37
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	WB Only	EW Perm	04	Excl. Left	NB Only	NS Perm	08				
Timing	G = 3.1	G = 1.1	G = 31.9	G =	G = 7.7	G = 4.5	G = 12.7	G =				
	Y = 4	Y = 4	Y = 4	Y =	Y = 4	Y = 4	Y = 4	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 85.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	67	915	457	121	992	79	459	437	24	78	389	40
Lane group cap.	226	1331	970	284	1544	689	1000	885	395	299	530	237
v/c ratio	0.30	0.69	0.47	0.43	0.64	0.11	0.46	0.49	0.06	0.26	0.73	0.17
Green ratio	0.41	0.38	0.61	0.52	0.44	0.44	0.39	0.25	0.25	0.24	0.15	0.15
Unif. delay d1	15.6	22.4	9.0	13.3	18.8	14.3	19.0	27.3	24.3	25.7	34.5	31.5
Delay factor k	0.11	0.26	0.11	0.11	0.22	0.11	0.11	0.11	0.11	0.11	0.29	0.11
Increm. delay d2	0.7	1.5	0.4	1.0	0.9	0.1	0.3	0.4	0.1	0.5	5.3	0.3
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	18.3	23.9	9.3	14.4	19.7	14.3	19.3	27.7	24.4	26.1	39.8	31.9
Lane group LOS	B	C	A	B	B	B	B	C	C	C	D	C
Approch. delay	18.9			18.8			23.5			37.1		
Approach LOS	B			B			C			D		
Intersec. delay	22.2			Intersection LOS						C		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & W. Broad/Sycamore					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	AM					Jurisdiction	4 Lane (2028) AM					
Time Period						Analysis Year						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume (vph)	39	785	177	7	913	131	66	88	41	164	293	48
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08				
Timing	G = 5.0	G = 28.4	G =	G =	G = 21.0	G =	G =	G =				
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 66.4						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	42	853	192	8	992	142	72	98	45	178	318	52
Lane group cap.	133	1517	677	133	1517	677	243	589	501	409	589	501
v/c ratio	0.32	0.56	0.28	0.06	0.65	0.21	0.30	0.16	0.09	0.44	0.54	0.10
Green ratio	0.08	0.43	0.43	0.08	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Unif. delay d1	29.1	14.3	12.4	28.5	15.1	11.9	17.1	16.4	16.0	18.0	18.7	16.0
Delay factor k	0.11	0.16	0.11	0.11	0.23	0.11	0.11	0.11	0.11	0.11	0.14	0.11
Incram. delay d2	1.4	0.5	0.2	0.2	1.0	0.2	0.7	0.1	0.1	0.7	1.0	0.1
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	30.4	14.8	12.6	28.7	16.1	12.1	17.8	16.5	16.1	18.7	19.7	16.1
Lane group LOS	C	B	B	C	B	B	B	B	B	B	B	B
Apprch. delay	15.0			15.7			16.8			19.1		
Approach LOS	B			B			B			B		
Intorsec. delay	16.2			Intersection LOS						B		

SHORT REPORT													
General Information						Site Information							
Analyst						Intersection	SR 20 & Hillcrest						
Agency or Co.	Gwinnett County					Area Type	All other areas						
Date Performed	11/16/2004					Jurisdiction							
Time Period	AM					Analysis Year	4 Lane (2028) AM						
Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1	
Lane group	L	T	R	L	T	R	L	T	R	L	T	R	
Volume (vph)	24	941	25	42	1008	54	24	10	27	49	16	19	
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2	
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A	
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking/tr													
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Phasing	Excl. Left	Thru & RT	03		04		NS Perm		06		07		08
Timing	G = 8.0	G = 35.0	G =	G =	G = 15.0	G =	G =	G =	G =	G =	G =	G =	
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y =	Y =	Y =	Y =	Y =	Y =	Y =	
Duration of Analysis (hrs) = 0.25						Cycle Length C = 70.0							
Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adj. flow rate	26	1023	27	46	1096	59	26	11	29	53	17	21	
Lane group cap.	202	1774	792	202	1774	792	298	399	339	300	399	339	
w/c ratio	0.19	0.58	0.03	0.23	0.62	0.07	0.09	0.03	0.09	0.18	0.04	0.06	
Green ratio	0.11	0.50	0.50	0.11	0.50	0.50	0.21	0.21	0.21	0.21	0.21	0.21	
Unlf. delay d1	27.9	12.3	8.9	28.2	12.7	9.1	22.0	21.7	22.0	22.5	21.8	21.9	
Delay factor k	0.11	0.17	0.11	0.11	0.20	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Increm. delay d2	0.3	0.5	0.0	0.6	0.7	0.0	0.1	0.0	0.1	0.3	0.0	0.1	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	28.2	12.8	8.9	28.8	13.3	9.1	22.1	21.8	22.1	22.7	21.9	22.0	
Lane group LOS	C	B	A	C	B	A	C	C	C	C	C	C	
Approch. delay	13.0			13.7			22.1			22.4			
Approach LOS	B			B			C			C			
Intersec. delay	14.0			Intersection LOS						B			

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & PIB					
Agency or Co.	11/16/2004					Area Type	All other areas					
Date Performed	AM					Jurisdiction						
Time Period						Analysis Year	4 Lane (202a) AM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	2	2	1	2	2	0	2	3	1	2	3	1
Lane group	L	T	R	L	TR		L	T	R	L	T	R
Volume (vph)	135	821	66	539	988	170	52	440	706	280	722	65
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3		3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0		0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	WB Only	Thru & RT	04	Excl. Left	Thru & RT	07	08				
Timing	G = 6.9 Y = 4	G = 10.5 Y = 4	G = 24.0 Y = 4	G = Y =	G = 8.6 Y = 4	G = 21.6 Y = 4	G = Y =	G = Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 91.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	147	892	72	586	1259		57	478	767	304	785	71
Lane group cap.	238	935	417	786	1487		325	1204	807	325	1204	376
v/c ratio	0.62	0.95	0.17	0.75	0.86		0.18	0.40	0.95	0.94	0.65	0.19
Green ratio	0.07	0.26	0.26	0.23	0.42		0.09	0.24	0.51	0.09	0.24	0.24
Unif. delay d1	41.2	33.0	25.8	32.6	23.8		37.9	29.2	21.2	40.9	31.3	27.7
Delay factor k	0.20	0.46	0.11	0.30	0.39		0.11	0.11	0.46	0.45	0.23	0.11
Incom. delay d2	4.8	19.2	0.2	3.9	5.3		0.3	0.2	20.5	33.5	1.3	0.2
PF factor	1.000	1.000	1.000	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Control delay	46.0	52.2	26.0	36.6	29.1		38.2	29.4	41.7	74.4	32.6	28.0
Lane group LOS	D	D	C	D	C		D	C	D	E	C	C
Approch. delay	49.7			31.5			37.1			43.3		
Approach LOS	D			C			D			D		
Intersec. delay	39.1			Intersection LOS						D		

SHORT REPORT												
General Information						Site Information						
Analyst Agency or Co. <i>Gwinnett County</i> Date Performed <i>11/16/2004</i> Time Period <i>PM</i>						Intersection <i>SR 20 & Suwanee Dam Road</i> Area Type <i>All other areas</i> Jurisdiction Analysis Year <i>4 Lane (2028) PM</i>						
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	1	2	1	1	1	1	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume (vph)	105	1151	563	58	1115	58	465	551	53	122	433	45
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	S	S	S	S	S	S	S	S	S	S	S	S
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	WB Only	EW Perm	04	Excl. Left	NB Only	NS Perm	08				
Timing	G = 4.3	G = 0.3	G = 43.5	G =	G = 6.4	G = 2.2	G = 30.3	G =				
	Y = 4	Y = 4	Y = 4	Y =	Y = 4	Y = 4	Y = 4	Y =				
Duration of Analysis (hrs) = 0.25						Cycle Length C = 111.0						
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	114	1251	612	63	1212	63	505	599	58	133	471	49
Lane group cap.	152	1390	857	204	1527	682	837	613	521	169	509	432
v/c ratio	0.75	0.90	0.71	0.31	0.79	0.09	0.60	0.98	0.11	0.79	0.93	0.11
Green ratio	0.43	0.39	0.54	0.51	0.43	0.43	0.42	0.33	0.33	0.33	0.27	0.27
Unif. delay d1	35.4	31.7	19.0	21.4	27.3	18.7	25.6	36.8	26.0	29.6	39.2	30.3
Delay factor k	0.31	0.42	0.28	0.11	0.34	0.11	0.19	0.48	0.11	0.33	0.44	0.11
Increment. delay d2	18.6	8.9	2.8	0.9	3.0	0.1	1.2	30.5	0.1	21.5	23.0	0.1
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	54.0	40.0	21.9	22.3	30.3	18.8	26.8	67.4	26.0	51.1	62.2	30.4
Lane group LOS	D	D	C	C	C	B	C	E	C	D	E	C
Approach delay	35.2			29.4			47.7			57.6		
Approach LOS	D			C			D			E		
Intersec. delay	39.4						Intersection LOS			D		

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & W. Broad/Sycamore					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/16/2004					Jurisdiction						
Time Period	PM					Analysis Year	4 Lane (2028) PM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Lane group	L	T	R	L	T	R	L	T	R	L	T	R
Volume (vph)	24	1160	116	7	1134	231	194	210	10	246	136	39
% Hoavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Ext. sff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	Thru & RT	03	04	NS Perm	06	07	08				
Timing	G = 4.9	G = 27.0	G =	G =	G = 24.1	G =	G =	G =				
	Y = 4	Y = 4	Y =	Y =	Y = 4	Y =	Y =	Y =				
Duration of Analysis (hrs) = 0.25							Cycle Length C = 68.0					
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	26	1261	126	8	1233	251	211	228	11	267	148	42
Lane group cap.	128	1408	629	128	1408	629	438	660	561	367	660	561
v/c ratio	0.20	0.90	0.20	0.06	0.88	0.40	0.48	0.35	0.02	0.73	0.22	0.07
Green ratio	0.07	0.40	0.40	0.07	0.40	0.40	0.35	0.35	0.35	0.35	0.35	0.35
Unif. delay d1	29.7	19.2	19.4	29.4	18.9	14.7	17.1	16.1	14.3	19.1	15.4	14.6
Delay factor k	0.11	0.42	0.11	0.11	0.40	0.11	0.11	0.11	0.11	0.29	0.11	0.11
Increment. delay d2	0.8	7.9	0.2	0.2	6.5	0.4	0.8	0.3	0.0	7.1	0.2	0.1
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Control delay	30.5	27.0	13.6	29.6	25.5	15.1	17.9	16.5	14.3	26.2	15.6	14.6
Lane group LOS	C	C	B	C	C	B	B	B	B	C	B	B
Approch. delay	25.9			23.7			17.1			21.7		
Approach LOS	C			C			B			C		
Intersec. delay	23.5			Intersection LOS						C		

SHORT REPORT													
General Information						Site Information							
Analyst						Intersection	SR 20 & Hillcrest						
Agency or Co.	Gwinnett County					Area Type	All other areas						
Date Performed	11/16/2004					Jurisdiction							
Time Period	PM					Analysis Year	4 Lane (202B) PM						
Volume and Timing Input													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Num. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1	
Lane group	L	T	R	L	T	R	L	T	R	L	T	R	
Volume (vph)	36	1360	28	49	1333	96	10	71	22	77	28	29	
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2	
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A	
Startup lost time	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Ext. eff. green	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Arrival type	3	3	3	3	3	3	3	3	3	3	3	3	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Width	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N	
Parking/hr													
Bus stops/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Unit Extension	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Phasing	Excl. Left	Thru & RT	03		04		NS Perm		06		07		08
Timing	G = 9.0	G = 65.0	G =	G =	G = 20.0		G =	G =	G =		G =		
	Y = 4	Y = 4	Y =	Y =	Y = 4		Y =	Y =	Y =		Y =		
Duration of Analysis (hrs) = 0.25								Cycle Length C = 108.0					
Lane Group Capacity, Control Delay, and LOS Determination													
	EB			WB			NB			SB			
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adj. flow rate	39	1478	30	53	1449	104	11	77	24	84	30	32	
Lane group cap.	150	2175	971	150	2175	971	259	352	299	248	352	299	
v/c ratio	0.26	0.68	0.03	0.35	0.87	0.11	0.04	0.22	0.08	0.34	0.09	0.11	
Green ratio	0.08	0.61	0.61	0.08	0.61	0.61	0.19	0.19	0.19	0.19	0.19	0.19	
Unif. delay d1	45.4	13.6	8.1	45.8	13.4	8.5	35.2	36.4	35.4	37.3	35.5	35.6	
Delay factor k	0.11	0.25	0.11	0.11	0.24	0.11	0.11	0.11	0.11	0.11	0.11	0.11	
Increm. delay d2	0.9	0.9	0.0	1.4	0.8	0.0	0.1	0.3	0.1	0.8	0.1	0.2	
PF factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	
Control delay	46.3	14.5	8.1	47.2	14.2	8.5	35.2	36.7	35.5	38.1	35.6	35.8	
Lane group LOS	D	B	A	D	B	A	D	D	D	D	D	D	
Aprch. delay	15.1			14.9			36.3			37.1			
Approach LOS	B			B			D			D			
Intersec. delay	16.7			Intersection LOS						B			

SHORT REPORT												
General Information						Site Information						
Analyst	Gwinnett County					Intersection	SR 20 & PIB					
Agency or Co.	Gwinnett County					Area Type	All other areas					
Date Performed	11/16/2004					Jurisdiction						
Time Period	PM					Analysis Year	4 Lane (2028) PM					
Volume and Timing Input												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Num. of Lanes	2	2	1	2	2	0	2	3	1	2	3	1
Lane group	L	T	R	L	TR		L	T	R	L	T	R
Volume (vph)	293	1158	26	649	1289	298	65	818	849	243	512	142
% Heavy veh	2	2	2	2	2	2	2	2	2	2	2	2
PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Actuated (P/A)	A	A	A	A	A	A	A	A	A	A	A	A
Startup lost time	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Ext. eff. green	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type	3	3	3	3	3		3	3	3	3	3	3
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Ped/Bike/RTOR Volume	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking/hr												
Bus stops/hr	0	0	0	0	0		0	0	0	0	0	0
Unit Extension	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Phasing	Excl. Left	WB Only	Thru & RT	04		Excl. Left	Thru & RT	07		08		
Timing	G = 18.0	G = 4.3	G = 48.6	G =	G = 7.6	G = 45.5	G =	G =	G =			
	Y = 4	Y = 4	Y = 4	Y =	Y = 4	Y = 4	Y =	Y =	Y =			
Duration of Analysis (hrs) = 0.25							Cycle Length C = 144.0					
Lane Group Capacity, Control Delay, and LOS Determination												
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adj. flow rate	318	1259	28	705	1725		71	889	923	264	557	154
Lane group cap.	430	1197	534	628	1362		181	1603	500	181	1603	500
v/c ratio	0.74	1.05	0.05	1.12	1.27		0.39	0.55	1.85	1.46	0.35	0.31
Green ratio	0.13	0.34	0.34	0.18	0.40		0.05	0.32	0.32	0.05	0.32	0.32
Unif. delay d1	60.7	47.7	32.2	58.8	43.6		66.0	40.8	49.3	68.2	37.8	37.3
Delay factor k	0.30	0.50	0.11	0.50	0.50		0.11	0.15	0.50	0.50	0.11	0.11
Increm. delay d2	6.7	40.8	0.0	74.6	125.9		1.4	0.4	388.4	234.2	0.1	0.4
PF factor	1.000	1.000	1.000	1.000	1.000		1.000	1.000	1.000	1.000	1.000	1.000
Control delay	67.4	88.5	32.2	133.4	169.5		67.4	41.3	437.6	302.4	38.0	37.7
Lane group LOS	E	F	C	F	F		E	D	F	F	D	D
Approch. delay	83.3			159.0			236.6			109.5		
Approach LOS	F			F			F			F		
Intersec. delay	155.6			Intersection LOS						F		

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**Precision
Planning,
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planners, engineers, architects, & surveyors

DATE: May 24, 2005

PROJECTS: BRST-054-1(63) - S.R. 20 Bridge Widening Over the Chattahoochee River
MLS-000-00(430) – S.R. 20 Widening from east of Burnette Trail to
Peachtree Industrial Boulevard

ITEM: Initial Concept Team Meeting

ATTENDEES: See attached sign-in sheet.

Minutes Written By Adam Smith

Mr. Stanley Hill called the meeting to order and each meeting attendee was introduced.

THE FOLLOWING ITEMS WERE DISCUSSED:

1. Mr. Stanley Hill stated that the projected traffic data should be representative of the year the roadway is open to traffic.
2. S.R. 20 is classified as a rural minor arterial. (According to Gwinnett D.O.T. the classification is rural major arterial)
3. The southbound movement on Suwanee Dam Road making a left turn on S.R. 20 should be evaluated for dual left turns based on new developments in the area.
4. Guardrail should be added to the typical section attachment.
5. A 4:1 slope should be used in design where possible to avoid the use of guardrail.
6. The required right-of-way width is 140 feet. In locations where a right turn lane is proposed the required right-of-way width is 155 feet.
7. Impacts to the gravity sewer south of S.R. 20 from the Chattahoochee River to just east of Burnette Trail should be avoided if possible.
8. The traffic analysis at Suwanee Dam Rd. should take into account increased traffic due to the proposed right in/right out on Riverside Road at S.R. 20.
9. There are five signalized intersections currently in the project corridor. Capacity analysis will be conducted at all intersections.
10. The geometric design will be based on a 45 mph design speed using the 2004 AASHTO Policy on Geometric Design of Highways and Streets and other required standards.
11. The typical section is a four-lane urban section with a 44 foot depressed median to accommodate future widening to a six-lane road.

12. Intersections with a deficient angle of intersection will be improved from the existing at approximately 60° to a more desirable 70°.
13. Most cuts along the centerline will be less than 2-3 feet and most fills along the centerline will be less than 4-5 feet (some may be over ten feet).
14. The design incorporates a shift in the alignment in some locations to reduce right-of-way impacts.
15. The design at this stage maintains 1000 feet minimum spacing between median breaks. Access points should be coordinated at new developments.
16. Gwinnett County Department of Public Utilities noted that there is an existing 16" water line running parallel to S.R. 20 from Peachtree Industrial Boulevard to Suwanee Dam Road.
17. The environmental items noted were:
 - a. Stream impacts to Chattahoochee River Tributaries and Level Creek Tributaries
 - b. Pottery shards found on the Chattahoochee River
 - c. Some historic structures will be removed by private development
 - d. Some UST sites have been identified. These should be shown on the concept plan and indicated in the concept report.
 - e. The environmental document is anticipated to be an EA (Environmental Assessment) with a FONSI (Finding of No Significant Impacts).
 - f. An alignment shift may be needed to avoid a 4F situation or to minimize impacts in areas near resources such as the park.
 - g. The proposed bridge may impact the park.
18. The existing bridge is a two-lane bridge. It will be replaced with two parallel two-lane bridges designed to allow for a future widening to a six-lane roadway.
19. The anticipated schedule is right-of-way to be approved by June 30, 2006 and let to construction by 2008.
20. The City of Sugar Hill noted that approximately 30 citizens have given feedback regarding the project. The developments proposed in the area or under construction have donated about 1.5 miles of right-of-way as a condition of zoning. They want to be sure that the intersection of Sycamore Rd./West Broad St. is designed to handle the new developments in the area. The Sugar Hill Community Center will be available to use for the Public Information Open House.
21. The City of Buford asked to be kept informed regarding the project.
22. The District 1 traffic operations department wanted to be sure that they be informed regarding any new developments so they have adequate time to resolve any issues. They request to see the studies for all new signals.
23. Gwinnett County asked if the schedule could be pushed up to be able to have a joint meeting with the Forsyth widening project STP-0002-00(392), P.I. No. 002392 (currently scheduled for July 14th, 2005). Jason McCook stated that the PDP requires that 30 days must be given to GDOT for concept approval before scheduling the Public Information Meeting.
24. The concept report should be re-submitted by Friday June 10th, 2005 to accommodate scheduling the final concept team meeting.
25. Both projects will be kept on schedule. Their concepts will be submitted and processed at the same time.

26. The concepts must be completed before the preliminary plans are begun.
27. The roadway project is to be funded with bond money. The bridge is to be state funded.
28. Sugar Hill Gas is in the process of relocating existing gas line.
29. Coordination between Forsyth County and Gwinnett County and with the Forsyth widening project STP-0002-00(392), PI No. 002392 is important for the bridge replacement project.

If there are any corrections to the above meeting minutes that you consider necessary for the project record, please contact Adam Smith directly at (770) 338-8140 within 72 hours of the date of receipt.

c: Georgia Department of Transportation – Jason McCook, Stanley Hill, Kim Phillips,
James S. Moore, Brent Cook, Jeff Jacques
Gwinnett County Department of Transportation – David Tucker, Alan Chapman
MAAI – Ron Braziel, Kevin Skinner
Lowe Engineers – Abbie Dement
Precision Planning – Bill Crowder, Asad Hadadzadeh, Adam Smith
Gwinnett County Department of Public Utilities – Henry T. Hoertz
City of Sugar Hill – Bob Hail, Dan Schultz
Forsyth County – John Cunard
City of Buford – Bryan Kerlin
File 360



**Precision
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Inc.**

planners, engineers, architects, & surveyors

DATE: December 2, 2005

PROJECTS: BRST-054-1(63) - S.R. 20 Bridge Widening Over the Chattahoochee River
MLS-000-00(430) – S.R. 20 Widening from east of Burnette Trail to
Peachtree Industrial Boulevard

ITEM: Concept Team Meeting

ATTENDEES: See attached sign-in sheet.

THE FOLLOWING ITEMS PERTAINING TO MLS-000-00(430) WERE DISCUSSED:

1. Right-of-way acquisition is scheduled in FY 2007 and construction is scheduled in FY 2008. It is anticipated that right-of-way plans will be approved by December 2006.
2. PPI was requested to study the need for an auxiliary lane on S.R. 20 on the eastbound approach to Peachtree Industrial Boulevard to serve the businesses near the intersection. The driveways currently cause degradation in the level of service of the intersection. An alternate would be to provide access to these parcels by another route and close access to S.R. 20.
3. The right of way for S.R. 20 will be expanded by 5 feet on both sides of the road to accommodate utility pole placement outside clear zone. Therefore the right of way will be 75 feet either side of the roadway centerline for a total of 150 feet. The typical section will be changed to show this. In addition, all slopes and drainage structures should be shown within the proposed right-of-way or permanent easement.
4. The profile grade should be shown to be the centerline, not the inside edge of pavement. This will accommodate the future widening to a 6-lane facility.
5. The names of all parcel owners must be added to the concept layout before the Public Information Open House.
6. The latest asphalt unit prices must be changed in the cost estimate to reflect the latest pricing. PPI should check with the GDOT District 1 Engineer for recent pricing.
7. This project will require a Value Engineering Study. This study can begin after the concept is approved by GDOT. The study will be conducted by GDOT and will require PPI to provide the latest available information to GDOT.
8. Any historic properties along the project need to be shown on the concept layout either with a boundary line or some other designation.
9. An individual 404 permit will try to be avoided if possible due to limited impacts.

10. All UST sites along the project must be shown on the concept layout.
11. A more detailed discussion of the various project alternatives should be discussed under Other Alternatives Considered in the concept report. A no-build alternative and decisions on the location of the alignment should be discussed with reasons why one location was chosen over another, including discussion of the deletion of the Northern Arc..
12. Two public meetings will be required on this project. The first will be a PIOH (Public Information Open House) and the second will be an environmental Public Hearing. The PIOH should take place in late Feb. 2006 and the latter will be after the environmental document is approved.
13. Changes to the concept report should be made as soon as possible. If there are no additional comments to the meeting notes within 48 hours, then they will be considered approved.
14. If available, cut and fill limits should be shown on the concept display.
15. The profiles for cross roads at curves in the alignment of the mainline should be designed so that drivers do not have to traverse a breakover in the pavement.
16. The City of Sugar Hill indicated that they are interested in a pedestrian underpass under S.R. 20. This will need to be coordinated with GDOT regarding the feasibility and staging of this construction.
17. The culverts mentioned in the report should be identified more specifically. The name of the stream should be mentioned and any other information which might help locate the culverts.
18. At this point, the only major environmental concern is a longitudinal impact to a stream opposite Riverside Dr. near the beginning of the project.
19. GDOT Traffic Operations stated that they need to have any traffic engineering studies in hand before the PFPR.
20. The right-of-way estimate will need to be revised by the County to reflect 150 feet of right-of-way instead of 140 feet.
21. The parcel appraisals will need to be checked by GDOT before approval.

If there are any corrections to the above meeting minutes that you consider necessary for the project record, please contact Adam Smith directly at (770) 338-8140 (or by e-mail: 735as@precisionplanning.com) or David Tucker at Gwinnett County DOT at 770-822-7484 (email david.tucker@gwinnettcountry.com) within 48 hours of the date of receipt.

- c: Georgia Department of Transportation – Stanley Hill, Vinesha Pegram, Jeff Jacques, Neil Kantner, Robert Mahoney, Jason Crane, Russell McMurry, Michael Johnson, John Hancock
 Gwinnett County Department of Transportation – David Tucker, Alan Chapman
 MAAI – Ron Braziel, Chauncey Elston, Jimmy Vaughn (Forsyth County)
 Precision Planning – Bill Crowder, Asad Hadadzadeh, Adam Smith
 Pohlman Engineering – Jim Pohlman (Precision Planning)
 City of Sugar Hill – Nick Thompson, Bob Hail
 Lowe Engineers – Abbie Jones
 Bellsouth – Eddie King
 File 360