ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P. I. No. 0000308, Gordon County
STP-0000-00(308)
Red Bud Road/SR 156 at College Street/CS 782-
Intersection Improvements

OFFICE Preconstruction

DATE August 3, 2007

FROM Genetha Rice-Singleton, Assistant Director of Preconstruction

TO SEE DISTRIBUTION

SUBJECT APPROVED PROJECT CONCEPT REPORT

Attached for your files is the approval for subject project.

Attachment

DISTRIBUTION:

Brian Summers
Glenn Bowman
Ken Thompson
Michael Henry
Keith Golden
Dewayne Comer
Angela Alexander
Paul Liles
Kent Sager
BOARD MEMBER

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE: P.I. No. 0000308, Gordon County
STP-0000-00(308)
Red Bud Road/SR 156 at College Street/CS 782-
Intersection Improvements

OFFICE: Preconstruction

DATE: July 25, 2007

FROM: Genetha Rice-Singleton, Assistant Director of Preconstruction

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

SUBJECT: ***PROJECT CONCEPT REPORT***

This project is the intersection improvements on Red Bud Road/SR 156 at College Street/CS 782 in Calhoun, Georgia. Red Bud Road is a four lane urban minor arterial. The existing average daily traffic (AADT) on Red Bud Road/SR 156 in the vicinity of the intersection is approximately 16,000 VPD, and is anticipated to increase to 17,450 VPD by the build year (2010) and 25,060 VPD by the design year. Approximately 20 percent of the projected AADT in 2010 and 2030 is expected to involve left-turn movements onto College Street/CS 782. The accident and injury rates for Red Bud Road/SR 156 in the vicinity of Red Bud Road/SR 156 and College Street/CS 782 intersection for the past three years are substantially higher than statewide averages. The intersection is expected to function at a level of service B/B (AM/PM) by 2010 and LOS D/F (AM/PM) by 2030. The proposed project is expected to improve the intersection to LOS C/D (AM/PM) by 2030.

The proposed project will add center left turn lanes on Red Bud Road/SR 156 at College Street/CS 782 and a right turn lane westbound from SR 156 to College Street. Traffic will be maintained on the existing roadway during construction.

Environmental concerns include requiring a Categorical Exclusion will be prepared; a Public hearing is not required; Time saving procedures is appropriate.

The estimated costs for this project are:

	PROPOSED	APPROVED	FUNDING	PROG DATE
Construction (includes E&C)	$ 901,000	$ 972,000	L200	2009
Right-of-way	$ 820,000	$ 820,000	L200	2009
Utilities	0			

*Notification letter sent to Calhoun 8-30-05/ DOT to pay for right-of-way per District 6

P.I. No. 0000308, Gordon County
July 25, 2007

I recommend this project concept be approved.

GRS: JDQ

Attachment

CONCUR_____
Todd I. Long, P.E., Director of Preconstruction

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

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

District Six

PROJECT CONCEPT REPORT

Project Number: STP-0000-00(308)
County: Gordon
P. I. Number: 0000308

Federal Route Number: None
State Route Number: SR 156

SEE PAGES 2 & 3 FOR REGIONAL MAP
& PROJECT LOCATION SKETCH

Recommendation for approval:

DATE 7-6-07 _____ Project Manager

DATE 7/5/07 _____ Office Head/District Engineer

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

DATE _____ State Transportation Planning Administrator

DATE _____ Office of Financial Management Administrator

DATE _____ State Environmental/Location Engineer

DATE 7-19-07 _____ State Traffic Safety & Design Engineer

DATE _____ Project Review Engineer

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

District Six

PROJECT CONCEPT REPORT

Project Number: STP-0000-00(308)
County: Gordon
P. I. Number: 0000308

Federal Route Number: None
State Route Number: SR 156

SEE PAGES 2 & 3 FOR REGIONAL MAP
& PROJECT LOCATION SKETCH

Recommendation for approval:

DATE 7-6-07 _____
Project Manager

DATE 7/5/07 _____
Office Head/District Engineer

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

DATE _____
State Transportation Planning Administrator

DATE _____
Office of Financial Management Administrator

DATE _____
State Environmental/Location Engineer

DATE _____
State Traffic Safety & Design Engineer

DATE 7/13/07 _____
Project Review Engineer

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

District Six

PROJECT CONCEPT REPORT

Project Number: STP-0000-00(308)
County: Gordon
P. I. Number: 0000308

Federal Route Number: None
State Route Number: SR 156

SEE PAGES 2 & 3 FOR REGIONAL MAP
& PROJECT LOCATION SKETCH

Recommendation for approval:

DATE 7-6-07 _____ Project Manager

DATE 7/5/07 _____ Office Head/District Engineer

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

DATE 7/19/2007 _____ State Transportation Planning Administrator

DATE _____ _____ Office of Financial Management Administrator

DATE _____ _____ State Environmental/Location Engineer

DATE _____ _____ State Traffic Safety & Design Engineer

DATE _____ _____ Project Review Engineer

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: **P.I. No. 0000308** **OFFICE:** Environment/Location

DATE: July 19, 2007

FROM: Harvey D. Keepler, State Environmental/Location Engineer

TO: Genetha Rice-Singleton, Assistant Director of Preconstruction

SUBJECT: **PROJECT CONCEPT REPORT**
STP 0000-00(308) / Gordon County

The above subject concept report has been reviewed. At least one historic structure known on Red Bud east of College. There is a small stream to the north, but it appears that the buffer would be outside of ROW.

If you have any questions, please contact me at (404) 699-4401.

HDK/lc

Attachment

cc: Brian Summers
Keith Golden
Angela Alexander
Kent L. Sager
Jamie Simpson

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

District Six

PROJECT CONCEPT REPORT

Project Number: STP-0000-00(308)
County: Gordon
P. I. Number: 0000308

Federal Route Number: None
State Route Number: SR 156

SEE PAGES 2 & 3 FOR REGIONAL MAP
& PROJECT LOCATION SKETCH

Recommendation for approval:

DATE 7-6-07 — Curtis D. Cowan
Project Manager

DATE 7/5/07 — [signature]
Office Head/District Engineer

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

DATE _____ — _____
State Transportation Planning Administrator

DATE _____ — _____
Office of Financial Management Administrator

DATE 7.11.07 — [signature]
State Environmental/Location Engineer

DATE _____ — _____
State Traffic Safety & Design Engineer

DATE _____ — _____
Project Review Engineer

7-9-07

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

District Six

PROJECT CONCEPT REPORT

Project Number: STP-0000-00(308)
County: Gordon
P. I. Number: 0000308

Federal Route Number: None
State Route Number: SR 156

SEE PAGES 2 & 3 FOR REGIONAL MAP
& PROJECT LOCATION SKETCH

Recommendation for approval:

DATE 7-6-07 Curtis D. Comer
Project Manager

DATE 7/5/07
Office Head/District Engineer

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

DATE _____
State Transportation Planning Administrator

DATE 7-26-07 James T. Simpson
~~Office of~~ Financial Management Administrator

DATE _____
State Environmental/Location Engineer

DATE _____
State Traffic Safety & Design Engineer

DATE _____
Project Review Engineer

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

District Six

PROJECT CONCEPT REPORT

Project Number: STP-0000-00(308)
County: Gordon
P. I. Number: 0000308

Federal Route Number: None
State Route Number: SR 156

SEE PAGES 2 & 3 FOR REGIONAL MAP
& PROJECT LOCATION SKETCH

Recommendation for approval:

DATE 7-6-07 _____ Project Manager

DATE 7/5/07 _____ Office Head/District Engineer

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

DATE _____ _____ State Transportation Planning Administrator

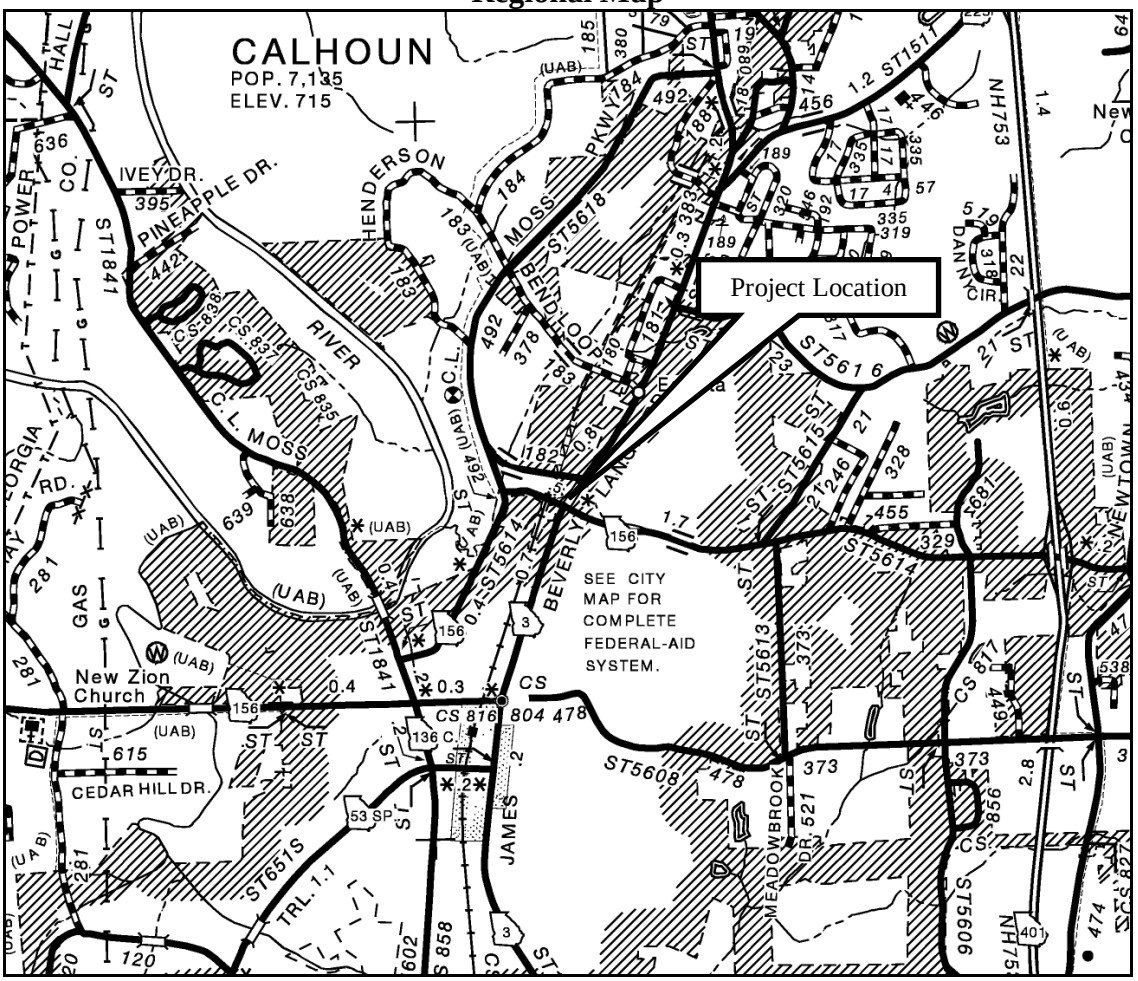
DATE _____ _____ Office of Financial Management Administrator

DATE _____ _____ State Environmental/Location Engineer

DATE _____ _____ State Traffic Safety & Design Engineer

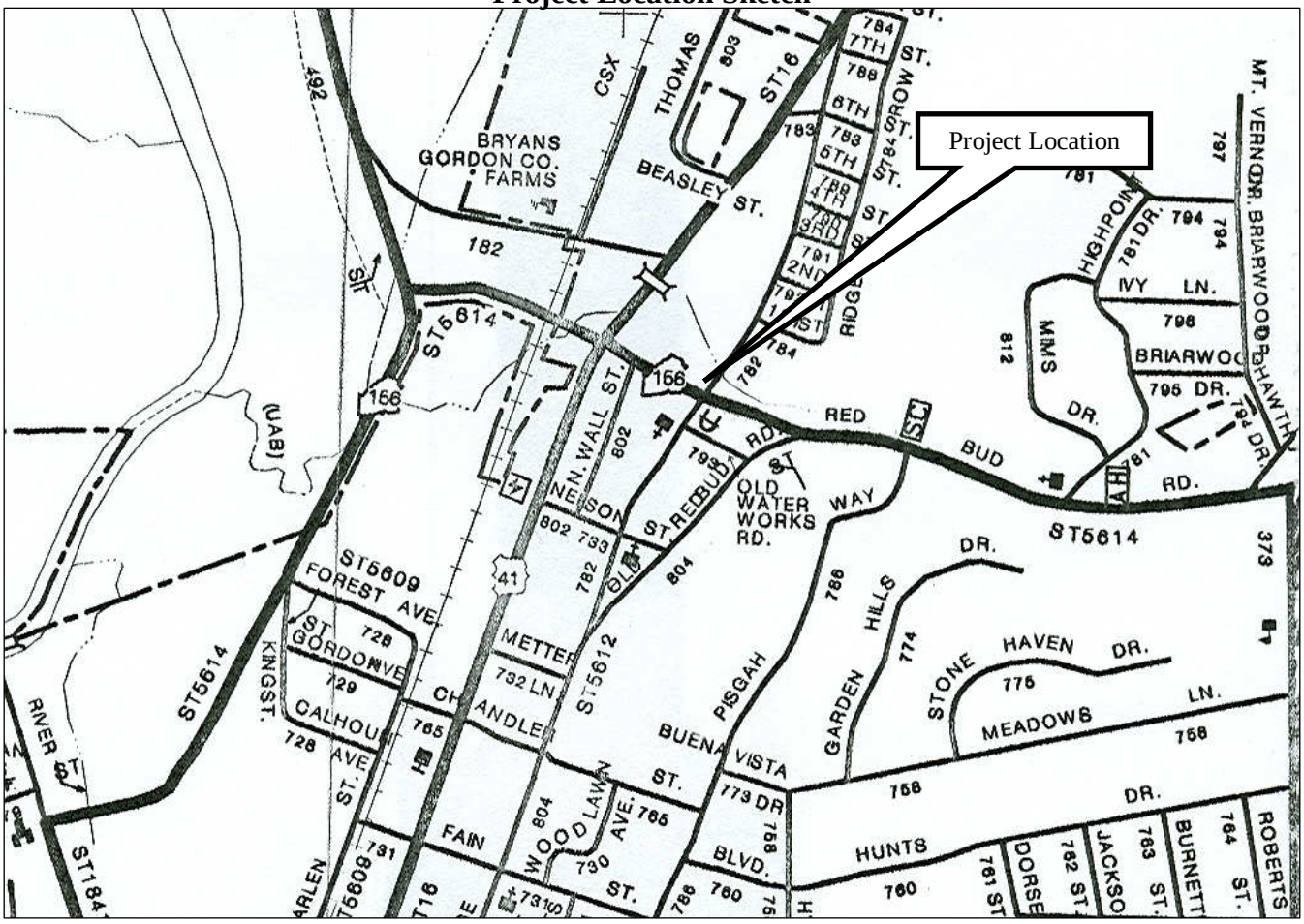
DATE _____ _____ Project Review Engineer

Regional Map



Intersection improvements on Red Bud Road (SR 156) at College Street (CS 782) in Calhoun

Project Location Sketch



NEED AND PURPOSE

The purpose of this project is to improve traffic operations at the signalized intersection of Red Bud Road/SR 156 and College Street/CS 782. The addition of center left-turn lanes on Red Bud Road/SR 156 at this intersection would provide storage for vehicles making left turns, which would allow the mainline traffic to flow unimpeded.

The existing average annual daily traffic (AADT) on Red Bud Road/SR 156 in the vicinity of the Red Bud Road (SR 156)/College Street (CS 782) intersection is approximately 16,000 vehicles per day (vpd), and is anticipated to increase to approximately 17,450 vpd by the build year (2010) and 26,060 vpd by the design year (2030). Approximately 20 percent of the projected AADT in 2010 and 2030 is expected to involve left-turn movements onto College Street/CS 782.

Level of service (LOS) is a qualitative measure used to describe the operating conditions of a roadway. The *Highway Capacity Manual* (Transportation Research Board, 2000) generally describes LOS in terms of factors such as speed, travel time, freedom to maneuver, traffic interruptions, driver comfort and convenience, and safety. LOS is represented by a ranking letter from "A" to "F," with "A" representing free-flow conditions and "F" representing traffic breakdown conditions. Levels of service are described as follows:

LOS	Description
A	Vehicles move in free-flow traffic conditions to select their desired speed. Motorists have great maneuverability within the traffic stream. General level of travel comfort and convenience is excellent.
B	Vehicles move in stable-flow traffic conditions. Motorists' operating speeds are somewhat affected by other vehicles. Motorists experience a slight decline in the freedom to maneuver within the traffic stream.
C	Vehicles move in stable-flow traffic conditions. Motorists' operating speeds and maneuverability are substantially affected by other vehicles. General level of comfort and convenience declines noticeably.
D	The stable traffic flow begins to become unstable as a result of a higher density of vehicles. Travel speeds and freedom to maneuver are severely restricted. General level of comfort and convenience is poor. Operational problems occur with small increases in traffic volumes.
E	Vehicles move in unstable-flow traffic conditions. Speeds are uniformly reduced. Traffic volumes are at or approaching the roadway's capacity level. Motorists' freedom to maneuver within the traffic stream is extremely constrained. General level of travel comfort and convenience is extremely poor. Breakdowns in the transportation system are caused by small increases in traffic volume.
F	Vehicles move in forced-flow (stop & go) traffic conditions. Traffic volumes exceed the roadway capacity level. Hazardous queues develop. Traffic congestion causes traffic to be stopped for long periods of time.

The traffic volumes referenced above indicate that the project corridor is experiencing increasing traffic volumes that will result in a reduction in vehicular safety and increased congestion. Table 1 shows the existing (2007) LOS, projected build year (2010) LOS, and projected design year (2030) LOS for both the No-Build and Build conditions for the Red Bud Road (SR 156)/College Street (CS 782) intersection.

Table 1. Existing and Projected LOS for the Red Bud Road (SR 156)/College Street (CS 782) Intersection under the No-Build and Build Conditions

Year	Red Bud Road/SR 156		College Street/CS 782		Overall LOS
	EB (AM/PM)	WB (AM/PM)	NB (AM/PM)	SB (AM/PM)	AM/PM
2007	A/A	B/B	B/A	B/B	B/B
2010 (No Build)	A/A	B/B	B/B	B/B	B/B
2010 (Build)	C/C	B/B	C/C	B/B	B/B
2030 (No Build)	A/B	E/F	E/C	D/F	D/F
2030 (Build)	C/E	C/D	D/E	B/D	C/D

As shown in Table 1, the Red Bud Road (SR 156)/College Street (CS 782) intersection is expected to function at a LOS B/B (AM/PM) by 2010 and LOS D/F (AM/PM) by 2030. The addition of eastbound and westbound left-turn lanes on Red Bud Road/SR 156 with other improvements under the proposed project is expected to improve the intersection to a LOS C/D (AM/PM) by 2030.

Safety analysis parameters, such as total accident rates, fatality rates, and injury rates, were developed for Red Bud Road/SR 156 in the vicinity of the Red Bud Road (SR 156)/College Street (CS 782) intersection. A comparison was made of the rates along existing Red Bud Road/SR 156 in this area with the corresponding statewide averages. The historical accident data at this intersection for the years 2003, 2004, and 2005 was obtained from the Georgia DOT. The results are summarized in Table 2. Of the 24 total accidents that occurred between 2003 and 2005, six were rear-end accidents, 16 were angle-type accidents, and two were sideswipes (same direction).

Table 2. Accident Data for the Red Bud Road (SR 156)/College Street (CS 782) Intersection

Year	Total Accidents	Accident Rate*	Statewide Average Accident Rate*	Total Fatalities	Fatality Rate*	Statewide Average Fatality Rate*	Total Injuries	Injury Rate*	Statewide Average Injury Rate*
2003	7	1,633	585	0	0.00	1.51	3	700	223
2004	7	1,553	509	0	0.00	1.44	2	444	194
2005	10	2,598	554	0	0.00	1.63	2	520	213

*rates per 100 million vehicle miles

As shown in Table 2, the accident and injury rates for Red Bud Road/SR 156 in the vicinity of the Red Bud Road (SR 156)/College Street (CS 782) intersection for the past three years are substantially higher than statewide averages. However, the fatality rate for Red Bud Road/SR 156 for these years is lower than statewide averages.

Description of the proposed project: This project consists of the addition of center left turn lanes on Red Bud Road (SR 156) at College Street (CS 782) and right turn lane westbound from SR 156 to College Street in the city of Calhoun in Gordon County. This project begins approximately 400 feet west of College Street (MP 11.66) and ends approximately 1300 feet east of College Street (MP 12.04) for a total project length of approximately 0.38 miles.

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

PDP Classification: Major ( ) Minor (X)

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

Functional Classification: Urban Minor Arterial

U. S. Route Number(s): None **State Route Number(s):** SR 156

Traffic (AADT):

Current Year: (2010) 17,450 Design Year: (2030) 25,060

Existing design features:

- Typical Section: Four 12-foot lanes with no shoulder
- Posted speed: 45 mph
- Minimum radius for curve: 600 feet
- Maximum super-elevation rate for curve: 8 %
- Maximum grade: 5 %
- Width of right of way: 80 feet (East of College St.) & 66 feet (West of College St.)
- Major structures: None
- Major interchanges or intersections along the project: College Street
- Existing length of roadway segment and the beginning mile logs for each county segment. MP 11.66 to MP 12.04 (0.38 miles)

Proposed Design Features:

- Proposed typical section(s): SR 156: four 12-foot lanes with a 14-foot center left turn lane, curb and gutter, 12-foot shoulders, 12-foot westbound right turn lane ; College Street: Increase SB left turn lane to 400 feet.
- Proposed Design Speed: SR 156: 45 mph; College Street: 30 mph
- Proposed Maximum grade Mainline: 5 %
- Maximum grade allowable: 5 %
- Proposed Maximum grade Side Street: 5 %
- Maximum grade allowable: 9 %
- Proposed Maximum grade driveway: 10 %
- Proposed Minimum radius for curve: 600 feet
- Maximum radius allowable: 600 feet
- Proposed Maximum super-elevation rate for curve: 8 %
- Proposed Maximum degree of curve: 6 degrees
- Maximum degree allowable: 10 degrees
- Right-of-Way:
    - Width: 107 feet max. (East of College St.) & 83 feet (West of College St.)
    - Easements: Temporary (X), Permanent ( ), Utility ( ), Other ( ).
    - Type of access control: Full ( ), Partial ( ), By Permit (X), Other ( ).
    - Number of parcels: 5 Number of displacements:
        - Business: None
        - Residences: None
        - Mobile homes: None
        - Other: None
- Structures:
    - Bridges: None
    - Retaining walls: None
- Major intersections and interchanges: College Street
- Traffic control during construction: Traffic will be maintained during construction
- Design Exceptions to controlling criteria anticipated:

	UNDETERMINED	YES	NO
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)
SPEED DESIGN:	( )	( )	(X)
VERTICAL CLEARANCE:	( )	( )	(X)
BRIDGE WIDTH:	( )	( )	(X)
BRIDGE STRUCTURAL CAPACITY:	( )	( )	(X)

Attachments:

1. Preliminary Cost Estimate:
    a. Construction including E&C,
    b. Right of Way, and
    c. Utilities.
2. Typical Sections,
3. Minutes of Initial Concept Team Meeting
4. Minutes of Concept Team Meeting
5. Traffic Data

- Design Variances: A design variance is proposed to reduce the required sixteen feet shoulder to a twelve feet shoulder. The variance is required to minimize impacts to the stream north of S.R. 156.

- Environmental concerns: Section 404, stream buffer variance requirements, water quality, historic resources.

- Level of environmental analysis:
  - Are Time Savings Procedures appropriate? Yes ( ), No (X),
  - Categorical exclusion (X),
- Utility involvements: The following have possible utilities located within the project limits:

BellSouth (AT&T)	Telecommunications	Mike Garrett	706-232-0880
Atlanta Gas Light Co	Gas	Rob Hembree	404-584-3363
GA. Power Co. (Dist.)	Power	Jon Jeffries	706-232-8961
Comcast Communications	Cable TV	Tim Gregory	706-232-0997
City of Calhoun	Power	Larry Vickery	706-602-6127
City of Calhoun	Water & Sewer	Jerry Crawford	706-602-6078
North Georgia EMC	Power	Paul Ruud	706-259-3394

Project responsibilities:

- Design: District 6 Pre-construction – Arcadis & Coastline Consulting Services
- Right of Way Acquisition, Wilbur Smith & Associates.
- Relocation of Utilities, GDOT
- Letting to contract, GDOT
- Supervision of construction, GDOT
- Providing material pits, Contractor
- Providing detours, N/R

Coordination

- Kick-off Meeting – 1/25/07
- Initial Concept team meeting – 4/20/07
- Concept meeting date and brief summary - 6/28/07, minutes attached
- Public involvement: TBD.
- Local government comments:
- Other projects in the area: MLP-3(226) Gordon P.I # 621360

Scheduling – Responsible Parties' Estimate

- Time to complete the environmental process: 12 Months
- Time to complete preliminary construction plans: 4 Months
- Time to complete right of way plans: 3 Months
- Time to complete the Section 404 Permit: 12 Months
- Time to complete final construction plans: 3 Months
- Time to complete to purchase right of way: 8 Months

Other alternates considered: No build

Comments:

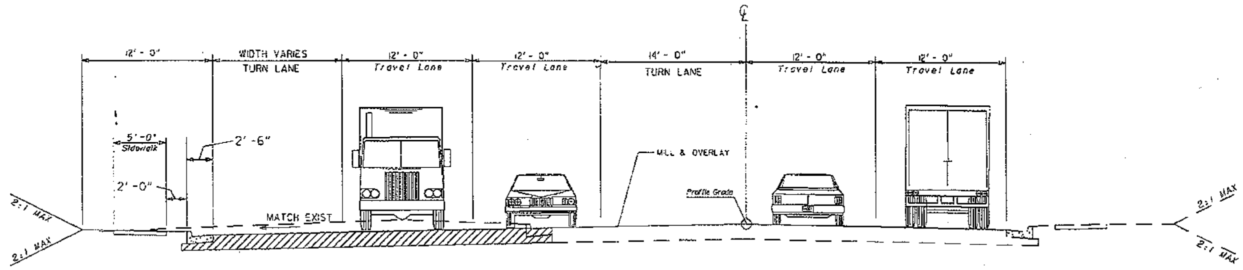
PRILIMINARY COAST ESTIMATE

PROJECT COST	
A. RIGHT-OF-WAY:	
1. PROPERTY (LAND & EASEMENT)	$235,405
2. DISPLACEMENTS; RES: 0, BUS: 0, M.H.: 0	$0
3. OTHER COST (DAMAGES, ADM. / COURT, INFL., ETC.)	$584,595
SUBTOTAL: A	**$820,000**
B. REIMBURSABLE UTILITIES:	
1. TRANSMISSION LINES	
2. DISTRIBUTION LINES	
3. OTHER UTILITIES	
SUBTOTAL: B	$0
C. CONSTRUCTION:	
1. MAJOR STRUCTURES:	
None	$0
SUBTOTAL: C-1	$0
2. GRADING AND DRAINAGE:	
a. GRADING COMPLETE	$75,000
b. DRAINAGE	$150,000
SUBTOTAL: C-2	**$225,000**
3. BASE AND PAVING:	
a. GR AGGR BASE CRS - ($25 / ton)	$52,371
b. ASPHALT PAVING:	
1. Superpave Base Course - 25mm, 4" depth ($90/ton)	$66,825
2. Superpave Intermed Course - 19mm, 2" depth ($90 / ton)	$33,413
3. Superpave Surface Course - 12.5mm, 1.5" depth ($90 / ton)	$81,062
c. Milling Existing Pavement	$52,000
SUBTOTAL: C-3.b	**$181,299**
SUBTOTAL: C-3	**$285,670**
4. LUMP ITEMS:	
a. TRAFFIC CONTROL	$125,000
b. CLEARING AND GRUBBING	$0

c. GRASSING	$10,000
d. EROSION CONTROL	$12,500
SUBTOTAL: C-4	**$147,500**
5. MISCELLANEOUS:	
a. SIGNING & STRIPING	$35,000
b. CONCRETE CURB AND GUTTER - ($25 / ft)	$47,500
c. 4" SIDEWALK - ($60 / SY)	$42,222
SUBTOTAL: C-5	**$124,722**
6. SPECIAL FEATURES :	
SUBTOTAL: C-6	$0

ESTIMATE SUMMARY		
A. RIGHT-OF-WAY:		$820,000
B. REIMBURSABLE UTILITIES:		$0
C. CONSTRUCTION:		
1. MAJOR STRUCTURES	$0	
2. GRADING AND DRAINAGE	$225,000	
3. BASE AND PAVING	$285,670	
4. LUMP ITEMS	$147,500	
5. MISCELLANEOUS	$124,722	
6. SPECIAL FEATURES	$0	
SUBTOTAL CONSTRUCTION COST	$782,892	
E. & C. (15%)	$117,433	
TOTAL CONSTRUCTION COST	**$900,325**	
TOTAL PROJECT COST		**$1,720,325**

COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GORDON COUNTY	STP-000-001308		



SR 156/RED BUD ROAD

NTS

REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION
	OFFICE: GDOT DISTRICT 6
	TYPICAL SECTIONS
	S.R. 156 AT COLLEGE STREET

Initial Concept Team Meeting Minutes

Project Number: STP-0000-00(308)
P. I. Number: 0000308
Federal Route Number: None
State Route Number: SR 156
Intersection improvements on Red Bud Road (SR 156) at College Street (CS 782) in Calhoun County: Gordon

Date: April 20,2007
Location: GDOT District 6

Attendees:

David Moore	GDOT	David.Moore@dot.state.ga.us
David Ray	GDOT	David.Ray@dot.state.ga.us
Reggie Ward	GDOT	Reggie.Ward@dot.state.ga.us
Steve Sanders	GDOT	Steve.Sanders@dot.state.ga.us
Galen Barrow	GDOT-DEL	Galen.Barrow@dot.state.ga.us
Rodney Givens	CCS	RGivens@coastline-consulting.com
Kevin Mckeen	Arcadis	Kmckeen@arcadis-us.com
Mikias Engida	CCS	MEngida@coastline-consulting.com

- Galen Barrow noted that the proposed right turn lane impact on the stream necessitates an application for a Nationwide 23 permit.
- Steve Sanders noted that the existing acceleration lane at the shopping center does not have to be put back.
- It was noted that College Street currently consists of 10' lanes, CCS should create 11' lane alternatives and evaluate the impact.
- David Moore noted that all shoulder widths to be 16' minimum, or else a design variance is needed.
- David Moore stated that sidewalks should be proposed as per ADA policy.
- Assume mill and overlay for all existing pavement within project limits.

Concept Team Meeting Minutes

Project Number: STP-0000-00(308)
P. I. Number: 0000308
Federal Route Number: None
State Route Number: SR 156
Intersection improvements on Red Bud Road (SR 156) at College Street (CS 782) in Calhoun County: Gordon

Date: June 28, 2007
Location: GDOT District 6
Attendees:

Reggie Ward	GDOT (Liaison)	Reggie.Ward@dot.state.ga.us
Steve Sanders	GDOT (Traffic)	Steve.Sanders@dot.state.ga.us
Galen Barrow	GDOT (Envir.)	Galen.Barrow@dot.state.ga.us
Royce Turner	GDOT (Utilities)	Royce.Turner@dot.state.ga.us
Rodney Givens	CCS	RGivens@coastline-consulting.com
Mikias Engida	CCS	MEngida@coastline-consulting.com
Kevin McKeen	ARCADIS	Kmckeen@arcadis-us.com
Alex Levy	ARCADIS	Alex.Levy@arcadis-us.com
Xuejun Fan	ARCADIS	Xuejun.Fan@arcadis-us.com
Joe Leoni	ARCADIS	Joe.Leoni@arcadis-us.com
Robin Olsen	ARCADIS	Rolsen@arcadis-us.com
Mickie McJunkin	Wilbur Smith & Assoc.	Mmcjunkin@wilbursmith.com

- Kevin McKeen introduced the project.

- Rodney Givens presented the concept display and the concept report and opened the floor for questions and comments.

- Alex Levy noted that the turn around for the 404 permits is 45 days and that the turn-around for a stream buffer variance is approximately 60 days, assuming normal schedules.

- Royce Turner with GDOT Utility acknowledged his presence and noted that he has not taken a close look at the project, but anticipated power poles and water lines to be affected by the project at minimum.

- Mickie McJunkin noted that Wilbur Smith & Associates is working on a turn-key project on US-41. She suggested that GDOT should consider undertaking R/W acquisition work of the two projects together. Of particular concern are the two properties that that would be impacted by both projects (the gas station and the bank). Currently, the US-41 project is redeveloping their concept. She also noted that R/W appraisals will take 60 days to complete.

- Galen Barrow noted that future storm water run-off should be taken into consideration in the design and in the environmental document.

- Mickie McJunkin stated that the Right of Way Cost Estimate has been approved by GDOT on June 18, 2007.

Traffic Analysis

Intersection Improvements on Red Bud Road (SR 156) at College Street (CS 782) in Calhoun

Prepared for:
Georgia DOT

Prepared by:
ARCADIS U.S., Inc.
2849 Paces Ferry Road
Suite 400
Atlanta
Georgia 30339
Tel 770.431.8666
Fax 770.435.2666

Our Ref.:
GA063709.0001

Date:
April 2007

Table of Contents

1. Introduction

In this study, traffic forecast and capacity analysis were performed for the intersection improvements on Red Bud Road (SR 156) at College Street (CS 782) in Calhoun, Gordon County to identify the roadway improvements needed to improve future traffic operations at this intersection. Traffic forecast was performed for open year (2010) and design year (2030), and capacity analysis was performed for a.m. and p.m. peak hours for existing conditions, open year and design year no-build and build conditions. Historical accidents were also analyzed.

2. Existing Conditions

2.1 Roadway Conditions

Currently Red Bud Road (SR 156) is a two-way four-lane road with no turning bays at the intersection of College Street. College Street is a two-way two-lane road with left turning bays. It is a signalized intersection.

2.2 Accident analysis

Three years (2003 - 2005) of historical accident data for this intersection was collected from Georgia DOT Crash Reporting Unit. Accident rate, injury rate and fatality rate were calculated and compared with statewide average rates, as shown in Table 1.

Table 1 Accident Analysis

Item\Year		2003	2004	2005
Crash Types	Angle	6	4	6
	Head On	0	0	0
	Not A collision with a Motor Vehicle	0	0	0
	Rear End	0	2	4
	Sideswipe-Same Direction	1	1	0
	Sideswipe-Opposite Direction	0	0	0
Total Accidents		7	7	10
Total Non-Fatal Injuries		3	2	2
Total Fatalities		0	0	0
Accident Rate (per 100 MVMT)		1633	1553	2598
Statewide Accident Rate (per 100 MVMT)		585	509	554

Non-Fatal Injury Rate (per 100 MVMT)	700	444	520
Statewide Non-Fatal Injury Rate (per 100 MVMT)	223	194	213
Fatality Rate (per 100 MVMT)	0	0	0
Statewide Fatality Rate (per 100 MVMT)	1.51	1.44	1.63

The comparison with statewide average accident rate indicates that for this intersection, the overall accident rates for year 2003, 2004 and 2005 were 1633 accidents per 100 million vehicle miles traveled (100 MVMT), 1553 accidents per 100 MVMT, and 2598 accidents per 100 MVMT, respectively, and they were 179 percent, 205 percent and 369 percent higher than the statewide average accident rates for urban minor arterial roads. The non-fatal injury rates were 214 percent, 129 percent, and 144 percent higher than the statewide average, respectively. The study area did not witness a fatal accident in the three years.

3. Traffic Projections

Traffic projections were performed for open year and design year. Historical traffic count data were reviewed and analyzed for determination of future traffic growth rate.

3.1 Existing Traffic Data Collection

In January 2007, 48-hour bi-directional counts were conducted on Red Bud Road, and peak hour turning movement counts were conducted for this intersection. The existing traffic count data indicates that the average K factor, the percentage of peak hour volume to 24-hour volume, for the 24-hour traffic count locations is 9%, and this value will be used in traffic projection.

3.2 Future Traffic Growth Rates

Historical traffic count data (1997 – 2005) was collected for Georgia DOT traffic count (TC) stations within the study area. Linear regression analysis method was used for analyzing the historical traffic growth and the average annual growth rates were calculated. The growth rates show an upward trend from 2% to 5%. It has been determined that 3% annual growth rate from existing year (2007) to base year (2010), and 2% from base year to design year (2030) were used in this project.

3.3 Future Traffic Projections

Georgia DOT seasonal factors were applied to the intersection peak hour turning movement counts to reflect the peak hour volumes for an average day. The adjusted intersections counts were balanced to generate existing (2007) design hourly volumes (DHV) and converted to average daily traffic (ADT) volumes based on the K factor obtained from traffic counts. Georgia DOT seasonal factors and axle factors were used to adjust the 24-hour count data to average daily traffic (ADT) level. These adjusted ADT volumes were used to validate the roadway segment ADT volumes converted based on the peak hour turning volumes.

Future traffic growth rates were applied to base year ADT volumes to calculate open year (2010) and design year (2030) ADT. Turning movement percentages of the existing peak hour turning movement counts were applied to calculate the open year and design year design hourly volumes (DHV). The ADT and DHV volumes are included in Appendix A.

4. Capacity Analysis

Capacity analysis is the primary method for the evaluation of the quality of service of highway and street facilities and level of service (LOS) is a quality measure describing operational conditions for these facilities. *Highway Capacity Manual 2000 (HCM 2000)* published by Transportation Research Board outlines the procedures of capacity analysis and the criteria defining LOS.

Six (6) LOS are defined in the HCM 2000. Different letters designate different level of service, ranging from A to F, with LOS A representing the best operating conditions and LOS F the worst. The LOS criteria for signalized intersections are listed in Table 2.

Table 2 LOS Criteria for Signalized Intersections

LOS	Control Delay per Vehicle (Sec)
A	<=10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

Table 4 Build Capacity Analysis Results (Alternative 1)

Location	Open Year (2010)			Design Year (2030)			Percentage of Delay Reduction for Design Year (Comparing with No-Build)	
	Delay (Sec)		LOS	Delay (Sec)		LOS	AM	PM
	AM	PM	AM/PM	AM	PM	AM/PM		
SR 156 @ College Street	16	18	B/B	27	48	C/D	36	56

Table 5 Build Capacity Analysis Results (Alternative 2)

Location	Open Year (2010)			Design Year (2030)			Percentage of Delay Reduction for Design Year (Comparing with No-Build)	
	Delay (Sec)		LOS	Delay (Sec)		LOS	AM	PM
	AM	PM	AM/PM	AM	PM	AM/PM		
SR 156 @ College Street	17	18	B/B	28	48	C/D	33	56

Capacity analysis was performed for this intersection for a.m. and p.m. peak hours for existing (2007) conditions, open year (2010) and design year (2030) no-build and build scenarios. *Synchro 6* software was used for capacity analysis in this study.

4.1 Existing and No-Build Conditions

Capacity analysis for a.m. and p.m. peak hours for the existing (2007) conditions, and open year (2010) and design year (2030) no-build conditions was performed and the results are summarized in Table 3.

Table 3 Existing and No-Build Capacity Analysis Results

Location	Existing Conditions (2007)			No-Build Conditions (2010)			No-Build Conditions (2030)		
	Delay (Sec)		LOS	Delay (Sec)		LOS	Delay (Sec)		LOS
	AM	PM	AM/PM	AM	PM	AM/PM	AM	PM	AM/PM
SR 156 @ College Street	11	12	B/B	12	14	B/B	42	105	D/F

The capacity analyses results summarized in the above table indicate that currently this intersection operates at an acceptable level of service, LOS B during both a.m. and p.m. hours. Future year no-build analysis reveals that in the open year this intersection will operate at LOS B during both a.m. and p.m. hours, whereas in design year it is estimated that that this intersection will operate at LOS F during p.m. hour with tremendously high intersection delay.

4.2 Build Conditions

Based on the results of the no-build analysis, improvements that will help in creating better operating conditions at this intersection were identified. Two alternatives were summarized in Tables 6 and 7 separately. The only difference between Alternative 1 and Alternative 2 is that Alternative 2 recommended an exclusive right turn lane at westbound of SR 156. The capacity analysis results were summarized in Tables 4 and 5. The results show that adding a right turn lane at westbound of SR 156 has no major impact to the intersection capacity. However it is recommended to improve the traffic safety since the westbound right turn volume is quite heavy (255 vehicle/hour in a.m. 2030). Based on *ITE Traffic Engineering Handbook,* an exclusive right turn lane is warranted for a roadway (45-55 mph design speed) if main steam DHV per single lane exceeds 180 vehicles per hour with more than 5 vehicles per hour turning right to the side street. This proposed right turn lane meets the warrant.

Table 6 Recommended Improvements – Alternative 1

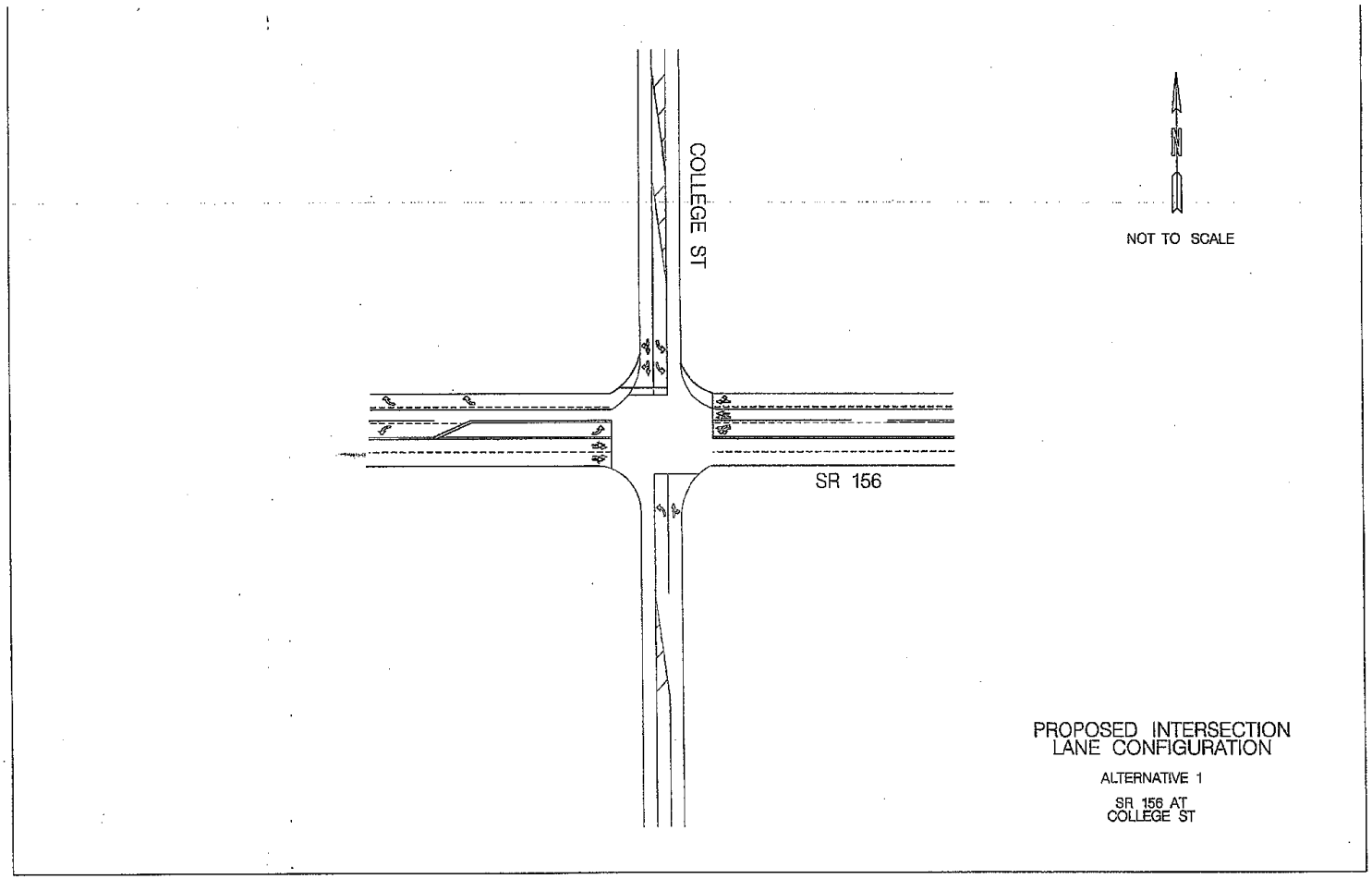
Locations	SR 156		College Street		Notes
	EB	WB	NB	SB	
SR 156 @ College Street	Add a left turn lane (250') Keep 2 through lanes	Add 450' left turn lane, tie to existing 4-lane section) Drop to 1 thru lane at US41		Increase left turn lane to 400'	Existing Signalized Intersection Lengths indicate desired finished length, excluding tapers. Typical taper length is 180'

Table 7 Recommended Improvements – Alternative 2

Locations	SR 156		College Street		Notes
	EB	WB	NB	SB	
SR 156 @ College Street	Add a left turn lane (250') Keep 2 through lanes	Add 450' left turn lane, tie to existing 4-lane section) Add a right turn lane (350') Drop to 1 thru lane at US41		Increase left turn lane to 400'	Existing Signalized Intersection Lengths indicate desired finished length, excluding tapers. Typical taper length is 180'

Appendix A

Traffic Volume Diagram



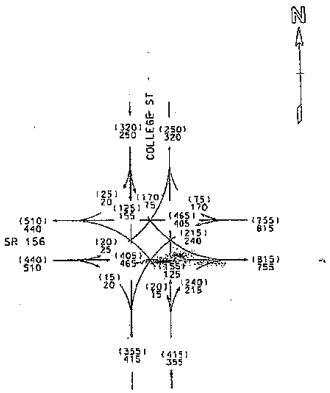
PROPOSED INTERSECTION
LANE CONFIGURATION

ALTERNATIVE 1

SR 156 AT
COLLEGE ST

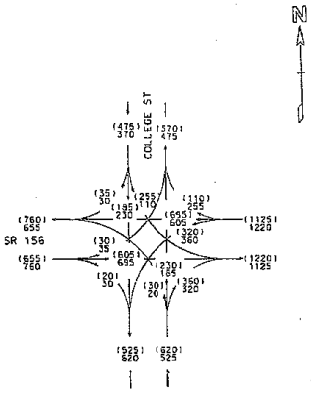
OPEN YEAR (2010) DHV

2010 AM DHV= 000
2010 PM DHV= (000)



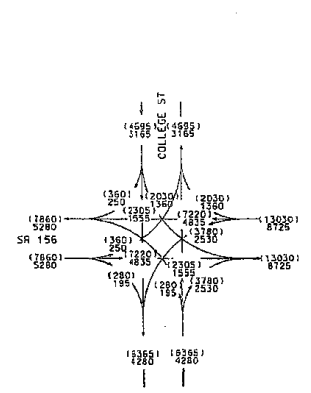
DESIGN YEAR (2030) DHV

2030 AM DHV= 000
2030 PM DHV= (000)



OPEN YEAR (2010)& DESIGN YEAR (2030) ADT

2010 ADT = 000
2030 ADT = (000)

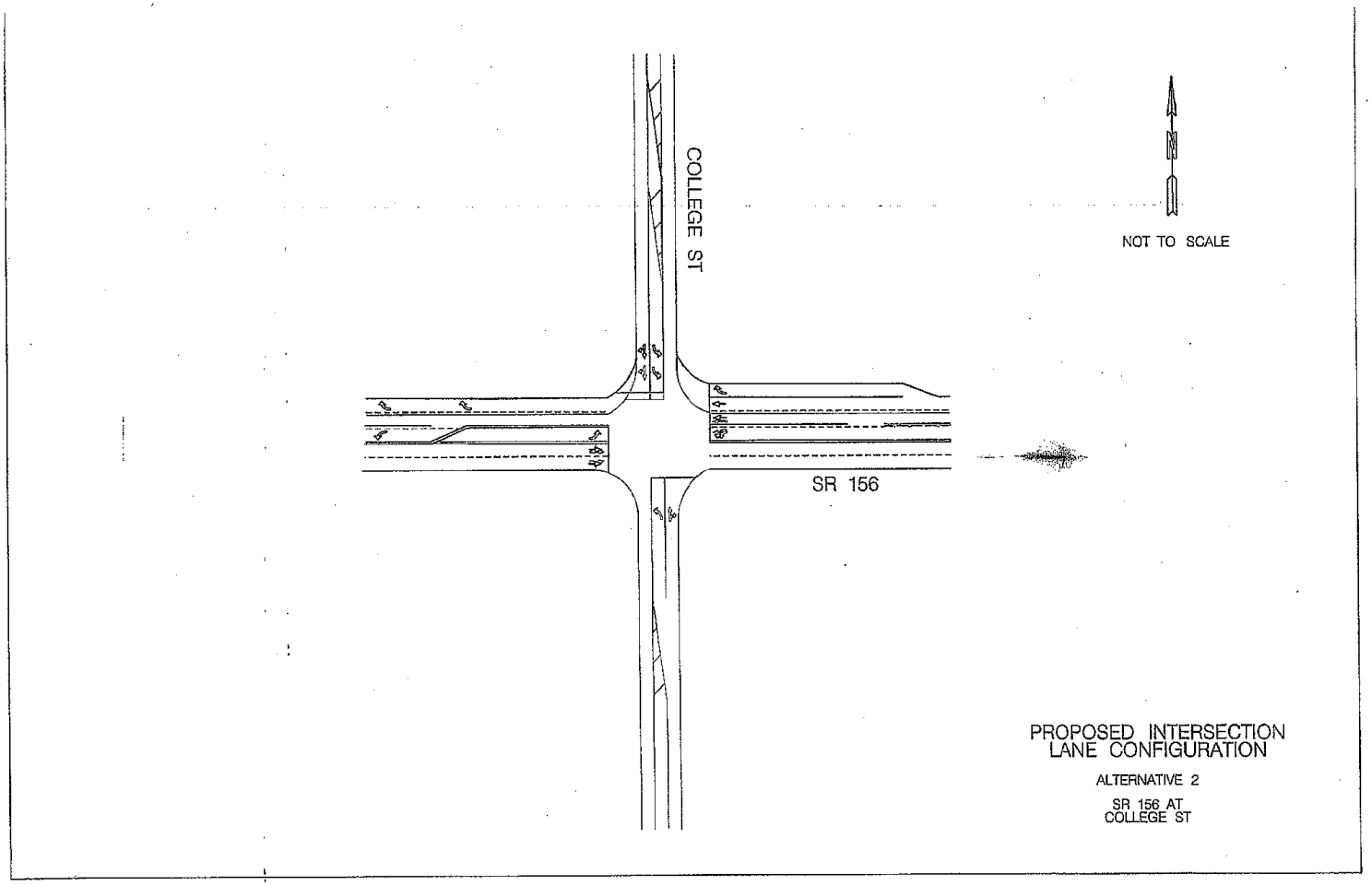


GORDON COUNTY
SR 156 @ COLLEGE ST
PROJ #:STP-0000-00(308)

T = 3%
24 HR. T = 5%
S.U. = 3%
COMB. = 2%

Appendix B

Intersection Sketches



PROPOSED INTERSECTION
LANE CONFIGURATION

ALTERNATIVE 2

SR 156 AT
COLLEGE ST