ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P. I. No. 0006365, Newton County
CSSTP-0006-00(365)
SR 120 & SR 212 Interim Intersection Improvements

OFFICE Preconstruction

DATE July 26, 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.

Attachment

DISTRIBUTION:

Brian Summers
Harvey Keepler
Ken Thompson
Michael Henry
Keith Golden
Joe Palladi
Paul Liles
Mike Thomas
BOARD MEMBER

D.O.T. 66

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. No. 0006365, Newton County **OFFICE** Preconstruction
CSSTP-0006-00(365)
SR 20 and SR 212 Interim Intersection Improvements **DATE** July 18, 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 consists of interim intersection improvements on SR 20 and SR 212 in Newton County. The intersections of SR 20 and SR 212 create two very closely spaced unsignalized intersections as they converge, creating a three-leg intersection and diverge 300' south at a four-leg intersection. The southern intersection of SR 20, SR 20/SR 212, SR 212, and Brown Bridge Road/CR 511 (herein referred to as the four leg intersection), and the intersection of SR 20/SR 212, SR 212/Scott Highway, and SR 20/McDonough Highway (herein referred to as the three-leg intersection) have been experiencing high levels of congestion and intersection delay. This portion of the county is experiencing increasing traffic volumes due to rapid development in this suburban area of the metro Atlanta region. This project is an interim project to relieve congestion and improve operations of these two intersections until the construction of GDOT project STP-869(13), P.I. No. 730907-, which is the widening of SR 20.

This project proposes to add left turn bays to each of the approaches of the four leg and three leg intersections and also adds right turn bays to the three leg intersection. The project also proposes to add a temporary traffic signal to the four leg intersection and a permanent traffic signal to the three leg intersection to improve operations and decrease overall intersections delay. It is proposed at the four leg intersection that opposing legs of SR 20 and SR 212 be widened to the west to avoid a cemetery in the southeastern quadrant while the SR 20 and Brown Bridge Road opposing legs will be widened symmetrically to limit the project footprint along these legs. The existing two lane roads currently meet horizontal and vertical design criteria for their speed designs and can be overlaid and widened to achieve their ultimate width. There is an existing 3' raised median on SR 2 southbound that will be removed as part of the project. The improvements at the three leg intersection are consistent with the plans for the future project and all of the proposed work will stay in place. The intersection improvements proposed at the four leg intersection, including the signal, will be altered as part of the overall project which will include cul-de-sacing the existing Brown Bridge Road and SR 20 and moving the temporary signal to a permanent signal location proposed in this plans.

At the three leg intersection, SR 212 will be realigned slightly to the north to achieve further separation from the four leg intersection and improve the skew angle which will benefit turning radii and sight distance for vehicles trying to access SR 20.

Because this is an interim project, the outside shoulders are being designed for rural conditions to limit the amount of wasted materials when the future project is constructed.

Environmental concerns include requiring a Categorical Exclusion be prepared; a public hearing open house is not required; time saving procedures are appropriate.

The estimated costs for this project are:

	PROPOSED	APPROVED	FUNDING	PROG DATE
Construction (includes E&C and inflation)	$1,395,000	$1,474,000	L240	LUMP
Right-of-Way & Utilities*	Local	Local		

*Newton County signed PMA for PE, right-of-way, utilities and 100% of construction cost over $500K.

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

INTERDEPARTMENTAL CORRESPONDENCE

FILE: STP-0006-00(365) Newton
P.I. No. 0006365
Intersection Improvements

OFFICE: Engineering Services

DATE: July 10, 2006

FROM: Brian K. Summers, P.E., Project Review Engineer REW

TO: Meg Pirkle, P.E., Assistant Director of Preconstruction

SUBJECT: **REVISED CONCEPT REPORT**

We have reviewed the Revised Concept Report submitted July 6, 2006, and have no comments.

The costs for this project are:

Construction	$1,207,000
Inflation	$60,350
E & C	$126,735
Reimbursable Utilities	$0.00 (Newton Co. anticipated)
Right of Way	$72,500

REW

c: Mike Thomas, Attn: Alan Smith

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
District Two

PROJECT CONCEPT REPORT

SR 20 AND SR 212 INTERIM INTERSECTION IMPROVEMENTS

Project Number: CSSTP-0006-00(365)
P.I. NO. 0006365
County: NEWTON

FEDERAL ROUTE NO: N/A
STATE ROUTE NO: 20 & 212

Prepared by:

DATE 6/30/06 _____ Project Manager

DATE 6-30-06 _____ District Engineer

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

DATE _____ State Transportation Planning Administrator

DATE _____ State Financial Management Administrator

DATE _____ State Environmental / Location Engineer

DATE 7/10/06 _____ Project Review Engineer

DATE _____ State Traffic Safety and Design Engineer

DATE _____ State Bridge & Structural Design Engineer

SCORING RESULTS AS PER MOG 2440-2

Project Number:	County:	PI No.:
STP-0006-00(365)	Newton	0006365

Report Date:	Concept By:
June 30, 2006	DOT Office: District 2
☒ Concept Stage	Consultant: URS Corp.

Project Type: Choose One From Each Column			
	☐ Major	☒ Urban	☐ ATMS
	☒ Minor	☐ Rural	☐ Bridge Replacement
			☐ Building
			☐ Interchange Reconstruction
			☒ Intersection Improvement
			☐ Interstate
			☐ New Location
			☐ Widening & Reconstruction
			☐ Miscellaneous

FOCUS AREAS	SCORE	RESULTS
Presentation	100	
Judgement	100	
Environmental	100	
Right of Way	100	
Utility	100	
Constructability	100	
Schedule	100	

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

DATE July 6, 2006

FROM Alan Smith, District Design Engineer

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

SUBJECT **CSSTP-0006-00 (365) Newton County**
Interim Intersection Improvements to SR 20 at SR 212
Project Concept Report

Attached is the original copy of the Revised Project Concept Report for your further handling for approval in accordance with the Plan Development Process (PDP).

The above mentioned project consists of interim intersection improvements and the installation of a signal on SR 20 at SR 212 in Newton County.

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

DATE 7/7/06

State Transportation Planning Administrator

Distribution:

Brian Summers
Harvey Keepler
Keith Golden
Joe Palladi
Jamie Simpson

NOTICE OF LOCATION AND DESIGN APPROVAL

CSSTP-0006-00(365) NEWTON COUNTY
P. I. No. 0006365

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

Date of Location and Design Approval: July 26, 2006

This project proposes interim operational improvements at two intersections in Newton County. The first intersection is SR 20/212 with SR 20/Brown Bridge Road and the second intersection is SR 212 with SR20 located 400 feet north of the first intersection. These improvements include adding left and right turn bays and signalization. The project lies entirely within Newton County and within Land Lots 51 and 78 of Land District 10 and within GMD 641.

Drawings of maps or plats of the proposed project as approved are on file and are available for inspection at the Georgia Department of Transportation.

Bryan Gibbs, Area Engineer
Department Of Transportation
Madison Area Office
1570 Bethany Road
Madison, Georgia 30434
(706) 343-5836

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

Mike Thomas, PE, District Engineer
Department Of Transportation
801 Fourth Street/SR 15 South
Tennille, Georgia 31089
(478) 552-4601
Mike.Thomas@dot.state.ga.us

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

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
District Two

PROJECT CONCEPT REPORT

SR 20 AND SR 212 INTERIM INTERSECTION IMPROVEMENTS

Project Number: CSSTP-0006-00(365)
P.I. NO. 0006365
County: NEWTON

FEDERAL ROUTE NO: N/A
STATE ROUTE NO: 20 & 212

Prepared by:

DATE 6/30/06 _____ _____
Project Manager

DATE 6-30-06 _____ _____
District Engineer

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

DATE _____ _____
State Transportation Planning Administrator

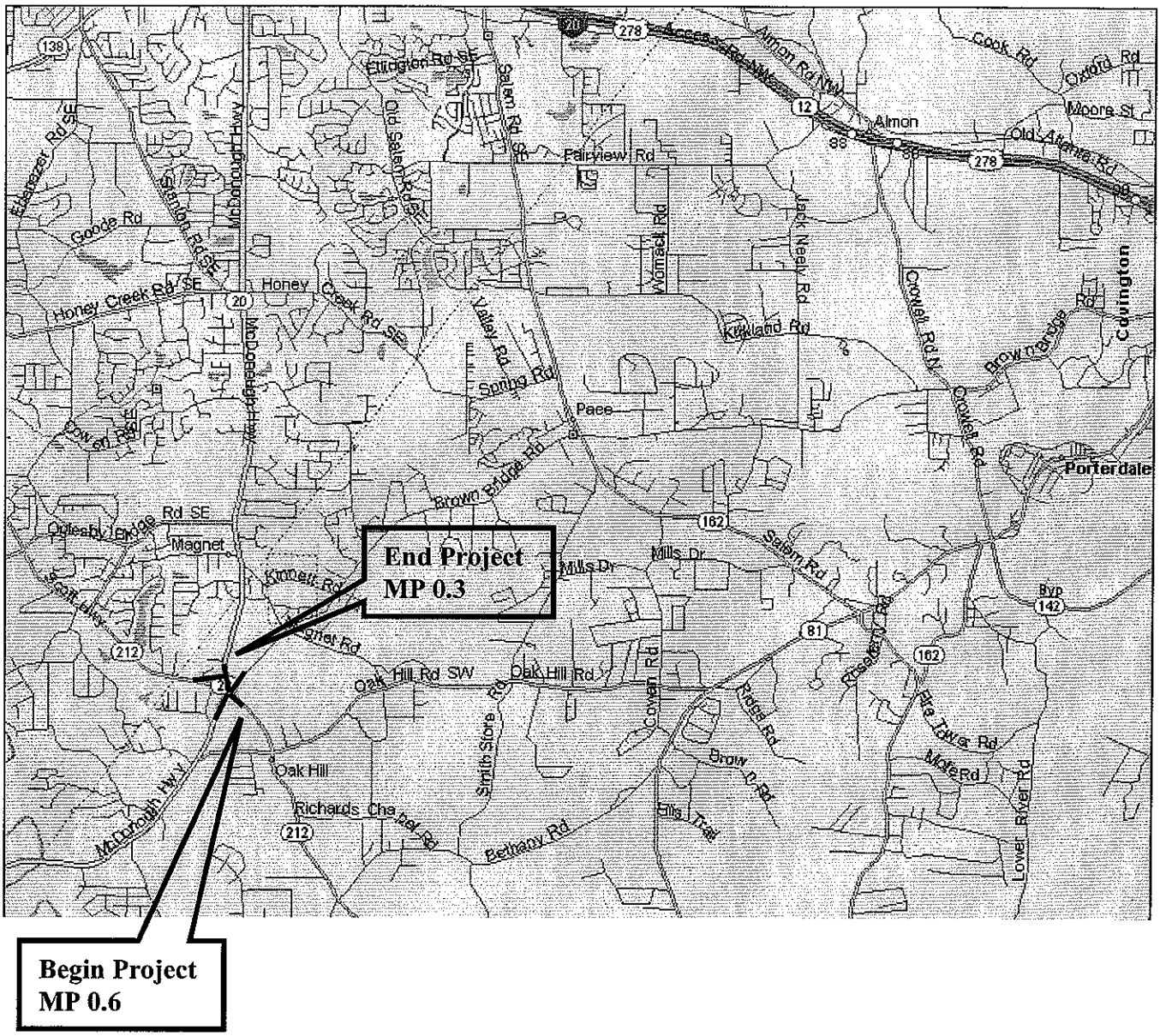
DATE _____ _____
State Financial Management Administrator

DATE _____ _____
State Environmental / Location Engineer

DATE _____ _____
Project Review Engineer

DATE _____ _____
State Traffic Safety and Design Engineer

DATE _____ _____
State Bridge & Structural Design Engineer



LOCATION MAP

Project: CSSTP-0006-00(365) Newton County, PI No: 0006365
Description: SR 20 and SR 212 Interim Intersection Improvements

Need and Purpose:

The intersections of State Route (SR) 20 and SR 212 create two very closely spaced unsignalized intersections in western Newton County as they converge creating a three- leg intersection and diverge 300 feet South at a four-leg intersection. The southern intersection SR 20, SR 20/SR 212, SR 212, and Brown Bridge Road/ CR511 (herein referred to as the four-leg intersection) and the intersection of SR 20/SR 212, SR 212/Scott Highway, and SR 20/McDonough Highway (herein referred to as the three-leg intersection) have been experiencing high levels of congestion and intersection delay. This portion of the county is experiencing increasing traffic volumes due to rapid development in this suburban area of the Metro Atlanta region. There is increasing residential and commercial growth surrounding these intersections which has lead to unsatisfactory levels of service and intersection delay. Newton County is listed by the United States Census Bureau as one of the top 20 fastest growing counties for a number of years and its infrastructure is trying to develop to meet the increased travel demand on its transportation system.

This project is an interim project to relieve congestion and improve operations of these two intersections until the construction of GDOT Project STP-869(13), P.I.# 730907, which is the widening of SR20. The future SR 20 widening project, which proposes to widen the existing 2 lane road to 4 lanes with a 20-foot raised median, starts just below these intersections and ends at its intersection with Honey Creek Road in Rockdale County. This future project also proposes to relocate Brown Bridge Road and the opposing SR 20 leg of the four-legged intersection south of Mount Zion Baptist Church and its cemetery approximately 1000 feet from the current four leg intersection. The relocation of these two legs of the intersection will provide significant distance between these two intersections and allow them to function at acceptable levels of service. The future widening project is scheduled to let in FY2011.

Description of the proposed project:

This project proposes to add left turn bays to each of the approaches of the four-leg and three-leg intersections and also adds right turn bays to the three-leg intersection. The project also proposes to add a temporary traffic signal to the four-leg intersection and a permanent traffic signal to the three-leg intersection to improve operations and decrease overall intersection delay. It is proposed at the four-leg intersection that opposing legs of SR 20 and SR 212 will be widened to the west to avoid a cemetery in the southeastern quadrant while the SR 20 and Brown Bridge Road opposing legs will be widened symmetrically to limit the project footprint along these legs. The existing two lane roads currently meet horizontal and vertical design criteria for their speed designs and can be overlaid and widened to achieve their ultimate width. There is an existing 3-foot raised median on SR 20 southbound that will be removed as a part of the project. The improvements at the three-leg intersection are consistent with the plans for the future project and all of the proposed work will stay in place. The intersection improvements proposed at the four-leg including the signal will be altered as a part of the overall project which will include cul-de-sacing the existing Brown Bridge Road and SR 20 and moving the temporary signal to a permanent signal location proposed in those plans.

At the three-leg intersection SR 212 will be realigned slightly to the north to achieve further separation from the four-leg intersection and improve the skew angle which will benefit turning radii and sight distance for vehicles trying to access SR 20.

Because this is an interim project, the outside shoulders are being designed for rural conditions to limit the amount of wasted materials when the future project is constructed.

Is the project located in a Non-attainment area? ☒ **Yes** ☐ **No**
This project will not add capacity but improve operations and decrease delay on both intersections improving air quality.

PDP Classification: Major ☐, or Minor ☒

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

Functional Classification: SR 20 – Urban Minor Arterial

SR 212 – Urban Minor Arterial

U. S. Route Number(s): N/A **State Route Number(s): 20 & 212** **County Route Number(s): 511**

Traffic (AADT):

SR 20:	Build Year: (2007): 19,200	Design Year (2012): 24,500
SR 212:	Build Year: (2007): 10,500	Design Year (2012): 13,400

Existing design features:

- Typical section:
  SR 20: Two 12 ft travel lanes with variable width grassed shoulders and defined drainage. A 3-foot raised median exists on the south bound leg of the 4-leg intersection.
  SR 212: Two 12 ft travel lanes with variable width grassed shoulders.

- Posted Speed:
  SR 20:.....45 mph
  SR 212:.....55 mph
- Minimum radius of curve:
  SR 20 and SR 212:.....1450 ft
  Maximum superelevation rate for curve:
  SR 20:.....5.50 %
  SR 212:.....6.00 %
- Maximum degree of curvature:
  SR 20 and SR 212.....4°
- Maximum grade:
  SR 20:.....3.50 %
  SR 212:.....2.00 %
- Width of Right of Way:
  SR 20 and SR 212:.....100 ft and 80 ft
  Length of Roadway Segment:
  SR 20:.....0.30 miles
  SR 212:.....0.29 miles

Is the project located in a Non-attainment area? ☒ **Yes** ☐ **No**
This project will not add capacity but improve operations and decrease delay on both intersections improving air quality.

PDP Classification: Major ☐, or Minor ☒

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

Functional Classification: SR 20 – Urban Minor Arterial

SR 212 – Urban Minor Arterial

U. S. Route Number(s): N/A **State Route Number(s): 20 & 212** **County Route Number(s): 511**

Traffic (AADT):

SR 20:	Build Year: (2007): 19,200	Design Year (2012): 24,500
SR 212:	Build Year: (2007): 10,500	Design Year (2012): 13,400

Existing design features:

- Typical section:
  SR 20: Two 12 ft travel lanes with variable width grassed shoulders and defined drainage. A 3-foot raised median exists on the south bound leg of the 4-leg intersection.
  SR 212: Two 12 ft travel lanes with variable width grassed shoulders.

- Posted Speed:
  SR 20:.....45 mph
  SR 212:.....55 mph
- Minimum radius of curve:
  SR 20 and SR 212:.....1450 ft
  Maximum superelevation rate for curve:
  SR 20:.....5.50 %
  SR 212:.....6.00 %
- Maximum degree of curvature:
  SR 20 and SR 212.....4°
- Maximum grade:
  SR 20:.....3.50 %
  SR 212:.....2.00 %
- Width of Right of Way:
  SR 20 and SR 212:.....100 ft and 80 ft
  Length of Roadway Segment:
  SR 20:.....0.30 miles
  SR 212:.....0.29 miles

Proposed Design Features:

Proposed Typical section (see attached):
4-leg intersection: 1-through lane in each direction with left turn lanes on all approaches with 8' rural shoulders. SR 20-Brown Bridge Road will be symmetrically widened while SR 20/212 will be widened 12' to the west. Both roads will be overlaid.
3-leg intersection: SR 212 is realigned to T-intersect with SR 20 at 90 degrees. This provides an additional 150 ft separation between the two intersections. SR 20 is widened 12 ft to the west. The intersection has 1 through lane in each direction with exclusive left turn lanes on the northbound and eastbound approach and right turn lanes at southbound and eastbound approaches with 8' rural shoulders.

- Proposed design speed:
  SR 20:.....45 mph
  SR 212:.....55 mph
- Proposed maximum grade:
  SR 20 and SR 212:.....4.00 %
- Maximum grade allowable:
  SR 20:.....7.00 %
  SR 212:.....6.00 %
- Proposed maximum grade driveway:.....11.00 %
- Proposed minimum radius of curve:
  SR 20:.....1450 ft
  SR 212:.....1200 ft
- Minimum radius allowable:
  SR 20:.....643 ft
  SR 212:.....1060 ft

  Proposed superelevation rate for curves:
  SR 20:.....5.50 %
  SR 212:.....6.00 %
- Right of way:
  SR 20 and SR 212:.....100 ft and 80 ft

  - Easements: Temporary ☒, Permanent ☐, Utility ☐, Other ☐.
  - Type of access control: Full ☐, Partial ☐, By Permit ☒, Other ☐.
  - Number of parcels: 1 Number of displacements:
    - Business: 0
    - Residences: 0
    - Mobile homes: 0
    - Other: 0

- Structures: It is anticipated that a wall will be necessary to avoid impact with a historic property in the NW quadrant of the 4-leg intersection.
- Major intersections: 4-leg: SR 20/212 and Brown Bridge
  3-leg: SR 20 and SR 212

- Design Exceptions to controlling criteria anticipated:

	UNDETERMINED	YES	NO
▪ HORIZONTAL ALIGNMENT:	☐	☐	☒
▪ ROADWAY WIDTH:	☐	☐	☒
▪ SHOULDER WIDTH:	☐	☒	☐
▪ VERTICAL GRADES:	☐	☐	☒
▪ CROSS SLOPES:	☐	☐	☒
▪ STOPPING SIGHT DISTANCE:	☐	☐	☒
▪ SUPERELEVATION RATES:	☐	☐	☒
▪ HORIZONTAL CLEARANCE:	☐	☐	☒
▪ SPEED DESIGN:	☐	☐	☒
▪ VERTICAL CLEARANCE:	☐	☐	☒
▪ BRIDGE WIDTH:	☐	☐	☒
▪ BRIDGE STRUCTURAL CAPACITY:	☐	☐	☒

It is anticipated that full shoulders cannot be provided due to the proximity of headstones adjacent to the edge of pavement in the southeast quadrant of the 4-leg intersection and full shoulders cannot be provided west of SR 20 at the location of a historic property.

- Design Variances – None expected
- Environmental concerns: Historic Impacts and Cemetery adjacent to project
- Level of environmental analysis:
  - Are Time Savings Procedures appropriate? Yes ☒, No ☐,
  - Categorical exclusion ☒,
  - Environmental Assessment/Finding of No Significant Impact (FONSI) ☐, or
  - Environmental Impact Statement (EIS) ☐.
- Utility involvements: *Georgia Power, Newton County Public Works, Snapping Shoals EMC, Bellsouth Telecommunications, Georgia Natural Gas.*

Project responsibilities:

- Design, URS Corporation
- Right of Way Acquisition, Newton County
- Relocation of Utilities, Newton County
- Letting to contract, GDOT
- Providing material pits, Contractor

Coordination

- Concept meeting date and brief summary: *Concept Meeting was held March 14, 2006 at the Newton County Courthouse. Everyone that attended agreed that no revisions to the proposed design are required.*
- P. A. R. meetings, dates and results: *Not required*
- FEMA, USCG, and/or TVA: *None*
- Public involvement. *A public information meeting is not required as a part of the Categorical Exclusion. Residents were made aware of interim solution for this intersection at PIOH for STP-869(13).*
- Local government comments: *Newton County is eager to act on this project due to the intersection delay.*

- Other projects in the area:
    - Widening of SR 20 from SR 212 to Honey Creek Road – -STP-869(13) Newton/Rockdale PI# 730907
- Other coordination to date: *None*
- Railroad Coordination: *None*

Scheduling – Responsible Parties' Estimate

- Time to complete the environmental process: 9 months
- Time to complete preliminary construction plans: 6 months
- Time to complete right of way plans: 1 months
- Time to complete the Section 404 Permit: 0 months
- Time to complete final construction plans: 4 months
- Time to purchase right of way: 6 months
- Other major items that will affect the project schedule: N/A

Other Alternates considered:

1. Scenario #1 – Both intersections unsignalized. The operational level of service was unacceptable.
2. Scenario #2 - Signal proposed at both SR 20/212 (4-leg) and SR 20/212 (3-leg) intersection. This is the preferred alternate and yields the best operational level of service.
3. Scenario #3 - Signal only at the SR 20/212 (4-leg) intersection. The operation level of service of this alternate was satisfactory but could not produce sufficient gaps in traffic to allow 3-leg intersection operate properly.
4. Scenario #4 - Signal only at the SR 20/212 (3-leg) intersection. The operational level of service was unacceptable.

Comments: CORSIM analysis was used to determine the preferred alternate and a summary letter is attached showing the findings. This project is designed as an interim improvement, so traffic is based on a design year of 2012 rather than a standard 20 year design horizon.

Attachments:

1. Cost Estimate
2. Typical Sections
3. CORSIM memo
4. Capacity Analysis
5. Concept Team Meeting Minutes
6. Concept Team Meeting Sign-In Sheet
7. L & D Approval
8. Concept Layout

PRELIMINARY COST ESTIMATE

PROJECT: SR20 @ SR212 Intersection

PREPARED BY: Nick Castronova/URS Corporation PROJECT LENGTH: 0.50 miles

ESTIMATED LETTING DATE: None

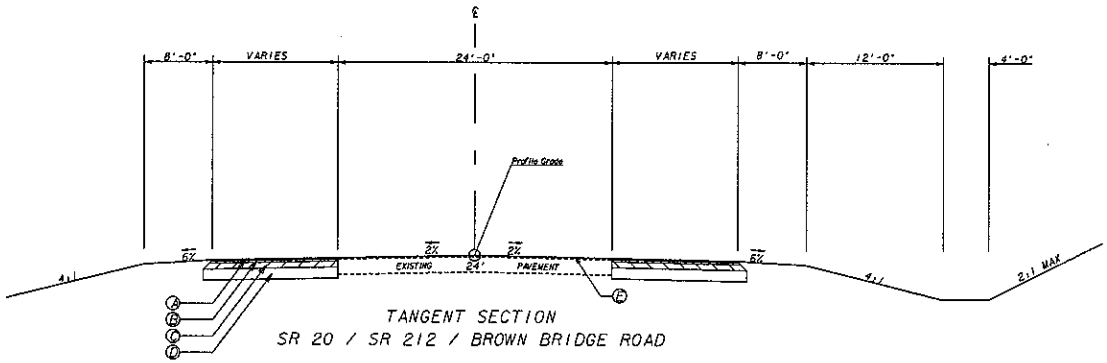
☐PROGRAMMING PROCESS ☒CONCEPT DEVELOPMENT ☐DURING PROJECT DEV.

PROJECT COST		
A. RIGHT-OF-WAY:		
1. PROPERTY (LAND & EASEMENT)	$	50,000.00
2. DISPLACEMENTS: RES: 0 BUS: 0 M.H.: 0	$	0.00
3. OTHER COST (ADM./COST, INFLATION)	$	22,500.00
SUBTOTAL:A	$	72,500.00
B. REIMBURSABLE UTILITIES:		
1. RAILROAD	$	0.00
2. TRANSMISSION LINES	$	0.00
3. SERVICES	$	0.00
SUBTOTAL:B	$	0.00
C. CONSTRUCTION:		
1. MAJOR STRUCTURES (WALL)	$	50,000.00
SUBTOTAL:C-1	$	50,000.00
2. GRADING AND DRAINAGE:		
a. EARTHWORK (50,000 cy @ $5.00)	$	250,000.00
b. DRAINAGE:		
Pipe - 18" (200 ft @ $35/ft)	$	7,000.00
Pipe - 24" (50 ft @ $40/ft)	$	2,000.00
Pipe - 30" (80 ft @ $50/ft)	$	4,000.00
Flared End Sections (10 @ $500/EA)	$	5,000.00
SUBTOTAL:C-2	$	268,000.00
3. BASE AND PAVING:		
a. AGGREGATE BASE (11,000 tons @ $20/ton)	$	220,000.00

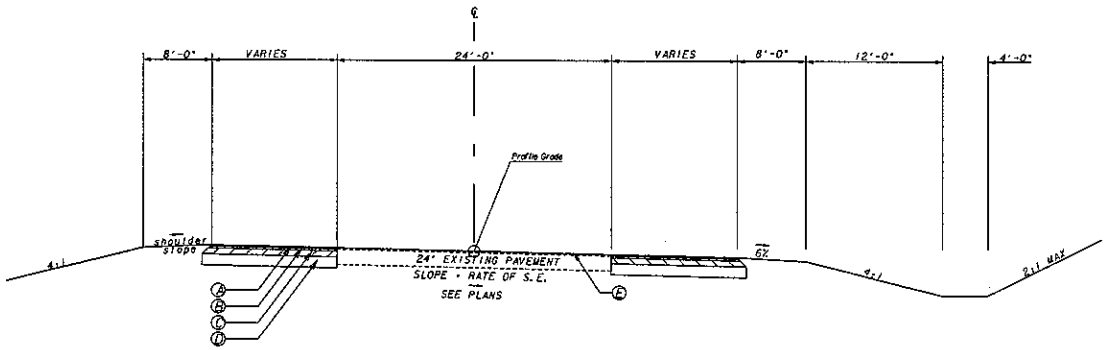
PROJECT COST		
b. ASPHALT PAVING:		
12.5mm Superpave (1640 tons @ $60/ton)	$ 98,400.00	
19mm Superpave (1010 tons @ $60/ton)	$ 60,600.00	
25mm Superpave (1430 tons @ $60/ton)	$ 85,800.00	
	SUBTOTAL:C-3.b	$ 244,800.00
	SUBTOTAL:C-3	$ 464,800.00
4. LUMP ITEMS:		
a. GRASSING (1 acre @ $5,000/acre)		$ 5,000.00
b. CLEARING AND GRUBBING (1 acre @ $8,000/acre)		$ 8,000.00
c. LANDSCAPING		$ 10,000.00
d. EROSION CONTROL		$ 30,000.00
e. TRAFFIC CONTROL		$ 100,000.00
	SUBTOTAL:C-4	$ 153,000.00
5. MISCELLANEOUS:		
a. SIGNAL (1 @ 3-leg and 1 @ 4-leg intersections)		$ 200,000.00
b. SIGNING - MARKING		$ 10,000.00
	SUBTOTAL:C-5	$ 210,000.00
6. SPECIAL FEATURES:		
	SUBTOTAL:C-6	$ 0.00

ESTIMATE SUMMARY		
A. RIGHT-OF-WAY	$	72,500.00
B. REIMBURSABLE UTILITIES	$	0.00
C. CONSTRUCTION		
1. MAJOR STRUCTURES	$	50,000.00
2. GRADING AND DRAINAGE	$	268,000.00
3. BASE AND PAVING	$	464,800.00
4. LUMP ITEMS	$	153,000.00
5. MISCELLANEOUS	$	210,000.00
6. SPECIAL FEATURES	$	0.00
SUBTOTAL CONSTRUCTION COST	$	1,145,800.00
E. & C. (10%)	$	114,580.00
INFLATION (5% PER YEAR)	$	57,290.00
NUMBER OF YEARS 1		
TOTAL CONSTRUCTION COST	$	1,317,670.00
TOTAL DESIGN COST	$	156,518.36
GRAND TOTAL PROJECT COST	**$**	**1,474,188.36**

02/24/2006 12:39:35 PM	#PRF#	P:\1528\0289 Newton SR20 SR 212\dgn-B\0063657TYP.dgn	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
#USERNAME#	#PENTABLE#		NEWTON	CSSTP-0006-00(365)		



TANGENT SECTION
SR 20 / SR 212 / BROWN BRIDGE ROAD



SUPER ELEVATED SECTION
SR 20 / SR 212 / BROWN BRIDGE ROAD

S.E. RATE	shoulder slope
2.0% OR 3.0%	4.0%
4.0% OR 5.0%	2.0%
6.0% OR 7.0%	1.0%
8.0 % +	0.0%

△SLOPE 6% OR RATE OF S.E. WHICHEVER IS GREATER

□SLOPE AS FOLLOWS:

S.E. RATE OF 0.03'/FT OR LESS USE 4%
S.E. RATE OF 0.04'/FT. USE ¾" IN 1'-0"
S.E. RATE OF 0.05'/FT. USE ½" IN 1'-0"
S.E. RATE OF 0.06'/FT. USE ⅜" IN 1'-0"
S.E. RATE OF 0.08'/FT. USE +0.01'/FT

ALGEBRAIC DIFFERENCE IN PAVING AND SHOULDER SLOPES NOT TO EXCEED 0.08'/FT

REQUIRED PAVEMENT

(A) 165 LBS/SY RECYCLED ASPH CONC 9.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM & H LIME
(B) 220 LBS/SY RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM & H LIME
(C) 440 LBS/SY RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM & H LIME
(D) GRADED AGGREGATE BASE, 12"
(E) RECYCLED ASPH CONC LEVELING, INCL BITUM & H LIME-AS REQ'D

URS
400 NORTHPARK TOWN CENTER
1000 ABERNATHY ROAD, N.E., SUITE 900
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NOT TO SCALE

REVISION DATES

DEPARTMENT OF TRANSPORTATION
DISTRICT TWO

TYPICAL SECTIONS

SR 20 AND SR 212
INTERSECTION IMPROVEMENTS

DRAWING No. 5-01

March 13, 2006

Kevin Walter, P.E.
County Engineer
Newton County
1140 Reynolds Street
Covington, Georgia 30014

Subject: CORSIM Modeling and Analysis
SR 20/ SR 212
Project No. 15280289

Dear Mr. Walter:

The purpose of this letter is to compare four (4) traffic signalization scenarios at the intersections of SR 20 at SR 212 (**Intersection #1**) and SR 212/SR 20 at Browns Bridge Road (**Intersection #2**) during the highest weekday peak hour (5:30pm-6:30pm). The four (4) scenarios are as follows:

1. Intersection #1 and Intersection #2 *Unsignalized*
2. Intersection #1 and Intersection #2 *Signalized*
3. Intersection #1 *Unsignalized* and Intersection #2 *Signalized*
4. Intersection #1 *Signalized* and Intersection #2 *Unsignalized*

These analyses include proposed geometric improvements to both intersections. Proposed improvements include the re-alignment of SR 212 at Intersection #1 and the addition of exclusive left turn lanes at Intersection #2. In addition, it was assumed that the land area to the northeast side of intersection #1 would be developed, thus a forth leg and generated traffic (assuming a 4,000 sq. ft. pharmacy) were incorporated into Intersection #1 and considered. Additional traffic generated by the projected pharmacy/drug store was determined by using the Institute of Transportation Engineer's Trip Generation Manual, 7th Edition.

To properly compare the four scenarios, CORSIM and Synchro software applications were utilized. CORSIM was used for animated traffic modeling, and Synchro was used for intersection capacity analysis. In addition, signal timing information input into CORSIM was developed using Synchro.

CORSIM Analysis

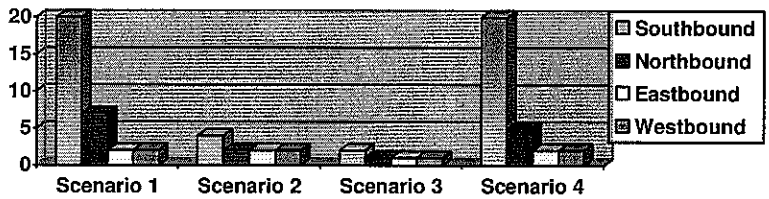
CORSIM (TSIS 5.1) software, developed by the Federal Highway Administration (FHWA), is utilized for the modeling of traffic operations on roadway and freeway networks. Geometric parameters including all traffic control measures are used in constructing a roadway network to depict various conditions (i.e. existing, future, etc.).

Typically, a base or existing condition is established prior to evaluating future alternatives. To accomplish this, existing volumes are recorded and input into a subject roadway network with appropriate geometry and traffic control features. Once the existing network has been constructed, field investigations are conducted to calibrate the CORSIM model thereby validating animation outputs.

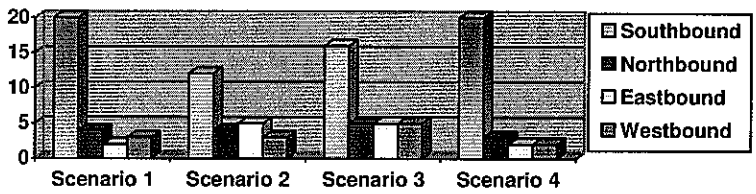
Upon successful model calibration, proposed improvements to the subject roadway are input into the model network and are qualitatively evaluated for impacts.

The following graphic indicates peak queue levels at each intersection for each scenario:

Intersection #1 (Queued Vehicles Per Approach)



Intersection #2 (Queued Vehicles By Approach)



NOTES: (1) Red indication denotes queue spillback greater than 20 vehicles resulting in significant congestion. (2) Queues observed at less than five vehicles can be considered incidental, thus do not imply any appreciable delay.

With Intersection #2 being the critical intersection, existing southbound queuing can be attributed to the approach delays caused by unsignalized stop control at this intersection (Scenarios 1 and 4). And, CORSIM model results indicate that existing queues on southbound SR 20 during the highest weekday peak hour are alleviated in scenarios 2 and 3. The key element in both of these scenarios is the signalization of Intersection #2. However, periodic southbound queuing at Intersection #2 was observed in Scenario 3 which may prove significant enough to obstruct access to the SBLT while under a stop condition. This is problematic as aggressive drivers can be expected to bypass southbound queued vehicles via the northbound left turn at Intersection #1 as opposing traffic is separated solely by thermoplastic striping. This creates a dangerous conflict with northbound vehicles.

Synchro Analysis

Synchro software is used for quantitatively evaluating traffic operations at signalized and unsignalized intersections and is based on criteria set forth in the Transportation Research Board's Highway Capacity Manual, 2000 Edition (HCM 2000).

Synchro results are summarized and presented in the table on the following page for all four scenarios.

Approach	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Intersection #1				
Southbound (SR 20)				
Delay (sec/veh)	0.1 *	6.3	0.1	6.3 **
LOS	A *(F)*	A	A	A *(F)*
Northbound (SR 20)				
Delay (sec/veh)	1.9 *	1.0	1.9	3.6
LOS	A	A	A	A
Eastbound (SR 212)				
Delay (sec/veh)	22.2	7.0	22.2	7.0
LOS	C	A	C	A
Westbound (Fut. Drwy)				
Delay (sec/veh)	34.4	34.7	34.4	34.7
LOS	D	C	D	C
Intersection #2				
Southbound (SR 20)				
Delay (sec/veh)	299.5	23.8	29.5	299.5
LOS	F	C	C	F
Northbound (SR 212)				
Delay (sec/veh)	30.0	14.6	11.9	30.0
LOS	D	B	B	D
Eastbound (SR 20)				
Delay (sec/veh)	15.9	25.9	27.9	15.9
LOS	C	C	C	C
Westbound (Browns Bdg)				
Delay (sec/veh)	16.4	26.9	20.9	16.4
LOS	C	C	C	C

NOTE: Shading indicates traffic signal control.

**Unsignalized (Two-Way Stop Control) analysis does not consider backup queues due to adjacent intersections on uncontrolled movements (north and southbound approaches at Intersection #1), thus accurate through movement delay calculations were not possible.*

*** Does not consider apparent southbound delay and backup queuing from Intersection #2.*

These analyses indicate that southbound vehicles will experience significant amounts of delay resulting in a LOS of F at Intersection #2 in Scenarios 1 and 4. The extensive delay forecast for the southbound approach at Intersection #2 in Scenarios 1 and 4 can also be expected to backup vehicles into Intersection #1 resulting in a LOS of F (*see table notes*). Thus, significant levels of delay on the southbound approach of Intersection #2 and Intersection #1 are expected when Intersection #2 is NOT signalized.

It should be noted that the eastbound approach on SR 212 at Intersection #1 is forecast to operate at a LOS A in Scenario 2 versus a LOS C in Scenario 3. This is due to a 15.2 second decrease in delay experienced. While an increase in delay of 6.2 seconds on the southbound approach (SR 20) is forecast in Scenario 2 versus Scenario 3, the LOS remains at an A.

At Intersection #2, analyses forecast more delay on the northbound and westbound approaches in Scenario 2 versus Scenario 3; however, it forecasts the opposite for the southbound and eastbound approaches. Peak hour volumes used in these analyses are attached.

Conclusion

Analysis results indicate that the implementation of a traffic signal at Intersection #2 alleviates existing southbound queue-spillback into Intersection #1. While the lone installation of a traffic signal at Intersection #2 addresses these southbound queue-spillback issues, a second signal at intersection #1 should also be considered. CORSIM results indicate further reductions in southbound queues at Intersection #2 with both intersections being signalized. This may reduce the chances of dangerous maneuvers, such as those conducted by aggressive southbound vehicles in queue attempting to make left turns onto Browns Bridge Road.

Synchro analyses do indicate some increases in delay in Scenario 2 (both intersections signalized) when compared to Scenario 3 (Intersection #2 signalized); however, it also indicates some decreases in delay. While these increases and decreases in delay appear to cancel out each other quantitatively, the decreases are forecast on the more problematic southbound approach.

In addition, with development potential on the northeast side of Intersection #1, future traffic entering and exiting this parcel may be at an increased risk due to moderately heavy southbound volumes and the horizontal alignment of SR 20. In signalizing Intersection #1, entering and exiting motorists may proceed under the protection of signalized traffic control.

If you have any questions or concerns regarding this letter, please feel free to call me at (678) 808-8850.

Sincerely,

Charles "Sonny" Smoak, Jr., P.E.
Project Manager

NC \ PA

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	44	4	220	7	3	7	109	384	9	4	218	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.40	0.40	0.40
Hourly flow rate (veh/h)	48	4	239	8	3	8	118	417	10	10	545	115
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
vC, conflicting volume	1229	1219	545	1222	1219	417	545			417		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	65	97	56	90	98	99	86			99		
cM capacity (veh/h)	136	158	538	77	158	635	1024			1142		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	52	239	18	118	417	10	10	545	115
Volume Left	48	0	8	118	0	0	10	0	0
Volume Right	0	239	8	0	0	10	0	0	115
cSH	138	538	141	1024	1700	1700	1142	1700	1700
Volume to Capacity	0.38	0.44	0.13	0.12	0.25	0.01	0.01	0.32	0.07
Queue Length (ft)	40	57	11	10	0	0	1	0	0
Control Delay (s)	46.2	16.9	34.4	9.0	0.0	0.0	8.2	0.0	0.0
Lane LOS	E	C	D	A			A		
Approach Delay (s)	22.2		34.4	1.9			0.1		
Approach LOS	C		D						

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	56.8%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	178	94	21	185	127	28	5	296	15	46	343	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.50	0.50	0.50
Hourly flow rate (veh/h)	193	102	23	201	138	30	5	322	16	92	686	112

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	193	125	201	168	5	338	92	798
Volume Left (vph)	193	0	201	0	5	0	92	0
Volume Right (vph)	0	23	0	30	0	16	0	112
Hadj (s)	0.2	-0.1	0.2	-0.1	0.2	0.0	0.2	-0.1
Departure Headway (s)	8.6	8.3	8.5	8.2	8.2	8.0	7.9	7.6
Degree Utilization, x	0.46	0.29	0.47	0.38	0.01	0.75	0.20	1.68
Capacity (veh/h)	401	421	413	429	423	438	446	481
Control Delay (s)	17.5	13.4	17.6	14.9	10.1	30.3	11.6	332.7
Approach Delay (s)	15.9		16.4		30.0		299.5	
Approach LOS	C		C		D		F	

Intersection Summary			
Delay	119.9		
HCM Level of Service	F		
Intersection Capacity Utilization	79.4%	ICU Level of Service	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1781	1583		1721		1770	1863	1583	1770	1863	1583
Flt Permitted		0.73	1.00		0.84		0.40	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)		1357	1583		1483		742	1863	1583	925	1863	1583
Volume (vph)	44	4	220	7	3	7	109	384	9	4	218	46
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.40	0.40	0.40
Adj. Flow (vph)	48	4	239	8	3	8	118	417	10	10	545	115
Lane Group Flow (vph)	0	52	239	0	19	0	118	417	10	10	545	115
Turn Type	Perm		Free	Perm			pm+pt		Free	pm+pt		Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8			2		Free	6		Free
Actuated Green, G (s)		5.6	80.0		5.6		64.4	58.3	80.0	53.1	52.0	80.0
Effective Green, g (s)		5.6	80.0		5.6		65.4	59.3	80.0	54.1	53.0	80.0
Actuated g/C Ratio		0.08	1.00		0.08		0.82	0.74	1.00	0.69	0.66	1.00
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		112	1583		122		715	1381	1583	659	1234	1583
v/s Ratio Prot							0.02	c0.22		0.00	c0.29	
v/s Ratio Perm		c0.04	c0.15		0.01		0.12		0.01	0.01		0.07
v/c Ratio		0.46	0.15		0.16		0.17	0.30	0.01	0.02	0.44	0.07
Uniform Delay, d1		35.0	0.0		34.1		3.6	3.5	0.0	4.7	6.4	0.0
Progression Factor		1.00	1.00		1.00		0.23	0.25	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.0	0.2		0.6		0.1	0.1	0.0	0.0	1.1	0.1
Delay (s)		38.0	0.2		34.7		0.9	1.0	0.0	4.7	7.6	0.1
Level of Service		D	A		C		A	A	A	A	A	A
Approach Delay (s)		7.0			34.7			1.0			6.3	
Approach LOS		A			C			A			A	

Intersection Summary				
HCM Average Control Delay	4.9	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	48.6%	ICU Level of Service	A	
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1850		1770	1824	
Flt Permitted	0.56	1.00	1.00	0.68	1.00	1.00	0.13	1.00		0.43	1.00	
Satd. Flow (perm)	1039	1863	1583	1267	1863	1583	237	1850		792	1824	
Volume (vph)	178	94	21	185	127	28	5	296	15	46	343	56
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.50	0.50	0.50
Adj. Flow (vph)	193	102	23	201	138	30	5	322	16	92	686	112
Lane Group Flow (vph)	193	102	23	201	138	30	5	338	0	92	798	0
Turn Type	pm+pt		Free	pm+pt		Free	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2			6		
Actuated Green, G (s)	19.4	9.6	80.0	19.4	9.6	80.0	37.0	35.8		44.2	39.4	
Effective Green, g (s)	21.4	10.6	80.0	21.4	10.6	80.0	39.0	36.8		46.2	40.4	
Actuated g/C Ratio	0.27	0.13	1.00	0.27	0.13	1.00	0.49	0.46		0.58	0.50	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	377	247	1583	407	247	1583	158	851		528	921	
v/s Ratio Prot	c0.07	0.05		0.07	c0.07		0.00	0.18		c0.01	c0.44	
v/s Ratio Perm	0.07		0.01	0.07		0.02	0.01			0.09		
v/c Ratio	0.51	0.41	0.01	0.49	0.56	0.02	0.03	0.40		0.17	0.87	
Uniform Delay, d1	24.1	31.8	0.0	24.2	32.5	0.0	14.1	14.3		8.2	17.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.07	0.88	
Incremental Delay, d2	1.2	1.1	0.0	0.9	2.7	0.0	0.1	0.3		0.2	10.5	
Delay (s)	25.3	33.0	0.0	25.2	35.2	0.0	14.2	14.6		8.9	25.8	
Level of Service	C	C	A	C	D	A	B	B		A	C	
Approach Delay (s)		25.9			26.9			14.6			24.1	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	C
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	44	4	220	7	3	7	109	384	9	4	218	46
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.40	0.40	0.40
Hourly flow rate (veh/h)	48	4	239	8	3	8	118	417	10	10	545	115
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
vC, conflicting volume	1229	1219	545	1222	1219	417	545			417		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	65	97	56	90	98	99	88			99		
cM capacity (veh/h)	136	158	538	77	158	635	1024			1142		

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	52	239	18	118	417	10	10	545	115
Volume Left	48	0	8	118	0	0	10	0	0
Volume Right	0	239	8	0	0	10	0	0	115
cSH	138	538	141	1024	1700	1700	1142	1700	1700
Volume to Capacity	0.38	0.44	0.13	0.12	0.25	0.01	0.01	0.32	0.07
Queue Length (ft)	40	57	11	10	0	0	1	0	0
Control Delay (s)	46.2	16.9	34.4	9.0	0.0	0.0	8.2	0.0	0.0
Lane LOS	E	C	D	A			A		
Approach Delay (s)	22.2		34.4	1.9			0.1		
Approach LOS	C		D						

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	56.8%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1850		1770	1824	
Flt Permitted	0.87	1.00	1.00	0.56	1.00	1.00	0.16	1.00		0.44	1.00	
Satd. Flow (perm)	1620	1863	1583	1049	1863	1583	298	1850		818	1824	
Volume (vph)	178	94	21	185	127	28	5	296	15	46	343	56
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.50	0.50	0.50
Adj. Flow (vph)	193	102	23	201	138	30	5	322	16	92	686	112
Lane Group Flow (vph)	193	102	23	201	138	30	5	338	0	92	798	0
Turn Type	pm+pt		Free	pm+pt		Free	pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		Free	8		Free	2			6		
Actuated Green, G (s)	8.6	3.6	58.1	13.6	6.1	58.1	24.9	24.0		29.1	26.1	
Effective Green, g (s)	10.6	4.6	58.1	15.6	7.1	58.1	26.9	25.0		31.1	27.1	
Actuated g/C Ratio	0.18	0.08	1.00	0.27	0.12	1.00	0.46	0.43		0.54	0.47	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	311	148	1583	387	228	1583	186	796		503	851	
v/s Ratio Prot	0.06	0.05		c0.08	c0.07		0.00	0.18		c0.01	c0.44	
v/s Ratio Perm	0.05		0.01	0.06		0.02	0.01			0.09		
v/c Ratio	0.62	0.69	0.01	0.52	0.61	0.02	0.03	0.42		0.18	0.94	
Uniform Delay, d1	21.8	26.1	0.0	17.6	24.2	0.0	11.4	11.5		6.9	14.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	12.6	0.0	1.2	4.5	0.0	0.1	0.4		0.2	17.4	
Delay (s)	25.6	38.6	0.0	18.8	28.7	0.0	11.4	11.9		7.1	32.1	
Level of Service	C	D	A	B	C	A	B	B		A	C	
Approach Delay (s)		27.9			20.9			11.9			29.5	
Approach LOS		C			C			B			C	

Intersection Summary				
HCM Average Control Delay	24.5	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	58.1	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	77.6%	ICU Level of Service	C	
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt		1.00	0.85		0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.96	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1781	1583		1721		1770	1863	1583	1770	1863	1583
Flt Permitted		0.73	1.00		0.84		0.40	1.00	1.00	0.50	1.00	1.00
Satd. Flow (perm)		1357	1583		1483		741	1863	1583	924	1863	1583
Volume (vph)	44	4	220	7	3	7	109	384	9	4	218	46
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.40	0.40	0.40
Adj. Flow (vph)	48	4	239	8	3	8	118	417	10	10	545	115
Lane Group Flow (vph)	0	52	239	0	19	0	118	417	10	10	545	115
Turn Type	Perm		Free	Perm			pm+pt		Free	pm+pt		Free
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8			2		Free	6		Free
Actuated Green, G (s)		5.6	80.0		5.6		64.4	58.2	80.0	53.1	51.9	80.0
Effective Green, g (s)		5.6	80.0		5.6		65.4	59.2	80.0	55.1	52.9	80.0
Actuated g/C Ratio		0.08	1.00		0.08		0.82	0.74	1.00	0.69	0.66	1.00
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		112	1583		122		715	1379	1583	660	1232	1583
v/s Ratio Prot							0.02	c0.22		0.00	c0.29	
v/s Ratio Perm		c0.04	c0.15		0.01		0.12		0.01	0.01		0.07
v/c Ratio		0.46	0.15		0.16		0.17	0.30	0.01	0.02	0.44	0.07
Uniform Delay, d1		35.0	0.0		34.1		3.6	3.5	0.0	4.7	6.5	0.0
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		3.0	0.2		0.6		0.1	0.1	0.0	0.0	1.2	0.1
Delay (s)		38.0	0.2		34.7		3.7	3.6	0.0	4.7	7.6	0.1
Level of Service		D	A		C		A	A	A	A	A	A
Approach Delay (s)		7.0			34.7			3.6			6.3	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	5.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	178	94	21	185	127	28	5	296	15	46	343	56
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.50	0.50	0.50
Hourly flow rate (veh/h)	193	102	23	201	138	30	5	322	16	92	686	112

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	193	125	201	168	5	338	92	798
Volume Left (vph)	193	0	201	0	5	0	92	0
Volume Right (vph)	0	23	0	30	0	16	0	112
Hadj (s)	0.2	-0.1	0.2	-0.1	0.2	0.0	0.2	0.1
Departure Headway (s)	8.6	8.3	8.5	8.2	8.2	8.0	7.9	7.6
Degree Utilization, x	0.46	0.29	0.47	0.38	0.01	0.75	0.20	1.68
Capacity (veh/h)	401	421	413	429	423	438	446	481
Control Delay (s)	17.5	13.4	17.6	14.9	10.1	30.3	11.6	332.7
Approach Delay (s)	15.9		16.4		30.0		299.5	
Approach LOS	C		C		D		F	

Intersection Summary				
Delay	149.9			
HCM Level of Service	F			
Intersection Capacity Utilization	79.4%	ICU Level of Service		C

MINUTES OF THE CONCEPT TEAM MEETING

The concept meeting for Georgia DOT Project No. STP-0007-00(339), PI No. 0007339, Newton County was held at the Newton County Courthouse the downstairs conference room on March 14th, 2006.

The meeting attendees included Kevin Walter (Newton County), Tom Garrett (Newton County), Aaron Varner (Newton County), Bryan Gibbs (GDOT Madison Area Engineer), Jamie Lindsey (GDOT Utilities), Ronald Brantley (GDOT R/W), George Brewer (GDOT District Preconstruction Engineer), Kedrick Collins (GDOT Traffic Ops), Roger Price (GDOT Traffic Ops), Todd Price (GDOT Traffic Ops), Don Harris (URS Corporation), Nick Castronova (URS Corporation).

Nick welcomed the attendees and briefly introduced the project.

The meeting proceeded with Nick explaining the project in detail, first by reviewing the concept report and then describing the conceptual layout. He then opened the floor for any questions and comments.

The biggest issue discussed was the need for both intersections to be signalized. Roger wanted a clear understanding of the benefits of signalizing both intersections. A meeting was to be held after Concept Team Meeting to view CORSIM analysis and provide the district with input on the operation of different scenarios of intersection configuration.

Discussed length of time to appraise and purchase right of way.

George suggested that URS investigate the usefulness of requesting a design exception for deficient shoulders in the vicinity of Mount Zion Baptist Church's cemetery and at the Holt House which has been deemed a historic property by the State Historic Preservation Office.

With no further comments, the meeting adjourned.

PROJECTS: STP-0007-00(339) & CSSTP-0006-00(365) NEWTON
P.I. Nos. 0007339 & 0006365
DATE: March 14, 2006

CONCEPT TEAM MEETING
SIGN-IN SHEET

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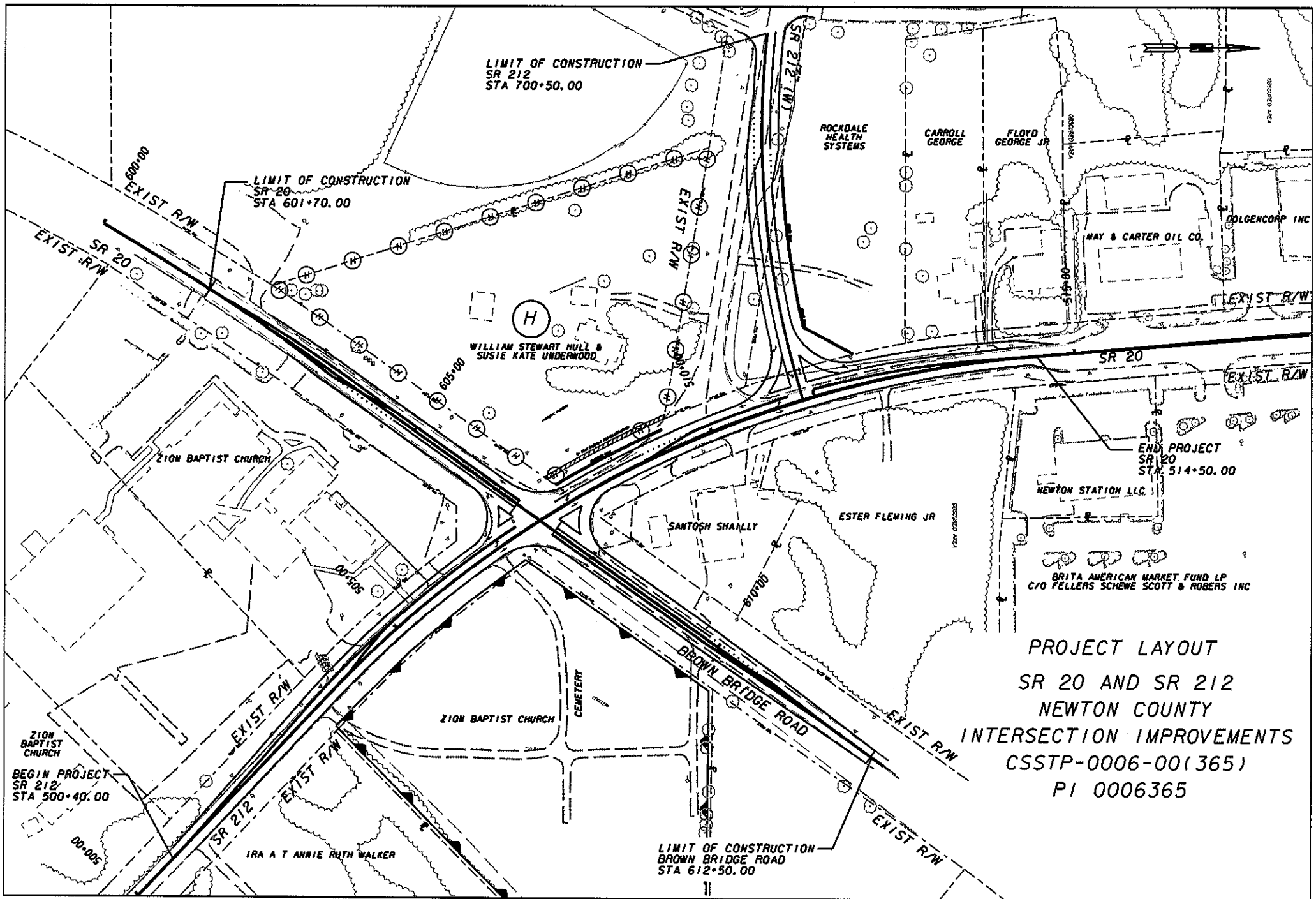

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