ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0008357
CSSTP-0008-00(357)
Forsyth County
GDOT District 1 - Gainesville
Widening: SR 9 from SR 371 to SR 141

OFFICE Design Policy & Support

DATE 6/02/2015

FROM Kim Phillips for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT **APPROVED CONCEPT REPORT**

Attached is the approved Concept Report for the above subject project.

Attachment

DISTRIBUTION:

Glenn Bowman, Director of Engineering
Joe Carpenter, Director of P3/Program Delivery
Genetha Rice-Singleton, Assistant Director of P3/Program Delivery
Albert Shelby, State Program Delivery Engineer
Darryl VanMeter, State Innovative Delivery Engineer
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Hiral Patel, State Environmental Administrator
Ben Rabun, State Bridge Engineer
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Lee Upkins, State Utilities Engineer
Richard Cobb, Statewide Location Bureau Chief
Brent Cook, District Engineer
Brandon Kirby, District Preconstruction Engineer
Neil Kantner, District Utilities Engineer
Anthony Tate, Project Manager
BOARD MEMBER - 7th Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT

Project Type:	Widening	P.I. Number:	0008357
GDOT District:	1	County:	Forsyth
Federal Route Number:	N/A	State Route Number:	9

This project involves the widening of SR 9/Atlanta Highway from SR 371/Post Road/Mullinax Road to 1,000 feet South of SR 141/Bethelview Road.

Submitted for approval:

Saurabh Bhattacharya, PE, Parsons — Saurabh Bhattacharya — 02/12/2015 — DATE **
Consultant Designer & Firm

Albert V. Shelby — Albert V. Shelby III — 3/5/2015 — DATE **
State Program Delivery Engineer

Anthony Tate — Anthony Tate — 2/19/2015 — DATE **
GDOT Project Manager

Recommendation for approval:

* HIRAL PATEL — 10/20/2014 — Date
State Environmental Administrator

* KATHY ZAHUL — 10/16/2014 — Date
State Traffic Engineer

Project Review Engineer — Date

* NICHOLAS FIELDS — 10/9/2014 — Date
State Utilities Engineer

* for NEIL KANTNER — 10/10/2014 — Date
~~District Engineer~~ / DISTRICT UTILITIES ENGINEER

* BEN RABUN — 5/4/2015 — Date
State Bridge Engineer *(if applicable)*

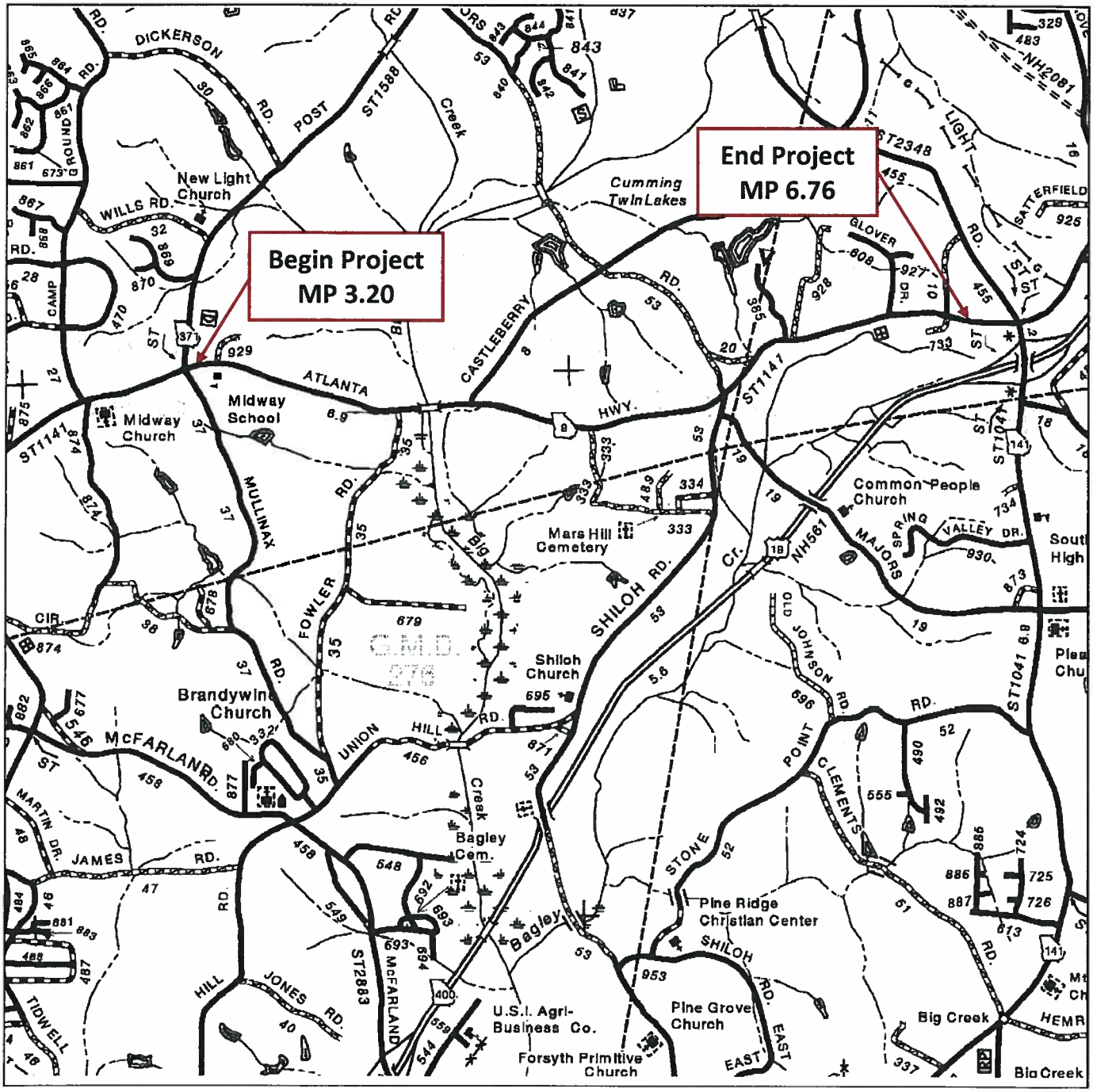
The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).

* CINTHIA L. VANDYKE — 10/10/2014 — Date
State Transportation Planning Administrator

* RECOMMENDATION ON FILE —

** PROJECT MANAGER CHANGE DURING REVIEW PROCESS: DOCUMENT RESIGNED

PROJECT LOCATION



Project Location Map

(not to scale)

Project: CSSTP-0008-00(357), PI No.: 0008357

SR 9/Atlanta Highway, Forsyth County, Georgia

PLANNING & BACKGROUND DATA

Project Justification Statement: SR 9 / Atlanta Highway is a major north-south roadway that connects downtown Atlanta to Dahlonega and links various cities such as Sandy Springs, Roswell, Alpharetta and Cumming. Additionally, it runs parallel to SR 400 and is a major transportation corridor for vehicles accessing SR 400.

Proposed PI 0008357 is one of several projects programmed to widen SR 9/Atlanta Highway from Alpharetta to Cumming. The project is included in the Atlanta Regional Transportation Plan (RTP). Project limits start at SR 371/Post Road/Mullinax Road and extend up to approximately 1,000 feet south of the intersection with SR 141. Project ties to PI 0007844 to the south and PIs 0007999 & 121690 to the north.

The need for this project is to alleviate traffic congestion along SR 9 by accommodating existing and future travel demand and to improve traffic operations along this corridor. The arterial level of service is projected to be "D" or worse for no-build condition in design year 2040. Overall crash rate along the corridor was slightly above statewide average for 2011. Rear end collisions and angled collisions were predominant in this corridor which is an indication of high volume and heavy turning movements. The actual design traffic volumes for both build and no build scenarios of this segment of the corridor are shown in the table below.

Design Traffic Volumes for Existing and Future No Build and Build Scenarios

Year	ADT (vpd)
Existing	16,160
2020 No- Build	18,940
2020 Build	21,020
2040 No-Build	23,100
2040 Build	28,300

SR 9/Atlanta Highway is functionally classified as urban minor arterial street within the limits of this project. The existing typical section consists of one lane in each direction with intermittent center two-way left turn lane and right turn lanes. Land use along this section of SR 9 is a mix of business, commercial, single family residential and large undeveloped parcels. The Forsyth County Big Creek Greenway crosses SR 9 just south of the intersection with Castleberry Road/Carolene Way. Midway Elementary School is located just north of the SR 9 intersection with SR 371. The project corridor is located on a school bus route for Midway Elementary School, Shiloh Point Elementary School, Piney Grove Middle School, West Forsyth High School and South Forsyth High School.

The major performance goal of this project is to reduce congestion and improve traffic operations. Reduction in frequency and severity of crashes and pedestrian accommodation will be a secondary benefit of this project.

Existing conditions: Within project limits SR 9 consists of one through lane in each direction with an intermittent center two-way left turn lane and right turn lanes. Discontinuous sidewalks are present along the corridor. There are seven existing unsignalized intersections with Waterbrooke Crossing, Fowler Road, Mars Hill Road, Majors Fork Road, Cross Creek Court, Whitfield Avenue and Bethelview

Drive/Bagwell Drive, and two existing signalized intersections with Castleberry Road/Carolene Way and Majors Road/Shiloh Road. Major utilities in the corridor include a 12" steel AGL gas line, Georgia Power Transmission line and 12'-24" Forsyth County ductile iron water pipe.

Other projects in the area:

1. PI 0006727, Fulton County – SR 9/Roswell Road from Abernathy Road to Forsyth County Line. The project will install ITS elements along SR 9 which includes adaptive signal timing, CCTV cameras, CMS, radar detection, pre-emption and variable speed limit warning signs at strategic locations, as well as Traffic Control Centers upgrades and filling in of communication gaps to meet the operational control concept. Construction - 2011.
2. PI 721780, Fulton County – SR 9 from Academy Street to Windward Parkway – Roadway widening. Right of way - 2018, Construction - 2019.
3. PI 0007838, Fulton County – SR 9 from Windward Parkway to Forsyth County Line – Roadway widening. Right of way - 2019, Construction - 2022.
4. PI 0007843, Forsyth County – SR 9 from Fulton/Forsyth County Line to CR 458/McFarland Road – Roadway widening. Right of way - 2017, Construction - 2019.
5. PI 0007844, Forsyth County – SR 9 from CR 458/McFarland Road to SR 371 – Roadway widening. Right of way - 2017, Construction - 2020.
6. PI 121690, Forsyth County – SR 9 from North of SR 141 to North of SR 20 – Roadway widening. Right of way - 2017, Construction - 2020.
7. PI 0007846, Forsyth County – CR 458/McFarland Road from SR 400 to SR 9/Atlanta Highway – Roadway widening. Construction - long range.
8. PI 0006915, Forsyth County – SR 371 from SR 9/Atlanta Highway to CR 5/Kelly Mill Road – Roadway widening. Right of way and construction - long range.
9. PI 0007999, Forsyth County – SR 141 @ SR 9 – Intersection improvement. Construction - 2013
10. PI 141880, Forsyth County – CR 455/Bethelview Road from SR 9 to CR 8/Castleberry Road – Roadway widening. Construction - 2012.

MPO: Atlanta TMA **TIP #:** FT-001C

TIA Regional Commission: Not a TIA Project RC Project ID: N/A

Congressional District(s): 7

Federal Oversight: ☐ FOS/PoDI ☒ Exempt ☐ State Funded ☐ Other

Projected Traffic AADT:
Current Year (2012): 16,160 Open Year (2020): 21,020 Design Year (2040): 28,300
Traffic Projections Performed by: Parsons Transportation Group Inc.

Functional Classification (Mainline): Urban Minor Arterial Street

Complete Streets - Bicycle, Pedestrian, and/or Transit Warrants:
Warrants met: ☐ None ☒ Bicycle ☒ Pedestrian ☐ Transit

The corridor is not on a designated bike/pedestrian route; however, Forsyth County Bicycle Transportation & Pedestrian Walkway 2025 plan recommends bicycle friendly shoulders on SR 9 from SR 371/Post Road to Bethelview Road. Also, the Big Creek Greenway crosses the project corridor at the intersection with Castleberry Road/Carolene Way. Between Castleberry Road/Carolene Way to Bethelview Road, 16-foot wide urban shoulder and 8-foot wide multi-use

path are proposed on both sides of SR 9 to provide bike and pedestrian connectivity to Big Creek Greenway. From SR 371/Post Road to Castleberry Road/Carolene Way, pedestrian accommodation is proposed on both sides of SR 9 using 12-foot wide urban shoulders and 5-foot wide sidewalks. Handrails will be provided at locations with side slopes greater than 3:1 and less than 4-foot buffer to sidewalks. The project corridor falls outside the ½-mile pedestrian catchment area of an existing fixed-route transit facility.

Is this a 3R (Resurfacing, Restoration, & Rehabilitation) Project? ☒ No ☐ Yes

Pavement Evaluation and Recommendations

Preliminary Pavement Evaluation Summary Report Required? ☐ No ☒ Yes
Preliminary Pavement Type Selection Report Required? ☒ No ☐ Yes
Feasible Pavement Alternatives: ☒ HMA ☐ PCC ☐ HMA & PCC

DESIGN AND STRUCTURAL DATA

Description of the proposed project: Project CSSTP-0008-00(357) is located in Forsyth County and includes the widening of SR 9/Atlanta Highway from existing two lanes to four lanes with raised median and urban shoulders. Project begins just past the intersection with SR 371/Post Road/Mullinax Road, mile point 3.20, and ends 1,000 feet south of the intersection with SR 141/Bethelview Road, mile point 6.76, for a total length of 3.56 miles. The existing 5 barrel bridge culvert carrying SR 9 over Big Creek will be replaced with a bridge.

Major Structures:

Structure	Existing	Proposed
ID # 117-0001-0 Bridge culvert carrying SR 9 over Big Creek	5 barrel, 10 ft. x 10 ft. concrete box culvert Length = 56 feet Width = 50 feet 1 lanes in each direction 12 ft. travel lane width 5 ft. shoulder width Sufficiency rating = 95.72	Bridge Length = 201.5 feet Width = 77 feet 5 inches 2 lanes in each direction 11 ft. travel lane width 16 ft. raised median 5.5 ft. sidewalks on both sides

Mainline Design Features: SR 9, Urban Minor Arterial Street

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	**2 lanes – 1 in each direction**	**4 lanes – 2 in each direction**	**4 lanes – 2 in each direction**
- Lane Width(s)	**12-ft**	**11-12-ft**	**11-ft**
- Median Width & Type	**Varies. None or 12-ft flush median**	**14-ft flush median**	**16-ft raised median**
- Outside Shoulder or Border Area Width	**6-ft unpaved rural shoulder**	**10 – 16-ft urban shoulder**	**12 - 16 -ft urban shoulder**
- Outside Shoulder Slope	**6.00%**	**2.00%**	**2.00%**
- Inside Shoulder Width	**N/A**	**N/A**	**N/A**
- Sidewalks	**N/A**	**5-ft**	**5-ft and 8-ft**
- Auxiliary Lanes	**12-ft left/right turn**	**11 - 12-ft left/right turn**	**11-ft left/right turn lane**

	lane	lane	
- Bike Lanes	N/A	N/A	N/A
Posted Speed	40/45/55mph		45 mph
Design Speed	40/45/55mph	45 mph	45 mph
Min Horizontal Curve Radius	590-ft	711-ft	711-ft
Maximum Superelevation Rate	10%	4%	4%
Maximum Grade	5%	6%	6%
Access Control	By Permit	By Permit	By Permit
Design Vehicle	WB-40	WB-40	WB-67
Pavement Type	HMA		HMA

*According to current GDOT design policy if applicable

Major Interchanges/Intersections:

- SR 9 intersection with Waterbrooke Crossing – Existing, unsignalized
- SR 9 intersection with Fowler Road – Existing, unsignalized
- SR 9 intersection with Castleberry Road/Carolene Way – Existing, signalized
- SR 9 intersection with Mars Hill Road – Existing, unsignalized
- SR 9 intersection with Majors Road/Shiloh Road – Existing, signalized
- SR 9 intersection with Majors Fork Road – Existing, unsignalized
- SR 9 intersection with Cross Creek Court – Existing, unsignalized
- SR 9 intersection with Whitfield Avenue – Existing, unsignalized
- SR 9 intersection with Bethelview Drive/Bagwell Drive – Existing, unsignalized

Lighting required: ☒ No ☐ Yes

Off-site Detours Anticipated: ☒ No ☐ Undetermined ☐ Yes

Transportation Management Plan [TMP] Required: ☐ NO ☒ YES
If Yes: Project classified as: ☒ Non-Significant ☐ Significant
TMP Components Anticipated: ☒ TTC ☐ TO ☐ PI

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

FHWA/AASHTO Controlling Criteria	NO	Undeter-mined	YES	Appvl Date (if applicable)
1. Design Speed	☒	☐	☐	
2. Lane Width	☒	☐	☐	
3. Shoulder Width	☒	☐	☐	
4. Bridge Width	☒	☐	☐	
5. Horizontal Alignment	☒	☐	☐	
6. Superelevation	☒	☐	☐	
7. Vertical Alignment	☒	☐	☐	
8. Grade	☒	☐	☐	
9. Stopping Sight Distance	☒	☐	☐	
10. Cross Slope	☒	☐	☐	
11. Vertical Clearance	☒	☐	☐	
12. Lateral Offset to Obstruction	☒	☐	☐	
13. Bridge Structural Capacity	☒	☐	☐	

Design Variances to GDOT standard criteria anticipated:

GDOT Standard Criteria	Reviewing Office	NO	Undeter-mined	YES	Appvl Date (if applicable)
1. Access Control/Median Openings	DP&S	☒	☐	☐	
2. Intersection Sight Distance	DP&S	☒	☐	☐	
3. Intersection Skew Angle	DP&S	☒	☐	☐	
4. Lateral Offset to Obstruction	DP&S	☒	☐	☐	
5. Rumble Strips	DP&S	☒	☐	☐	
6. Safety Edge	DP&S	☒	☐	☐	
7. Median Usage	DP&S	☐	☐	☒	
8. Roundabout Illumination	DP&S	☒	☐	☐	
9. Complete Streets	DP&S	☒	☐	☐	
10. ADA & PROWAG	DP&S	☒	☐	☐	
11. Georgia Construction Standards	DP&S	☒	☐	☐	
12. GDOT Drainage Manual	DP&S	☒	☐	☐	
13. GDOT Bridge & Structural Manual	Bridges	☒	☐	☐	

GDOT standards recommend the use of a 20-24 ft raised median when base year ADT is greater than 18,000 & design year ADT is greater than 24,000. The project corridor has a higher ADT than the threshold required by GDOT. Therefore, a raised median is warranted. A 16-ft raised median is proposed to minimize project footprint, reduce right of way impacts, minimize overall project cost and at the same time provide much needed access control to improve operations and safety along the corridor.

VE Study anticipated: ☒ No ☐ Yes ☐ Completed

UTILITY AND PROPERTY

Temporary State Route needed: ☒ No ☐ Yes ☐ Undetermined

Railroad Involvement: N/A

Utility Involvements: The following utilities have been identified in the project corridor based on quality level D records research –

- Sawnee EMC – Overhead Distribution
- Comcast – Overhead TV
- Georgia Power Transmission Corp – Overhead Transmission running parallel to SR 9
- AGL – 12" Steel Gas Line
- Forsyth County – 12" ductile iron pipe (DIP) Water & 16" DIP Water which turns into 24" DIP and unknown size/type sewer
- AT&T – Underground Duct Banks and Multiple Fiber Cables and Copper Cables
- North Georgia Network Cooperative – Unknown overhead/underground communication

SUE Required: ☒ Yes ☐ No

Public Interest Determination Policy and Procedure recommended (Utilities)? ☒ NO ☐ YES

Right-of-Way: Existing width: 75 - 200 ft Proposed width: 75 - 200 ft
Required Right-of-Way anticipated: ☐ NO ☒ YES ☐ Undetermined
Easements anticipated: ☐ None ☒ Temporary ☒ Permanent ☒ Utility ☒ Other

Anticipated number of impacted parcels:		69
Displacements Anticipated:	Businesses:	0
	Residences:	0
	Other:	0
	Total Displacements:	0

Location and Design approval: ☐ Not Required ☒ Required

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: Pedestrian accommodation; inconvenience to travelling public during construction; right-of-way impacts, impacts to the floodplain of Big Creek and the Big Creek Greenway

Context Sensitive Solutions: Proposed design includes sidewalks on both sides of the roadway to accommodate pedestrians. The design will stage construct proposed widening to allow maintenance of traffic on existing roadway during construction. Right-of-way impacts are proposed to be minimized by using 11-foot lanes and 12-16-foot urban shoulders. Retaining walls are also proposed to minimize project foot print and avoid conflicts with major utilities. Impacts to the floodplain of Big Creek will be modeled and analyzed hydraulically. Project alignment will be designed to avoid impacts to the existing Big Creek Greenway.

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:

GEPA: ☐ **NEPA:** ☐ CE ☒ EA/FONSI ☐ EIS

MS4 Permit Compliance – Is the project located in an MS4 area? ☐ No ☒ Yes

Environmental Permits/Variances/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	☒	☐	
2. Forest Service/Corps Land	☒	☐	
3. CWA Section 404 Permit	☐	☒	It is likely that a Nationwide or Regional 404 permit will be required
4. Tennessee Valley Authority Permit	☒	☐	
5. Buffer Variance	☒	☐	
6. Coastal Zone Management Coordination	☒	☐	
7. NPDES	☐	☒	
8. FEMA	☒	☐	
9. Cemetery Permit	☒	☐	
10. Other Permits	☒	☐	
11. Other Commitments	☐	☒	Other commitments will be identified on the project green sheet.
12. Other Coordination	☒	☐	

Is a PAR required? ☒ No ☐ Yes ☐ Completed

Based on preliminary proposed right-of-way, the impacts fall within the range authorized by Nationwide Permit 14.

Environmental Comments and Information:

NEPA/GEPA: The NEPA EA will be a combined document for GDOT PI nos. 0007838, 0007843, 0007844, 0008357 and 121690. Big Creek Greenway is a Section 4(f) resource in the project area. Project design will avoid/minimize impacts to this facility.

Ecology: An environmental screening has been completed for early identification of potential federal and buffered state waters. Seven waters were identified that potentially would be considered federal and buffered state waters. It is anticipated that a Section 404 Nationwide or Regional Permit would be needed. A buffer variance is not anticipated. A delineation of wetlands and streams will need to be performed for the environmental assessment. It is also anticipated that a bat survey will need to be conducted during the appropriate survey season along with an aquatic survey, and seasonal plant surveys.

History: A history screening has been completed for the project corridor. The Fowler Family Farm is a listed resource in the National Register. Eighteen additional resources have been identified as potentially eligible. A survey for eligible historic resources and a SHPO approved Assessment of Effects will be required for the environmental assessment Avoidance and impact minimization measures will be continuously evaluated.

Archeology: It is not anticipated that any cemeteries adjacent to SR 9 will be impacted by the project. A survey for archaeological resources will be performed for the environmental assessment.

Air Quality:

Is the project located in a PM 2.5 Non-attainment area?	☐ No	☒ Yes
Is the project located in an Ozone Non-attainment area?	☐ No	☒ Yes
Is a Carbon Monoxide hotspot analysis required?	☐ No	☒ Yes

Noise Effects: A Type I Noise Analysis will be performed for the environmental assessment, prior to submittal of the EA.

Public Involvement: A public information open house (PIOH) was held on September 23, 2014 at Vickery Creek Middle School in Cumming, GA from 5:00 pm until 7:00 pm – 162 people came. 57 comment forms were submitted: 34 in favor of the project, 12 conditional, 2 uncommitted, 4 against, 2 both in favor and conditional, 1 both against and conditional, and 2 without a marked response. Comments were related to access concerns due to raised median separation, location of median openings, movement of trucks, requests for additional signs, and requests to expedite construction.

Major stakeholders: Major stakeholders in the area include the traveling public, commuters that use this segment of SR 9 to travel to and from work, businesses in the area, and those residents that live on and along SR 9.

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: Construction will be staged to maintain traffic on existing roadway during construction.

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

COORDINATION, ACTIVITIES, RESPONSIBILITIES, AND COSTS

Concept Meeting: A Concept Team Meeting was held on July 11, 2014. Meeting minutes attached as Attachment 11.

Other coordination to date: None.

Project Activities:

Project Activity	Party Responsible for Performing Task(s)
Concept Development	GDOT Office of Program Delivery (Parsons as Consultant)
Design	GDOT Office of Program Delivery (Parsons as Consultant)
Right-of-Way Acquisition	GDOT
Utility Relocation	Utility Companies
Letting to Contract	GDOT
Construction Supervision	GDOT
Providing Material Pits	Contractor
Providing Detours	Contractor
Environmental Studies, Documents, and Permits	GDOT (Kimley Horn and Associates as Consultant)
Environmental Mitigation	GDOT
Construction Inspection & Materials Testing	GDOT

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
Funded By	GDOT	GDOT	GDOT	GDOT	GDOT	
$ Amount	$2,402,167	$2,752,000	$2,905,288	$20,945,861.09	$465,000	$29,470,316.09
Date of Estimate	2011	7/16/2014	6/23/2014	12/1/2014	9/4/2014	

*CST Cost includes: Construction, Engineering and Inspection, Contingency and Liquid AC Cost Adjustment.

ALTERNATIVES DISCUSSION

Alternative selection:

Preferred Alternative: This alternative proposes 11 feet wide travel lanes, a 16-foot wide raised median and 12 feet wide urban shoulders with 5 feet wide sidewalks. 2 feet wide curb & gutter is proposed in the median and outside shoulders. East of the intersection with Carolene Way/Castleberry Road, 8 feet wide multi-use paths and 16 feet wide urban shoulders are proposed to provide bike and pedestrian connectivity to Big Creek Greenway. A reduced median width of 4 feet is proposed for a length of approximately 400 feet west of Oakmont Bend Drive to minimize right-of-way impacts and avoid relocation of Georgia Power transmission poles. The existing 5 barrel bridge culvert carrying SR 9 over Big Creek will be replaced with a bridge. Design speed is 45 mph.

Estimated Property Impacts:	99 parcels	**Estimated Total Cost:**	$29,470,316.09
Estimated ROW Cost:	$2,752,000	**Estimated CST Time:**	24 months

Rationale: This alternative meets the capacity & operational needs of the project and minimizes project cost by minimizing project footprint.

No-Build Alternative:			
Estimated Property Impacts:	NA	**Estimated Total Cost:**	NA
Estimated ROW Cost:	NA	**Estimated CST Time:**	NA
Rationale: This alternative is not preferred since it does not meet the capacity and operational needs of the project.			

Alternative 1: This alternative is similar to the preferred alternative except that it would construct 12 feet wide travel lanes.			
Estimated Property Impacts:	99 parcels	**Estimated Total Cost:**	$35,643,395
Estimated ROW Cost:	$3,137,280	**Estimated CST Time:**	24 months
Rationale: This alternative is not preferred due to the additional pavement costs and increased project footprint.			

Alternative 2: This alternative is similar to the preferred alternative except that it would construct 16 feet wide urban shoulders with 8 feet wide multi-use trails on both sides of the roadway for the entire length of the project.			
Estimated Property Impacts:	99 parcels	**Estimated Total Cost:**	$32,265,724
Estimated ROW Cost:	$3,247,360	**Estimated CST Time:**	18 months
Rationale: This alternative is not preferred due to the additional construction, utility and ROW cost resulting from the increased project footprint.			

Alternative 3: This alternative is similar to the preferred alternative except that it would construct a 14 feet flush median allowing two-way left turning movement.			
Estimated Property Impacts:	99 parcels	**Estimated Total Cost:**	$29,156,929
Estimated ROW Cost:	$2,752,000	**Estimated CST Time:**	18 months
Rationale: This section of SR 9 has several commercial establishments with direct access to SR 9. By providing a 14 feet flush median the operational safety of the corridor may be negatively impacted. Due to heavy turning movements at the driveways, the corridor has recorded higher crash rates than statewide averages in the three year period evaluated. Because of high driveway density and heavy traffic flow on SR 9, this alternative is not preferred.			

Alternative 4: This alternative is similar to the preferred alternative except that it would construct 12-foot wide travel lanes, 24-foot wide raised median and 16-foot wide urban shoulders with 8-foot wide multi-use trails on both sides of the roadway.			
Estimated Property Impacts:	99 parcels	**Estimated Total Cost:**	$35,694,322
Estimated ROW Cost:	$3,467,520	**Estimated CST Time:**	18 months
Rationale: This alternative is not preferred due to the additional construction, utility and ROW cost resulting from the increased project footprint.			

Alternative 5: This alternative incorporates a design speed of 55 mph for SR 9/Atlanta Highway.			
Estimated Property Impacts:	99 parcels	**Estimated Total Cost:**	$32,836,127
Estimated ROW Cost:	$3,577,600	**Estimated CST Time:**	18 months

Rationale: Different sections of SR 9 under this project have current posted speeds of 40, 45 and 55 mph. There is higher pedestrian and bicycle traffic on this project compared to the some other sections of SR 9 in Forsyth County because of the Big Creek Greenway crossing within this project. A new signal at Carolene Way was recently added and another one at Fowler Road is proposed under this project. Due to the presence of new signals and higher pedestrian volume, it may be safer to limit the design speed to 45 mph. Proposed projects to the north and south of PI 0008357 have a design speed of 45 mph. Additionally, 55 mph design speed would require a 24 feet wide raised median and additional 2 feet inside shoulders resulting in increased project foot print, right-of-way impacts and overall project costs. Therefore this alternative is not preferred.

Comments: None

Attachments:

1. Concept Layout
2. Typical sections
3. Detailed Cost Estimates:
    a. Construction including Engineering and Inspection
    b. Completed Liquid AC Cost Adjustment forms
    c. Right-of-Way
    d. Utilities
    e. Environmental Mitigation (EPD, etc)
4. Traffic Memo including crash summaries & capacity analysis summary
5. Traffic diagrams
6. Summary of TE Study
7. Bridge inventory report
8. Concept Level Hydrology Study for MS4 Permit
9. Preliminary Pavement Type Selection Report
10. Conforming plan's network schematics showing thru lanes
11. Minutes of Concept meetings
12. PIOH Synopsis – September 23, 2014

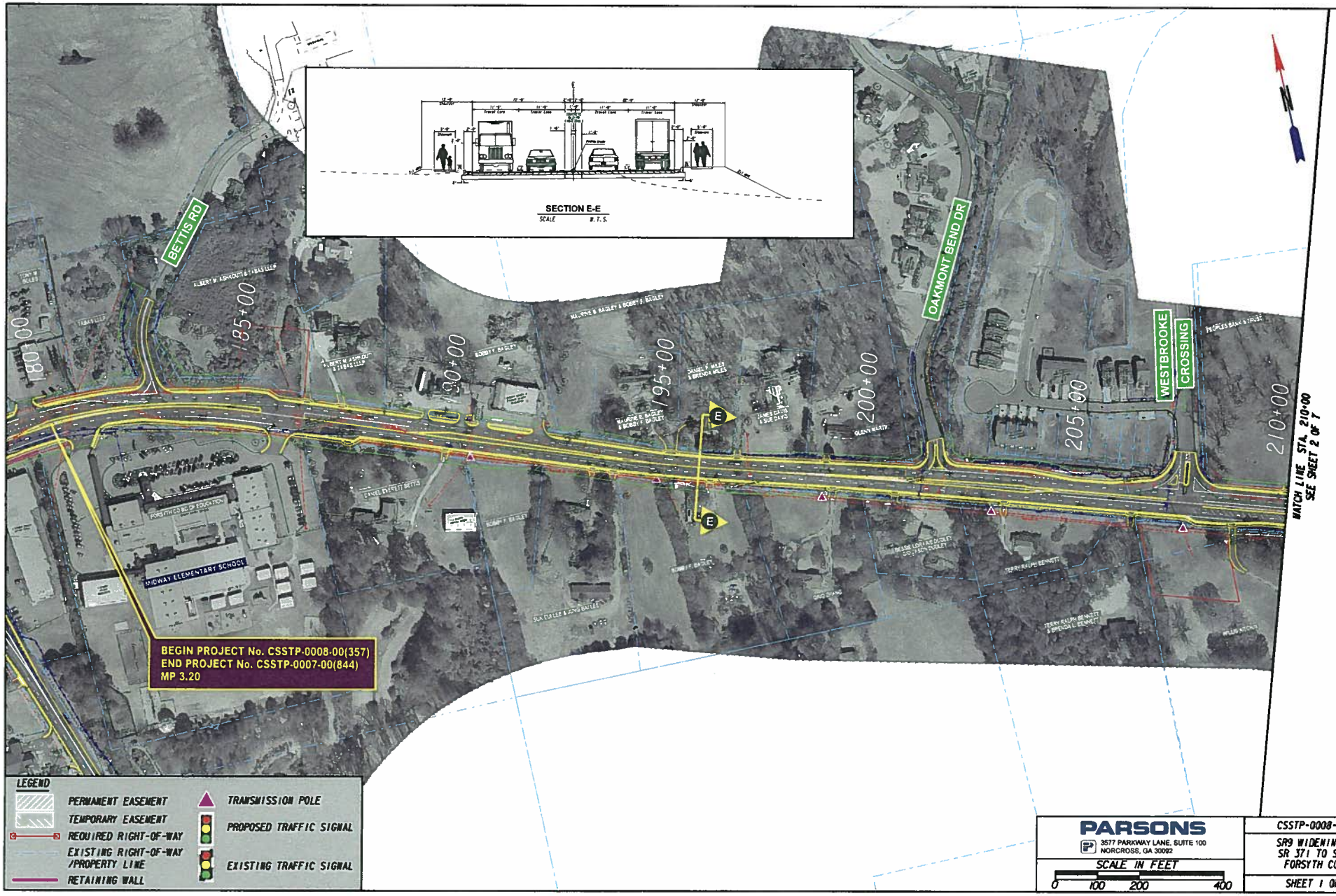
APPROVALS

Concur: _____
Director of Engineering

Approve: Margaret B. Pickle _____ 5.21.15
Chief Engineer Date

ATTACHMENT 1

Concept Layout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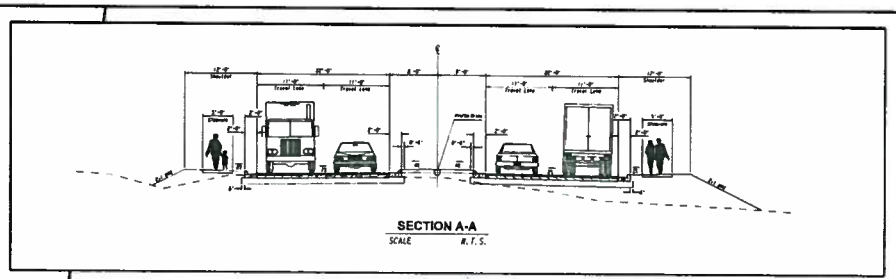
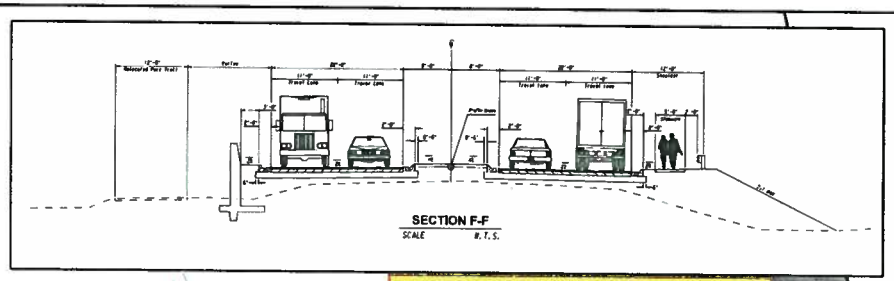
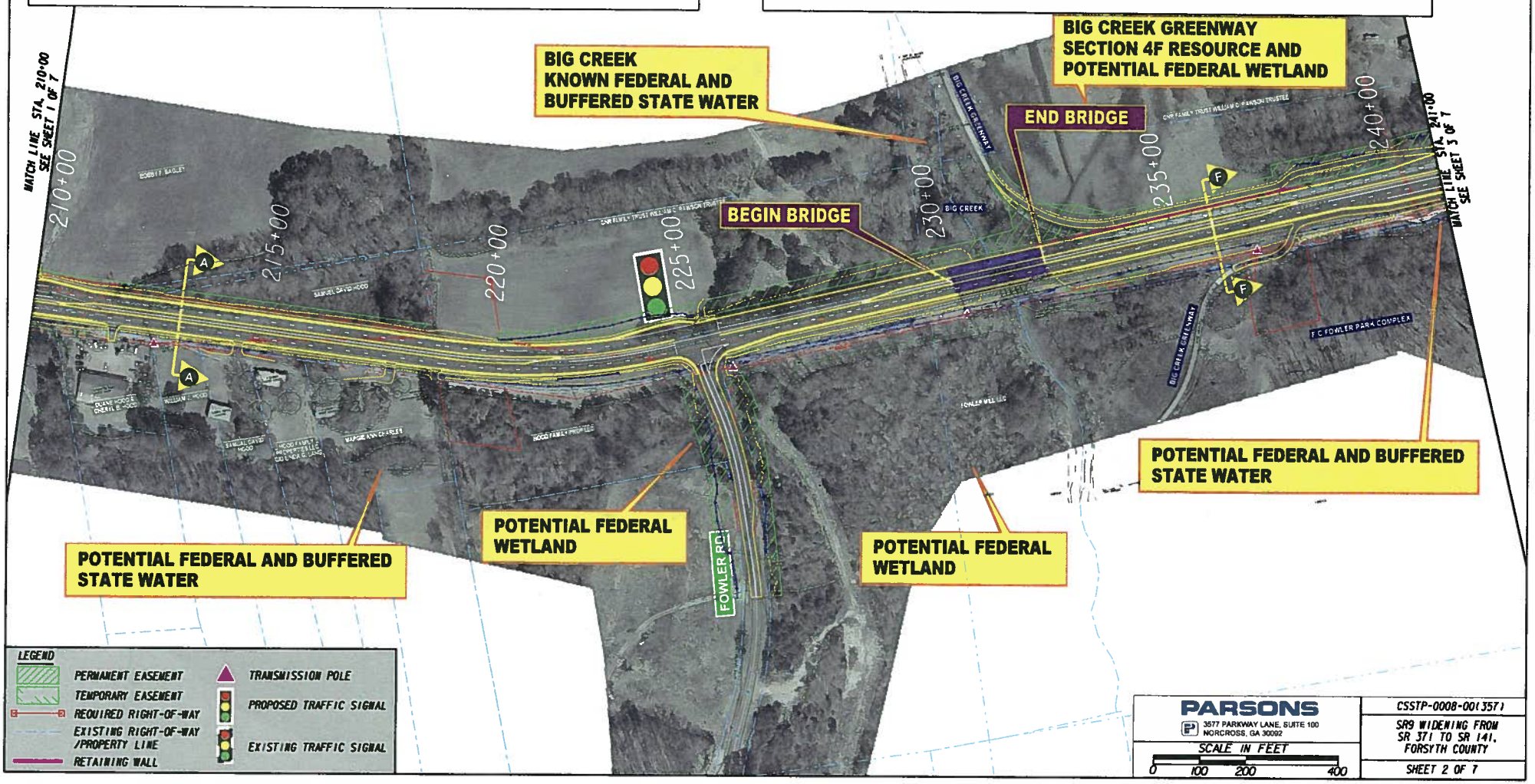
SCALE N.T.S.
BETTIS RD
OAKMONT BEND DR
WESTBROOKE CROSSING
MIDWAY ELEMENTARY SCHOOL
180+00
185+00
190+00
195+00
200+00
205+00
210+00
MATCH LINE STA. 210+00
SEE SHEET 2 OF 7
BEGIN PROJECT No. CSSTP-0008-00(357)
END PROJECT No. CSSTP-0007-00(844)
MP 3.20
LEGEND
PERMANENT EASEMENT
TEMPORARY EASEMENT
REQUIRED RIGHT-OF-WAY
EXISTING RIGHT-OF-WAY /PROPERTY LINE
RETAINING WALL
TRANSMISSION POLE
PROPOSED TRAFFIC SIGNAL
EXISTING TRAFFIC SIGNAL
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM SR 371 TO SR 141, FORSYTH COUNTY
SHEET 1 OF 7







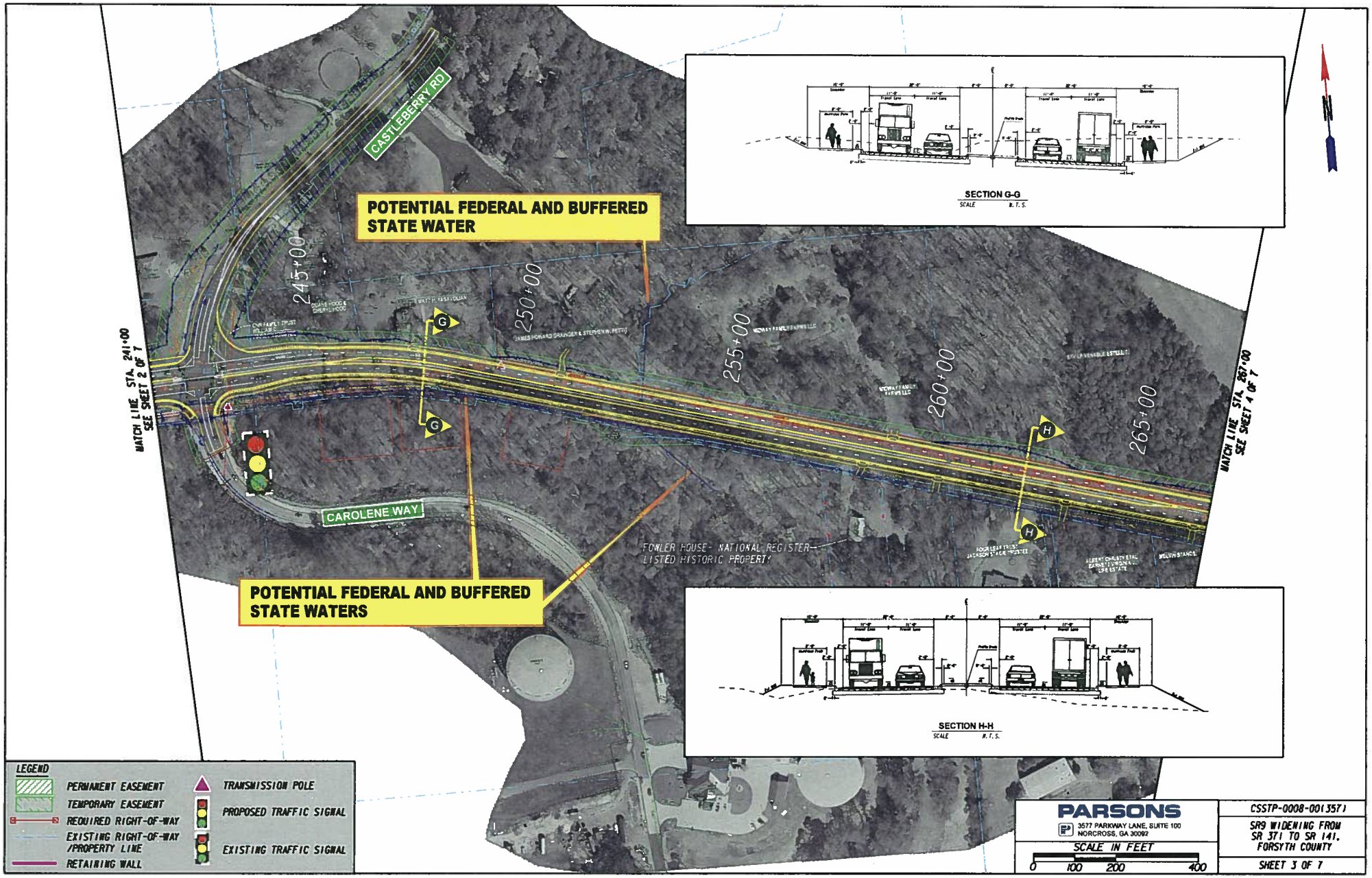
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

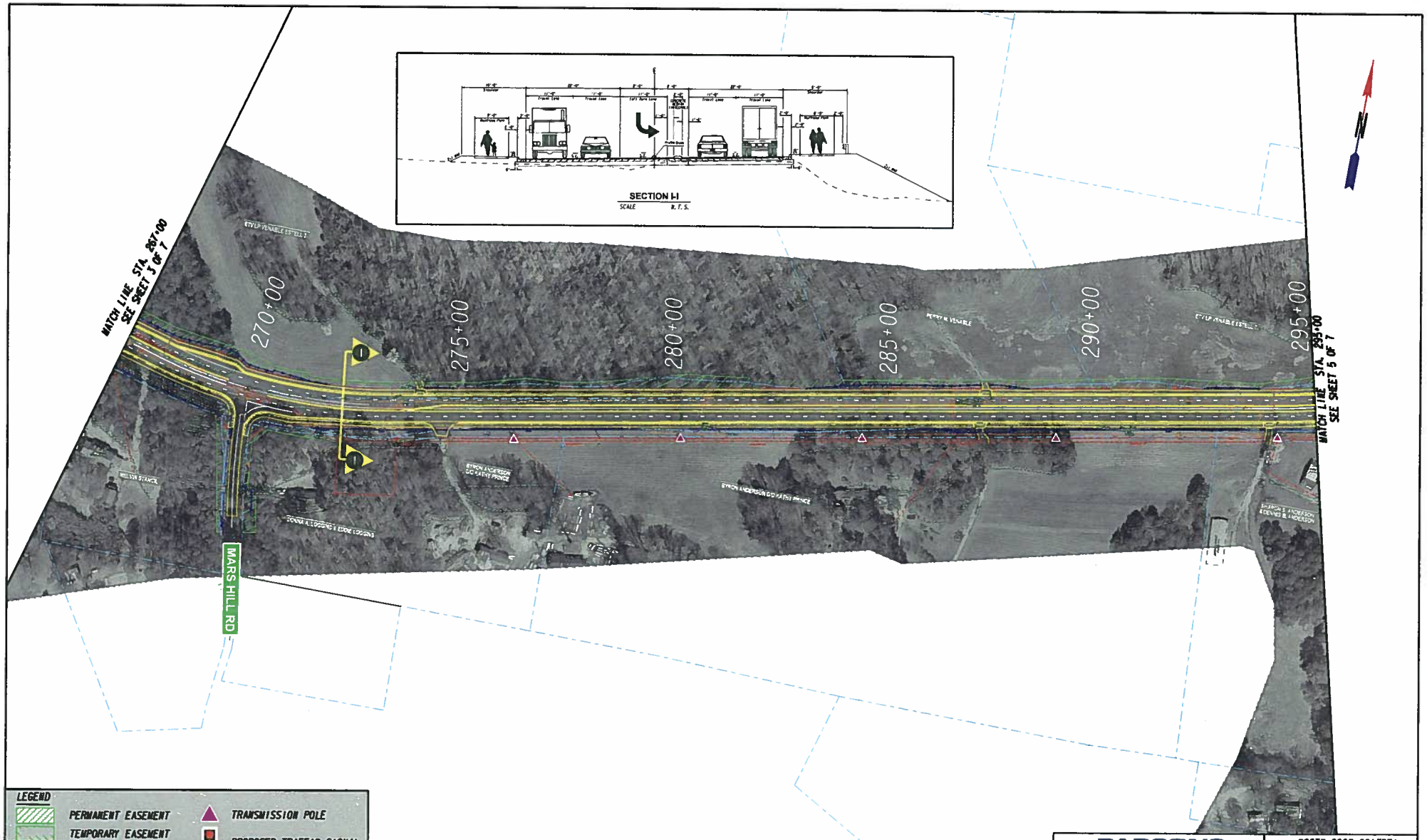
SCALE IN FEET
0 100 200 400

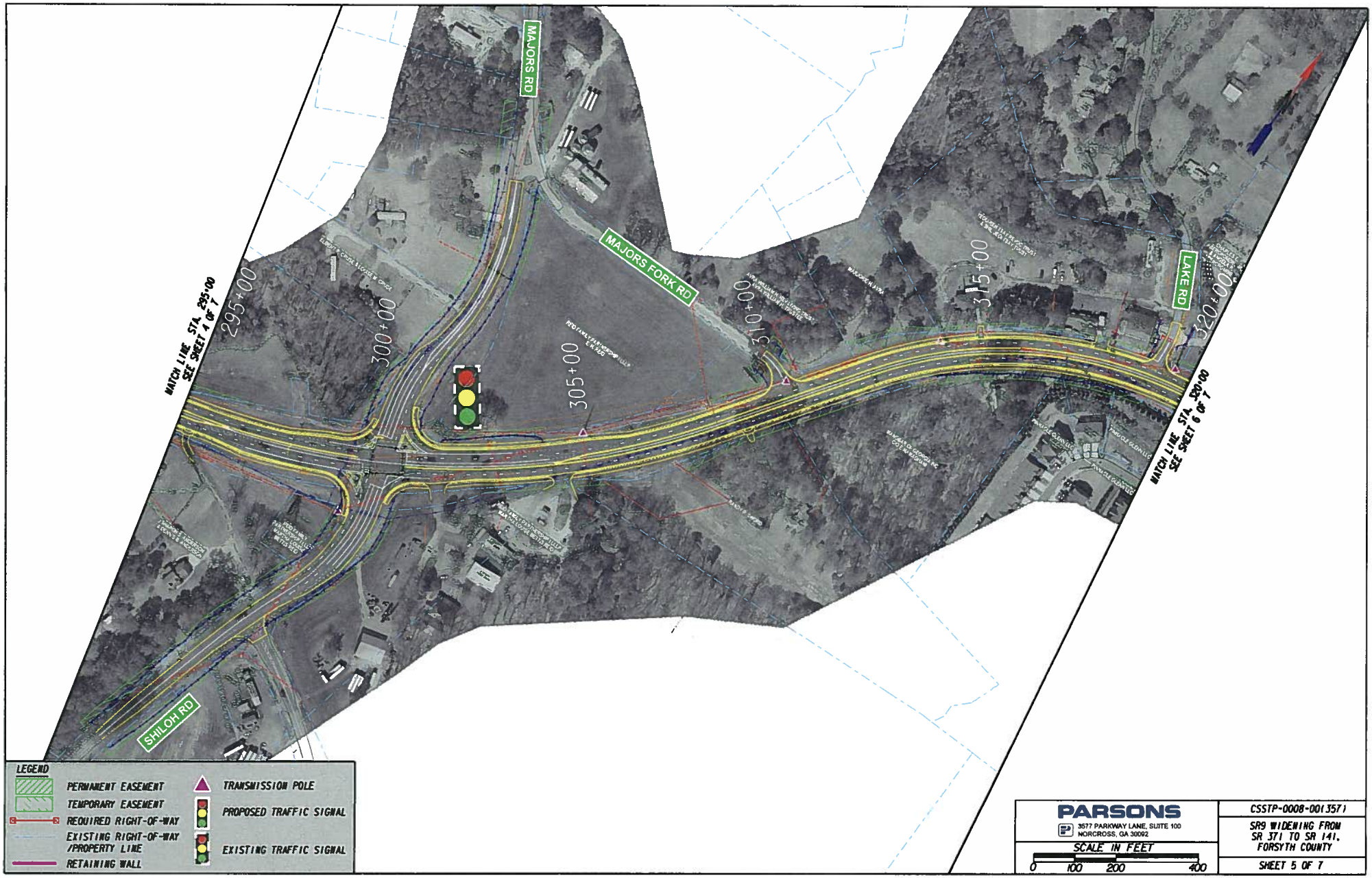
CSSTP-0008-00(357)

SR9 WIDENING FROM SR 371 TO SR 141, FORSYTH COUNTY

SHEET 2 OF 7


CASTLEBERRY RD
CAROLENE WAY
POTENTIAL FEDERAL AND BUFFERED STATE WATER
POTENTIAL FEDERAL AND BUFFERED STATE WATERS
245+00
250+00
255+00
260+00
265+00
MATCH LINE STA. 241+00 SEE SHEET 2 OF 7
MATCH LINE STA. 267+00 SEE SHEET 4 OF 7
FOWLER HOUSE - NATIONAL REGISTER LISTED HISTORIC PROPERTY
SECTION G-G
SCALE N.T.S.
SECTION H-H
SCALE N.T.S.
LEGEND
PERMANENT EASEMENT
TEMPORARY EASEMENT
REQUIRED RIGHT-OF-WAY
EXISTING RIGHT-OF-WAY /PROPERTY LINE
RETAINING WALL
TRANSMISSION POLE
PROPOSED TRAFFIC SIGNAL
EXISTING TRAFFIC SIGNAL
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM SR 371 TO SR 141, FORSYTH COUNTY
SHEET 3 OF 7


SECTION I-I
SCALE N.T.S.
MATCH LINE STA. 267+00
SEE SHEET 3 OF 7
270+00
275+00
280+00
285+00
290+00
295+00
MATCH LINE STA. 299+00
SEE SHEET 5 OF 7
MARS HILL RD
BYRON & ANDERSON
BYRON & ANDERSON
LEGEND
PERMANENT EASEMENT
TEMPORARY EASEMENT
REQUIRED RIGHT-OF-WAY
EXISTING RIGHT-OF-WAY /PROPERTY LINE
RETAINING WALL
TRANSMISSION POLE
PROPOSED TRAFFIC SIGNAL
EXISTING TRAFFIC SIGNAL
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM
SR 371 TO SR 141,
FORSYTH COUNTY
SHEET 4 OF 7



LEGEND

- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- REQUIRED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY /PROPERTY LINE
- RETAINING WALL
- TRANSMISSION POLE
- PROPOSED TRAFFIC SIGNAL
- EXISTING TRAFFIC SIGNAL

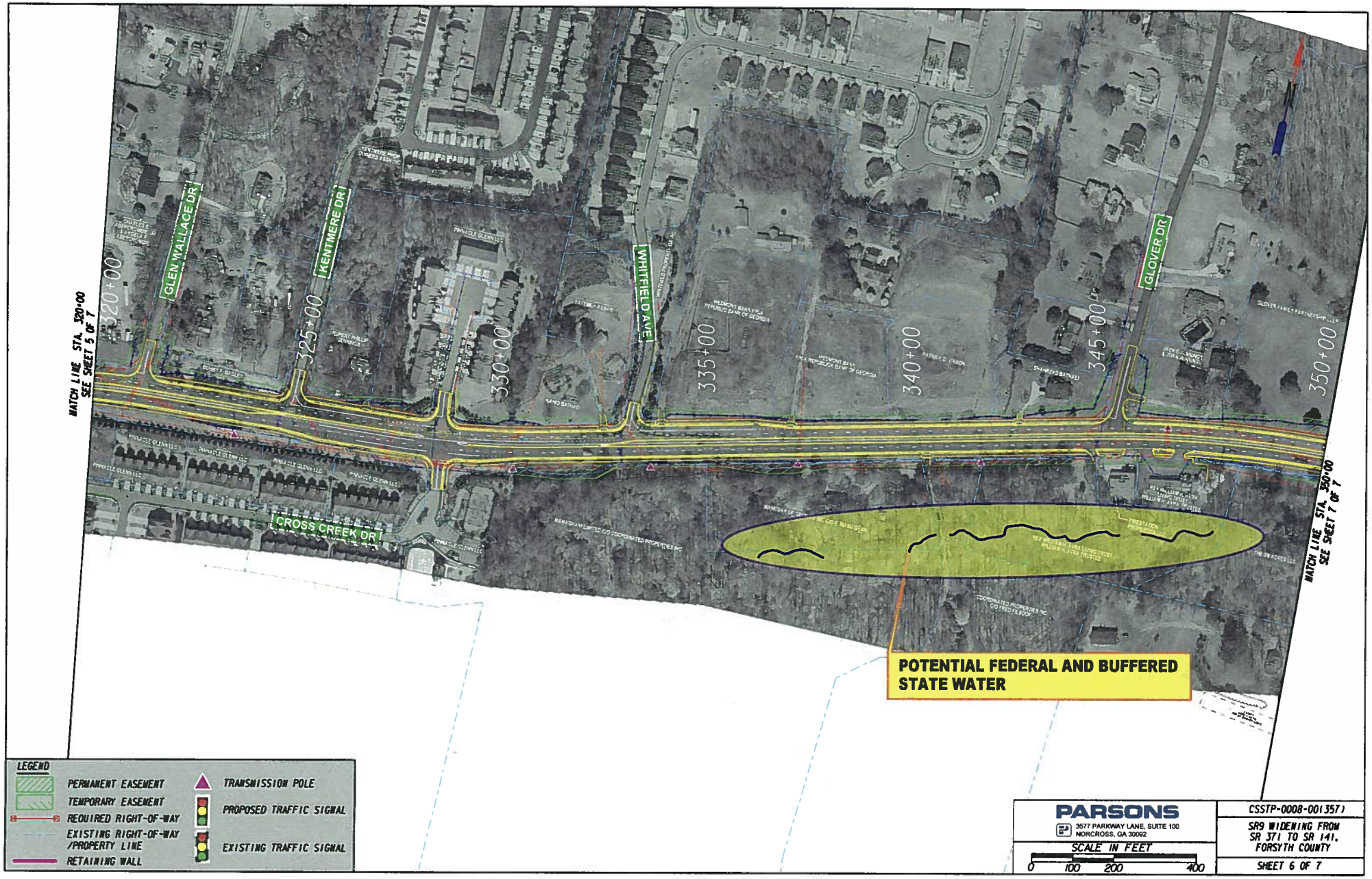
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

SCALE IN FEET
0 100 200 400

CSSTP-0008-00(357)

SR9 WIDENING FROM SR 371 TO SR 141, FORSYTH COUNTY

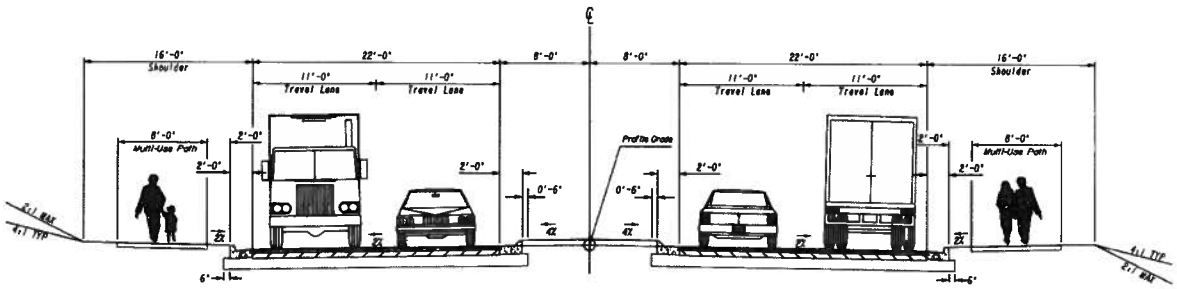
SHEET 5 OF 7


MATCH LINE STA. 320+00
SEE SHEET 5 OF 7
GLEN WALLACE DR
KENTMERE DR
WHITFIELD AVE
GLOVER DR
CROSS CREEK DR
320+00
325+00
330+00
335+00
340+00
345+00
350+00
MATCH LINE STA. 350+00
SEE SHEET 7 OF 7
POTENTIAL FEDERAL AND BUFFERED STATE WATER
LEGEND
PERMANENT EASEMENT
TEMPORARY EASEMENT
REQUIRED RIGHT-OF-WAY
EXISTING RIGHT-OF-WAY /PROPERTY LINE
RETAINING WALL
TRANSMISSION POLE
PROPOSED TRAFFIC SIGNAL
EXISTING TRAFFIC SIGNAL
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM SR 371 TO SR 141, FORSYTH COUNTY
SHEET 6 OF 7

BETHELVIEW DR
BETHELVIEW RD
BAGWELL DR
PEACHTREE PKWY
350+00
355+00
360+00
365+00
367+71
MATCH LINE STA. 350+00
SEE SHEET 6 OF 7
END PROJECT No. CSSTP-0008-00(357)
TIE TO PROJECT No. STP00-1336-00(011)
MP 6.66
LEGEND
PERMANENT EASEMENT
TEMPORARY EASEMENT
REQUIRED RIGHT-OF-WAY
EXISTING RIGHT-OF-WAY /PROPERTY LINE
RETAINING WALL
TRANSMISSION POLE
PROPOSED TRAFFIC SIGNAL
EXISTING TRAFFIC SIGNAL
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM SR 371 TO SR 141, FORSYTH COUNTY
SHEET 7 OF 7

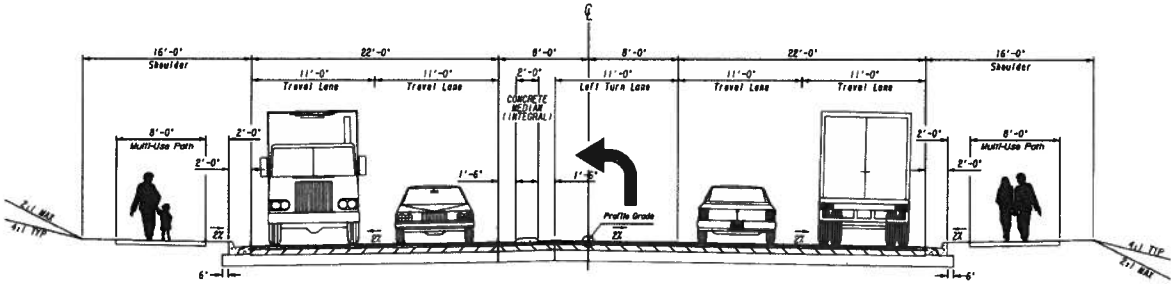
ATTACHMENT 2

Typical Sections



TYPICAL SECTION 1

S.R. 9/ATLANTA HIGHWAY



TYPICAL SECTION 2

S.R. 9/ATLANTA HIGHWAY

PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

NOT TO SCALE

GEORGIA
DEPARTMENT OF TRANSPORTATION

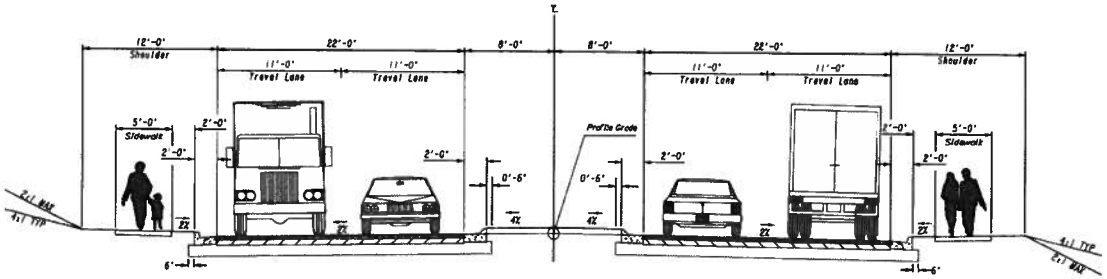
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

TYPICAL SECTIONS

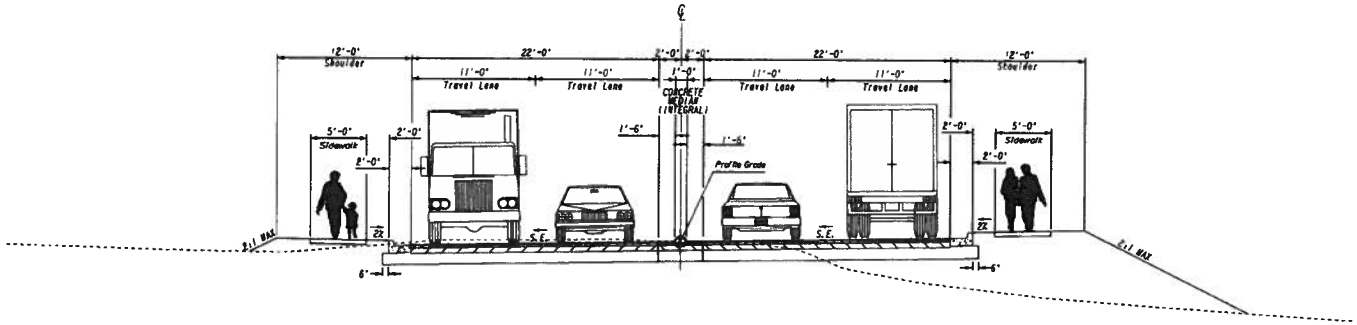
SR9 WIDENING FROM SR371 TO SR141, FORSYTH COUNTY

DRAWING No. 5-001



TYPICAL SECTION 3

S.R. 9/ATLANTA HIGHWAY



TYPICAL SECTION 4

S.R. 9/ATLANTA HIGHWAY

PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

NOT TO SCALE

GEORGIA
DEPARTMENT OF TRANSPORTATION

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

TYPICAL SECTIONS

SR9 WIDENING FROM SR371 TO SR141, FORSYTH COUNTY

DRAWING No. 5-002

ATTACHMENT 3

Detailed Cost Estimates

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. **0008357**

OFFICE Program Delivery

PROJECT DESCRIPTION

SR 9 from SR 371 to SR 141

DATE November 25, 2014

From: Albert V. Shelby, State Program Delivery Engineer

To: Lisa L. Myers, State Project Review Engineer

Subject: REVISIONS TO PROGRAMMED COSTS

PROJECT MANAGER Otis Clark

MGMT LET DATE 2/15/2019

MGMT ROW DATE 5/15/2017

PROGRAMMED COSTS (TPro W/OUT INFLATION)			**LAST ESTIMATE UPDATE**	
CONSTRUCTION	$	17,498,985.41	DATE	12/3/2012
RIGHT OF WAY	$	2,752,000.00	DATE	12/3/2012
UTILITIES	$	2,641,170.00	DATE	12/3/2012

REVISED COST ESTIMATES

CONSTRUCTION*	$	20,945,861.09
RIGHT OF WAY	$	2,752,000.00
UTILITIES	$	2,905,288.00

*Cost Contains 10 % Contingency

REASONS FOR COST INCREASE AND CONTINGENCY JUSTIFICATION:

Increase in unit costs and quantities
Big Creek needs a bridge instead of culvert extension

CONTINGENCY SUMMARY

A.	CONSTRUCTION COST ESTIMATE:	$ 16,966,944.75	Base Estimate From CES	
B.	ENGINEERING AND INSPECTION (E & I):	$ 848,347.24	Base Estimate (A) x	5 %
C.	CONTINGENCY:	$ 1,781,529.20	Base Estimate (A) + E & I (B) x See % Table in "Risk Based Cost Estimation" Memo	10 %
D.	TOTAL LIQUID AC ADJUSTMENT:	$ 1,349,039.90	Total From Liquid AC Spreadsheet	
E.	CONSTRUCTION TOTAL:	$ 20,945,861.09	(A + B + C + D = E)	

REIMBURSABLE UTILTY COSTS

UTILITY OWNER	REIMBURSABLE COST
AT&T	$ 372,268.00
Atlanta Gas Light Co.	$ -
Comcast CATV	$ 103,208.00
Forsyth County	$ 88,440.00
Georgia Transmission Corp.	$ 1,952,500.00
Sawnee EMC	$ 336,600.00
North Georgia Network Coop - Communications	$ 52,272.00
TOTAL	**$ 2,905,288.00**

ATTACHMENTS:

Detailed Cost Estimate Printout From TRAQS
Liquid AC Adjustment Spreadsheet
Preliminary Utility Cost Estimate
Preliminary RW Cost Estimate

STATE HIGHWAY AGENCY

JOB ESTIMATE REPORT

JOB NUMBER : 0008357_1 SPEC YEAR: 01
DESCRIPTION: SR9 FROM SR371 TO SOUTH OF SR 141/BETHELVIEW ROAD
SOUTH OF EXISTING BRIDGE

COST GROUPS FOR JOB 0008357_1

COST GROUP	DESCRIPTION	QUANTITY	PRICE	AMOUNT	ACTIVE?
UDEF	DRAINAGE	1.000	1571301.00000	1571301.00	Y
UDEF	PERMANENT EROSION CONTROL	1.000	521672.00000	521672.00	Y
UDEF	TEMPORARY EROSION CONTROL	1.000	395968.00000	395968.00	Y
UDEF	SIGNING & MARKING	1.000	395968.00000	395968.00	Y
ACTIVE COST GROUP TOTAL				2884909.00	
INFLATED COST GROUP TOTAL				2884909.00	

ITEMS FOR JOB 0008357_1

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	150-1000		LS	TRAFFIC CONTROL - CSSTP-0008-00(357)	1.000	350000.00	350000.00
0010	153-1300		EA	FIELD ENGINEERS OFFICE TP 3	1.000	66551.00	66551.00
0040	402-3121		TN	RECYL AC 25MM SP,GP1/2,BM&HL	29742.000	69.70	2073017.40
0050	402-3190		TN	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	22307.000	82.44	1838989.08
0060	413-1000		GL	BITUM TACK COAT	14196.000	2.94	41736.24
0125	210-0100		LS	GRADING COMPLETE - CSSTP-0008-00(357)	1.000	1160000.00	1160000.00
0140	310-1101		TN	GR AGGR BASE CRS, INCL MATL	101617.000	16.00	1625872.00
0145	402-1812		TN	RECYL AC LEVELING,INC BM&HL	11154.000	63.41	707325.67
0155	402-3130		TN	RECYL AC 12.5MM SP,GP2,BM&HL	11154.000	72.06	803757.24
0160	441-0104		SY	CONC SIDEWALK, 4 IN	33226.000	23.23	771839.98
0165	441-0700		SY	CONC MEDIAN, VARB TK	20501.000	40.76	835750.53
0170	441-4040		SY	CONC VALLEY GUTTER,W/CURB,6"	1496.000	300.00	448800.00
0175	441-6012		LF	CONC CURB & GUTTER/ 6"X24"TP2	82374.000	7.34	604625.16
0185	500-3110		LF	CLASS A CONCRETE, TYPE P1, RETAINING WAL	55.000	280.57	15431.70
0190	500-3115		LF	CLASS A CONCRETE, TYPE P2, RETAINING WAL	550.000	422.91	232600.81
0192	500-3120		LF	CLASS A CONCRETE, TYPE P3, RETAINING WAL	55.000	579.17	31854.73
0210	511-1000		LB	BAR REINF STEEL	68765.000	0.68	46962.37
0220	543-9000		LS	CONSTR OF BRIDGE COMPLETE - CSSTP-0008-00(357)	1.000	1715940.42	1715940.42
0225	610-9230		LS	REM CLVT, CONCRETE, STA - 231+34	1.000	50000.00	50000.00
0230	634-1200		EA	RIGHT OF WAY MARKERS	120.000	107.89	12946.80
0250	641-1100		LF	GUARDRAIL, TP T	23.000	87.34	2008.85
0280	641-1200		LF	GUARDRAIL, TP W	22653.000	16.31	369470.43
0300	641-5001		EA	GUARDRAIL ANCHORAGE, TP 1	21.000	660.94	13879.74
0330	641-5012		EA	GUARDRAIL ANCHORAGE, TP 12	20.000	1883.78	37675.60
0350	647-1000		LS	TRAF SIGNAL INSTALLATION NO - CSSTP-0008-00(357)	1.000	225000.00	225000.00

JOB ESTIMATE REPORT

ITEM TOTAL	14082035.74
INFLATED ITEM TOTAL	14082035.74

TOTALS FOR JOB 0008357_1

ESTIMATED COST:	16966944.75
CONTINGENCY PERCENT (0.0):	0.00
ESTIMATED TOTAL:	16966944.75

PROJ. NO.	CSSTP-0008-00(357)	CALL NO.	9/29/2009
P.I. NO.	0008357		
DATE	11/25/2014		

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Nov-14	$ 2.859
DIESEL		$ 3.539
LIQUID AC		$ 595.00

Link to Fuel and AC Index:
http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

LIQUID AC ADJUSTMENTS

PA=[((APM-APL)/APL)]xTMTxAPL

Asphalt

Price Adjustment (PA)			**1327272.45**	**$**	**1,327,272.45**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 952.00		
Monthly Asphalt Cement Price month project let (APL)			$ 595.00		
Total Monthly Tonnage of asphalt cement (TMT)			3717.85		

ASPHALT	Tons	%AC	AC ton
Leveling	11154	5.0%	557.7
12.5 OGFC	0	5.0%	0
12.5 mm	11154	5.0%	557.7
9.5 mm SP	0	5.0%	0
25 mm SP	29742	5.0%	1487.1
19 mm SP	22307	5.0%	1115.35
	74357		**3717.85**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$ 21,767.45**	**$**	**21,767.45**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 952.00		
Monthly Asphalt Cement Price month project let (APL)			$ 595.00		
Total Monthly Tonnage of asphalt cement (TMT)			60.97325269		

Bitum Tack Gals	gals/ton	tons
14196	232.8234	60.9732527

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)			**0**	**$**	**-**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$ 952.00		
Monthly Asphalt Cement Price month project let (APL)			$ 595.00		
Total Monthly Tonnage of asphalt cement (TMT)			0		

Bitum Tack	SY	Gals/SY	Gals	gals/ton	tons
Single Surf. Trmt.		0.20	0	232.8234	0
Double Surf.Trmt.		0.44	0	232.8234	0
Triple Surf. Trmt		0.71	0	232.8234	0
					0

TOTAL LIQUID AC ADJUSTMENT	**$**	**1,349,039.90**

Department of Transportation

State of Georgia

Interdepartmental Correspondence

FILE	R/W Cost Estimate	**OFFICE**	Atlanta
		DATE	July 16, 2014
FROM	Phil Copeland, Right of Way Administrator LaShone Alexander, Right of Way Cost Estimator		
TO	Otis Clark, Project Manager		

SUBJECT **Preliminary Right of Way Cost Estimate**
Project: CSSTP-0007-00(843) CSSTP-0007-00(844) CSSTP-0008-00(357) Forsyth County
P.I. No.: 0007843, 0007844, 0008357
Description: SR 9 Atlanta Hwy from Fulton County Line to SR 141

As per your request, attached is a copy of the approved Preliminary Right of Way Cost Estimates on the above referenced projects.

If you have any questions, please contact LaShone Alexander at One Georgia Center 600 West Parkway Street, NW Atlanta, GA 30308, Right of Way Office at (478) 553-1569 or (478) 232-4045.

`

PC:LA
Attachments
c: file

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 7/16/2014 Project: CSSTP-0007-00(357)
Revised: County: Forsyth
PI: 0008357
Description: SR 9/Atlanta Highway From Fulton County Line to SR 141
Project Termini: SR 9/Atlanta Highway From Fulton County Line to SR 141
Existing ROW: Varies
Parcels: 69 Required ROW: Varies

Land and Improvements	$1,360,282.50
Proximity Damage	*$0.00*
Consequential Damage	*$0.00*
Cost to Cures	*$0.00*
Trade Fixtures	*$0.00*
Improvements	*$465,000.00*
Valuation Services	$106,250.00
Legal Services	$459,075.00
Relocation	$178,000.00
Demolition	$62,500.00
Administrative	$585,500.00
TOTAL ESTIMATED COSTS	$2,751,607.50
TOTAL ESTIMATED COSTS (ROUNDED)	***$2,752,000.00***

Preparation Credits	Hours	Signature

Prepared By: Lashrone Alexander CG#: 286999 07/16/2014 (DATE)
Approved By: Lashrone Alexander CG#: 286999 07/16/2014 (DATE)

NOTE: No Market Appreciation is included in this Preliminary Cost Estimate

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE	CSSTP-0008-00(357) Forsyth Co. PI No. 0008357 SR 9 FM Mullinax Rd to Bethelview Dr.	OFFICE	GAINESVILLE
FROM	Neil Kantner, P.E., Distr. Utilities Eng.	DATE	6/23/2014

TO Albert Shelby, State Program Delivery Engineer
ATTEN Otis Clark, Project Manager

SUBJECT UPDATED PRELIMINARY UTILITY COST ESTIMATE

As requested by your office we are furnishing you with an Updated Preliminary Utility Cost estimate for the subject project.

FACILITY OWNER		NON-REIMBURSABLE		REIMBURSBLE
AT&T		$886,133		$372,268
Atlanta Gas Light		$4,380,750		$0
Comcast CATV		$126,143		$103,208
Forsyth County Water		$2,092,200		$0
Forsyth County Sewer		$26,400		$88,440
Georgia Transmission Corp.		$0		$1,952,500
Sawnee EMC		$415,800		$336,600
North Georgia Network		$78,408		$52,272
Cooperative - Communication				

TOTALS	$8,005,833	~~$2,905,287~~ $2,905,288
Total Non-Reimbursable Cost	$8,005,833	
Total Reimbursable Cost		~~$2,905,287~~ $2,905,288

If you have any questions, please contact Neil Kantner at 770-532-5510.

NAK

C: Mike Bolden, State Utilities Engineer
Matt Needham, Area Engineer
File

Williams, Emilee

From: Gary.Newton@kimley-horn.com
Sent: Thursday, September 04, 2014 3:31 PM
To: Williams, Emilee
Cc: Bhattacharya, Saurabh; oclark@dot.ga.gov
Subject: RE: SR 9 Concept

Emilee,
Using the mitigation cost rates listed in the GDOT email below, we have estimated impacts to include all waters within approximately 25 feet of the preliminary proposed ROW and obtaining intentionally over-estimated quantities using GIS. Additional assumptions include 5 stream credits per foot impacted and 8 wetland credits per 1 acre impacted with wetland credits rounded up to the nearest whole number.

PI Number	Mitigation Credit Estimate
0007838	$52,000
0007843	None
0007844	None
0008357	$465,000

I am hoping to have the network schematics later today.

From: Williams, Emilee [mailto:Emilee.Williams@parsons.com]
Sent: Friday, August 29, 2014 9:30 AM
To: Newton, Gary
Cc: Bhattacharya, Saurabh; oclark@dot.ga.gov
Subject: FW: SR 9 Concept

Gary, I wanted to follow up with you regarding the outstanding items for the SR 9 concept reports (see below for details). Please let us know when we can expect these to be completed.

Thanks,

Emilee Williams, EI
Associate Roadway Engineer
PARSONS
678.969.2319
www.parsons.com

From: Williams, Emilee
Sent: Thursday, August 21, 2014 1:32 PM
To: 'Gary.Newton@kimley-horn.com'
Cc: oclark@dot.ga.gov; Bhattacharya, Saurabh
Subject: RE: SR 9 Concept

Gary,

Thank you for sending your revisions; however, a few outstanding items remain.

ATTACHMENT 4

Traffic Memo Including Crash Summaries & Capacity Analysis Summary

SR 9 Widening From SR 371 / Post Road / Mullinax Road to 1,000 Ft. South of SR 141 / Bethelview Road
P.I. # 0008357

1. Introduction

This is one of three projects that focus on Atlanta Highway (SR 9) widening in Forsyth County, Georgia. The study area includes SR 9 from its intersection with SR 371 / Post Road / Mullinax Road for a distance of about 3.54 miles to its intersection with SR 141 / Peachtree Parkway / Bethelview Road. Two additional projects comprise the widening of SR 9 from the Fulton County line to its intersection with McFarland Road (P.I. 0007843) and between its intersections with McFarland Road and SR 371 / Post Road / Mullinax Road (P.I. 0007844). Traffic data was collected and capacity analysis was performed for the project to identify the deficiencies of the existing condition and appropriate future improvements.

2. Existing Conditions

Currently, SR 9 is a two-lane road with turning lanes at some individual intersections and a two-way-left-turning lane for some sections. There are multiple intersections (cross roads and driveways) with SR 9 within the project extents; four of which are currently signalized and all other intersections are unsignalized (stop controls for the minor approaches). The posted speed limit for SR 9 is 55 miles per hour (mph). The current highest annual daily traffic (ADT) for SR 9 within project limits is 16,160 vehicles per day (vpd). The ADT for other cross roads are shown in the volume diagrams attachment.

3. Projects in Area

The following nearby projects were identified

- P.I. 721780 - Fulton County – SR 9 Widening from Academy Street to Windward Parkway.
- P.I. 0007838 - Fulton County – SR 9 Widening from Windward Parkway to Forsyth County Line.
- P.I. 0007843 - Forsyth County – SR 9 Widening from Fulton County line to McFarland Road.
- P.I. 0007844 - Forsyth County – SR 9 Widening from McFarland Road to SR 371 / Post Road / Mullinax Road.
- P.I. 0007999 - Forsyth County – SR 141/SR 9 intersection improvements.
- P.I. 141880 - Forsyth County – CR 455 / Bethelview Road Widening from SR 9 to SR 8 / Castleberry Road.
- P.I. 121690 - Forsyth County – SR 9 Widening from North of SR 141 to North of SR 20.
- P.I. 0006727 - Fulton County – ITS Installation for SR 9 / Roswell Road from Abernathy Road to Forsyth County line.

4. Crash Analysis

Historical crash data was obtained from Critical Analysis Reporting Environment (CARE 9) software and database for the available most recent three years (2007-2009) for SR 9 within the project limits from SR 371 to SR 141. The length of project segment is 3.54 miles. Crash history by crash type and crash rates for the project limits are summarized in Tables 1 and 2 respectively.

Table 1 Crash History by Crash Type

Year	Angle	Head On	Rear End	Sideswipe	Other	Total
2010	7	1	16	--	3	27
2011	6	--	30	1	12	49
2012	10	5	14	--	2	31
2013	11	2	11	1	8	33
Total	34	8	71	2	25	140
Percentage	24%	6%	50%	2%	18%	100%

Table 2 Crash History by Rate & Comparison with Statewide Average

Year	No. of Crashes			All Crashes		Injuries		Fatalities	
	Crashes	Injuries	Fatalities	Rate (100MVM)	Statewide Average Rate (100MVM)	Rate (100MVM)	Statewide Average Rate (100MVM)	Rate (100MVM)	Statewide Average Rate (100MVM)
2010	27	8	0	358	464	106	113	0	1.19
2011	49	18	0	516	482	190	110	0	1.19
2012	31	15	0	332	544	161	120	0	1.16
2013	33	24	0	177	n/a	129	n/a	0	n/a

Table 3 Lighting Conditions Crash History

Condition	2010	2011	2012	2013	Total
Daylight	22	35	21	22	100
Dusk	--	--	1	--	1
Dawn	--	3	1	2	6
Dark - lighted	4	4	1	1	10
Dark – not lighted	1	7	7	8	23
Total	***27***	***49***	***31***	***33***	***140***
% Dark – not lighted	***0.7%***	***5%***	***5%***	***5.7%***	

The historical crash data indicated that 27, 49, 31, 33 crashes occurred along SR9 study section respectively. In total, 140 crashes occurred on SR 9 during the 4 years period. Rear end collisions accounted for 50 percent of the crashes while angle collisions accounted for 24 percent

of all crashes. The high percentage of rear-end crashes and angle crashes is an indication of congestion and high turning movements at intersections.

Crash rates were calculated and compared with the statewide averages rate for urban minor arterial, as shown in Table 2.The crash rate information shown in Table 2 showed that the crash rates for SR 9 with in project limits is slightly higher than statewide averages for the year 2011. The injury rate along SR 9 within project limits is higher than statewide average rates for the years 2011 and 2012. This section of SR 9 had no fatality between years 2010-2012. 2013 statewide average data has not been published by GDOT yet, hence 2013 data was not used in overall crash rate calculations

For each analysis year, less than 10 percent of the crashes occurred during dark-non lighted conditions.

5. Traffic Forecast

Traffic forecast was performed for opening year (2020) and design year (2040) for SR 9. Existing traffic count data was collected in January 2012 and used as the basis for traffic forecast. Georgia DOT historical traffic count data was reviewed and analyzed to determine future traffic growth rate.

5.1. Existing Traffic Data

Twenty-four (24) hours traffic count data for SR 9 and peak hour turning movement count data for selected intersections was collected in January, 2012.

5.2. Traffic Growth Rate and Forecast

Monthly factor, daily factor and axle factor were used to adjust 2012 traffic count data to annual average daily level. Based on the traffic forecast for related projects collected from and discussion with the GDOT Office of Planning, the determined average traffic growth rates for the project are summarized in Table 15 below. The opening year (2020) and design year (2040) traffic volumes were developed and are included in Appendix A.

Table 15 Traffic Growth Rate

Scenario/ Year	Growth Rate/Year
No-Build (2012-2020)	2.0 %
Build (2012-2020)	2.5 %
No-Build (2020-2040)	1.0 %
Build (2020-2040)	1.5 %

6. Capacity Analysis

Capacity analysis is a set of procedures for estimating traffic-carrying ability of facilities over a range of defined operational conditions. It provides tools to assess facilities and to plan and design improved facilities [Highway Capacity Manual 2010]. Level of service (LOS) is a quality measure describing operational conditions, which is represented by six letters, from A to F, with LOS A representing the best operating conditions and LOS F the worst. For intersections capacity analysis, control delay is the measure of effectiveness (MOE) determining LOS. The LOS criteria for signalized and unsignalized intersections and urban arterials defined in Highway Capacity Manual 2010 are included in Table 16, 17 and 18, respectively.

Table 16 LOS Criteria for Signalized Intersections

Level of Service	Control Delay Per Vehicle (sec/veh)
A	<=10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80

Table 17 LOS Criteria for Unsignalized Intersections

Level of Service	Control Delay Per Vehicle (sec/veh)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50

Table 18 Urban Street LOS by Class

Travel Speed as Percentage of Base Free flow speed (%)	LOS
>85	A
>67-85	B
>50-67	C
>40-50	D
>30-40	E
≤ 30	F

Capacity analysis was performed for a.m. and p.m. peak hours for existing (2012) condition, opening year (2020) and design year (2040) no-build conditions in this study. *Synchro plus SimTraffic 7* software was used for analyzing intersections and roadway. Intersection LOS Results are summarized in Table 19 while Roadway LOS results are summarized in Tables 20 and 21. For these analyses, SR 9 is considered an east-west road and all crossroads are considered north-south roads.

Table 19 Capacity Analysis (LOS) Results for Intersections (Existing and Future Conditions)

SR 9 @	Approach /Movement	Existing AM	Existing PM	2020 No-Build AM	2020 No-Build PM	2040 No-Build AM	2040 No-Build PM
Midway Elem. School Driveway	Eastbound	A	A	A	A	A	A
	Westbound	A	B	A	B	A	B
	Northbound	F	E	F	F	F	F
Woodbine Way	Eastbound	A	A	A	A	A	A
	Westbound	A	A	A	A	A	A
	Southbound	C	C	D	D	E	E
Fowler Road	Eastbound	A	A	A	A	A	A
	Westbound	A	A	A	A	A	A
	Northbound	F	F	F	F	F	F
Castleberry Road/Carolene Way*	-	**B**	**B**	**C**	**C**	**E**	**D**
Mars Hill Road	Westbound	A	A	A	A	A	A
	Northbound	C	C	C	D	D	F
Majors Road/Shiloh Road	-	**C**	**C**	**D**	**C**	**F**	**D**
Majors Fork Road	Eastbound	A	A	A	A	A	A
	Southbound	C	E	D	F	F	F
Crosscreek Ct	Eastbound	A	A	A	A	A	A
	Westbound	A	A	A	A	A	A
	Northbound	C	C	D	E	F	F
	Southbound	D	D	E	F	F	F
Whitfield Avenue	Eastbound	A	A	A	A	A	A
	Southbound	D	D	E	F	F	F
Bethelview Drive/Bagwell Drive	Eastbound	A	A	A	A	A	A
	Westbound	A	A	A	A	A	A
	Northbound	C	C	C	C	D	C
	Southbound	C	C	C	C	D	C
Bethelview Rd / SR 141/ ***	-	**E**	**D**	**D**	**C**	**F**	**D**

* Signalized intersections

**Project P.I. 0007999 (design year 2032) to be in place by 2013. Project updates SR 141, SR 9 and Bethelview Rd to two through lanes, two left turn lanes, a right turn lane and free right turn pocket. Incorporated into 2020 and 2040 models.

Table 20 Urban Roadway Capacity Analysis (LOS) Results (Existing and Future Conditions) – SR 9 EB

SR 9 @	Existing AM	Existing PM	2020 No-Build AM	2020 No-Build PM	2040 No-Build AM	2040 No-Build PM
Midway Elem. School Driveway	C	C	C	B	C	C
Woodbine Way	A	A	A	A	A	A
Fowler Road	A	B	B	B	B	B
Castleberry Road/Carolene Way*	**B**	**C**	**C**	**B**	**C**	**C**
Mars Hill Road	B	A	B	A	B	A
Majors Road/Shiloh Road	**C**	**C**	**C**	**C**	**D**	**C**
Majors Fork Road	B	B	B	B	C	C
Crosscreek Ct	A	A	A	A	A	A
Whitfield Avenue	A	A	B	A	A	B
Bethelview Drive/Bagwell Drive	A	A	A	A	A	A
***Bethelview Rd / SR 141/ ** **	**F**	**F**	**F**	**D**	**F**	**E**

* Signalized intersections

**Project P.I. 0007999 (design year 2032) to be in place by 2013. Project updates SR 141, SR 9 and Bethelview Rd to two through lanes, two left turn lanes, a right turn lane and free right turn pocket. Incorporated into 2020 and 2040 models.

SR 9 posted speed limit is 45 mph northbound to Waterbrooke Crossing and 55 mph to SR 141.

Table 21 Urban Roadway Capacity Analysis (LOS) Results (Existing and Future Conditions) – SR 9 WB

SR 9 @	Existing AM	Existing PM	2020 No-Build AM	2020 No-Build PM	2040 No-Build AM	2040 No-Build PM
***Bethelview Rd / SR 141** **	**F**	**F**	**F**	**F**	**F**	**F**
Bethelview Dr / Bagwell Dr	B	B	C	B	C	B
Whitfield Ave	A	A	A	A	A	A
Crosscreek Ct	B	A	B	B	B	B
Majors Fork Rd	A	A	A	A	A	A
Majors Rd/Shiloh Rd	**D**	**C**	**D**	**D**	**F**	**E**
Mars Hill Rd	B	B	B	B	B	B
Castleberry Rd/Carolene Way*	**C**	**B**	**B**	**B**	**C**	**C**
Fowler Rd	B	B	B	B	B	B
Woodbine Way	A	A	A	A	A	A
Midway Elementary School Driveway	B	B	B	B	B	B

* Signalized intersections

**Project P.I. 0007999 (design year 2032) to be in place by 2013. Project updates SR 141, SR 9 and Bethelview Rd to two through lanes, two left turn lanes, a right turn lane and free right turn pocket. Incorporated into 2020 and 2040 models.

SR 9 posted speed limit is 45 mph northbound to Waterbrooke Crossing and 55 mph to SR 141.

ATTACHMENT 5

Traffic Diagrams

Department of Transportation
State of Georgia

INTERDEPARTMENT CORRESPONDENCE

FILE CSSTP-0007-00(843), CSSTP-0007-00(844) CSSTP- 0008-00(357)
Forsyth County
P.I. # 0007843, 0007844 & 0008357

OFFICE Planning

DATE July 2, 2012

FROM Cynthia L. VanDyke, State Transportation Planning Administrator

TO Genetha Rice-Singleton, State Program Delivery Engineer
Attention: Otis Clark

SUBJECT **Reviewed** Design Traffic for SR 9/ATLANTA HWY., FM/FULTON CO. LINE TO CR 458/MCFARLAND RD., SR 9, FM/CR 458/MCFARLAND RD. TO SR 371 & SR 9, FM/SR 371 TO SR 141.

As per your request, we reviewed the consultant's Design Traffic for the above subject project.

The Design Traffic is approved based on the information furnished. If you have any questions concerning this information please contact Leslie R. Woods at (404) 631-1773.

CLV/LRW

SHEET 1 OF 30

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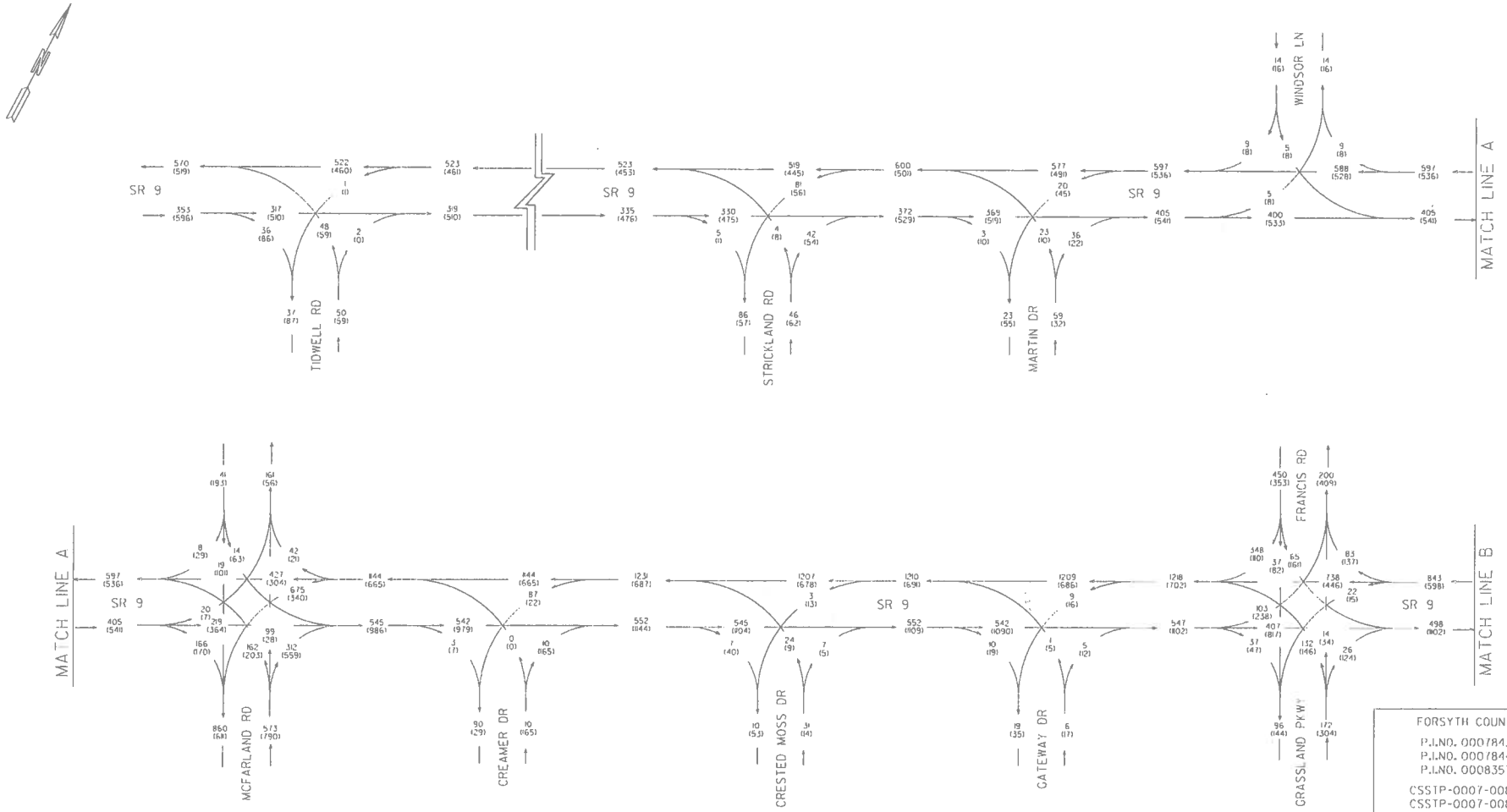

FORSYTH COUNTY

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P.I.NO. 0008357

CSSTP-0007-00843
CSSTP-0007-00844
CSSTP-0008-00357

SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

EXISTING
2012 PM = (000)
2012 AM = 000
T = 10%
S.U. = 9%
COMB. = 1%

05/2012

NOTE: DRAWING IS NOT TO SCALE.

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NORCROSS, GA 30092

SHEET 2 OF 30

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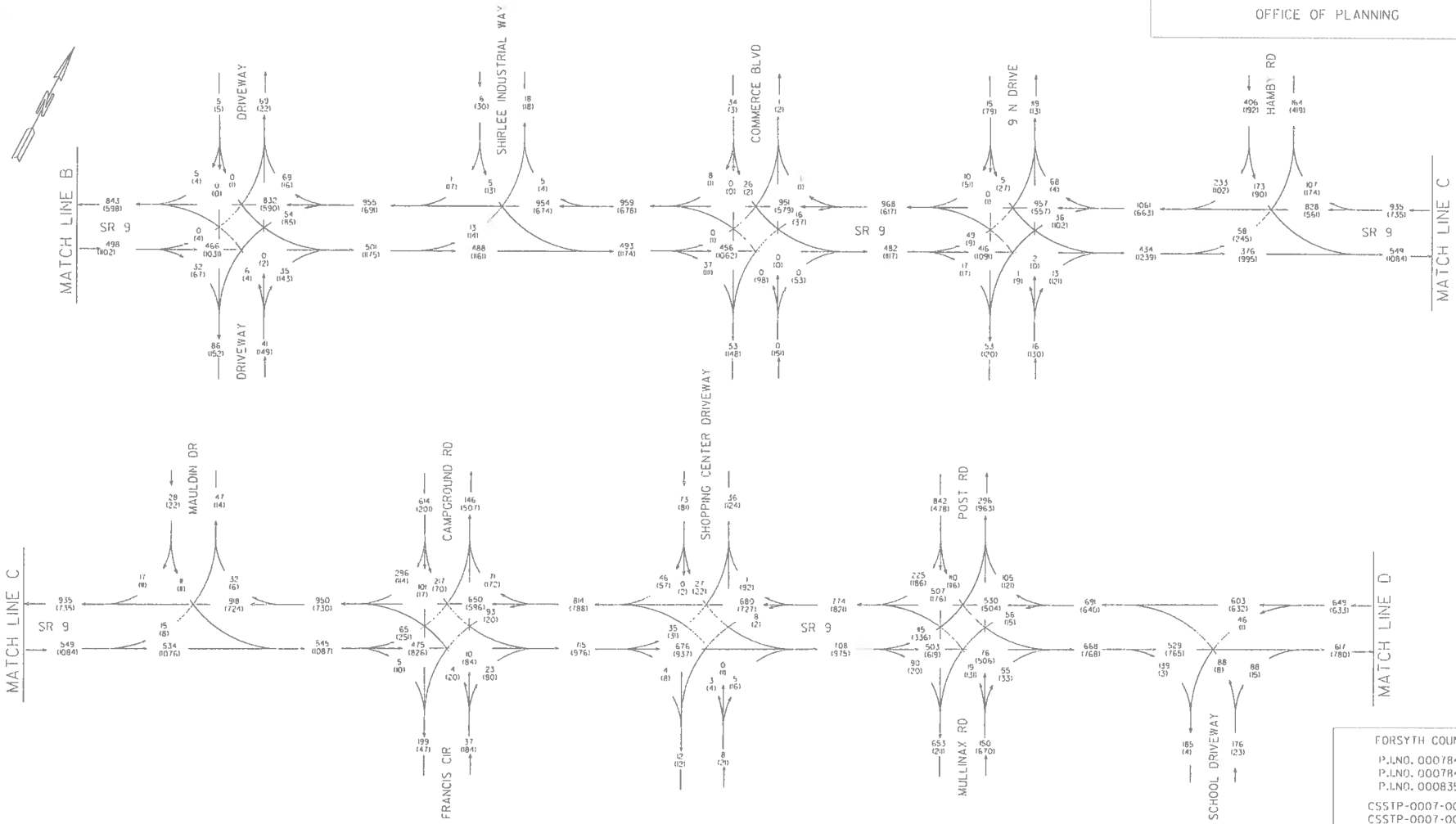

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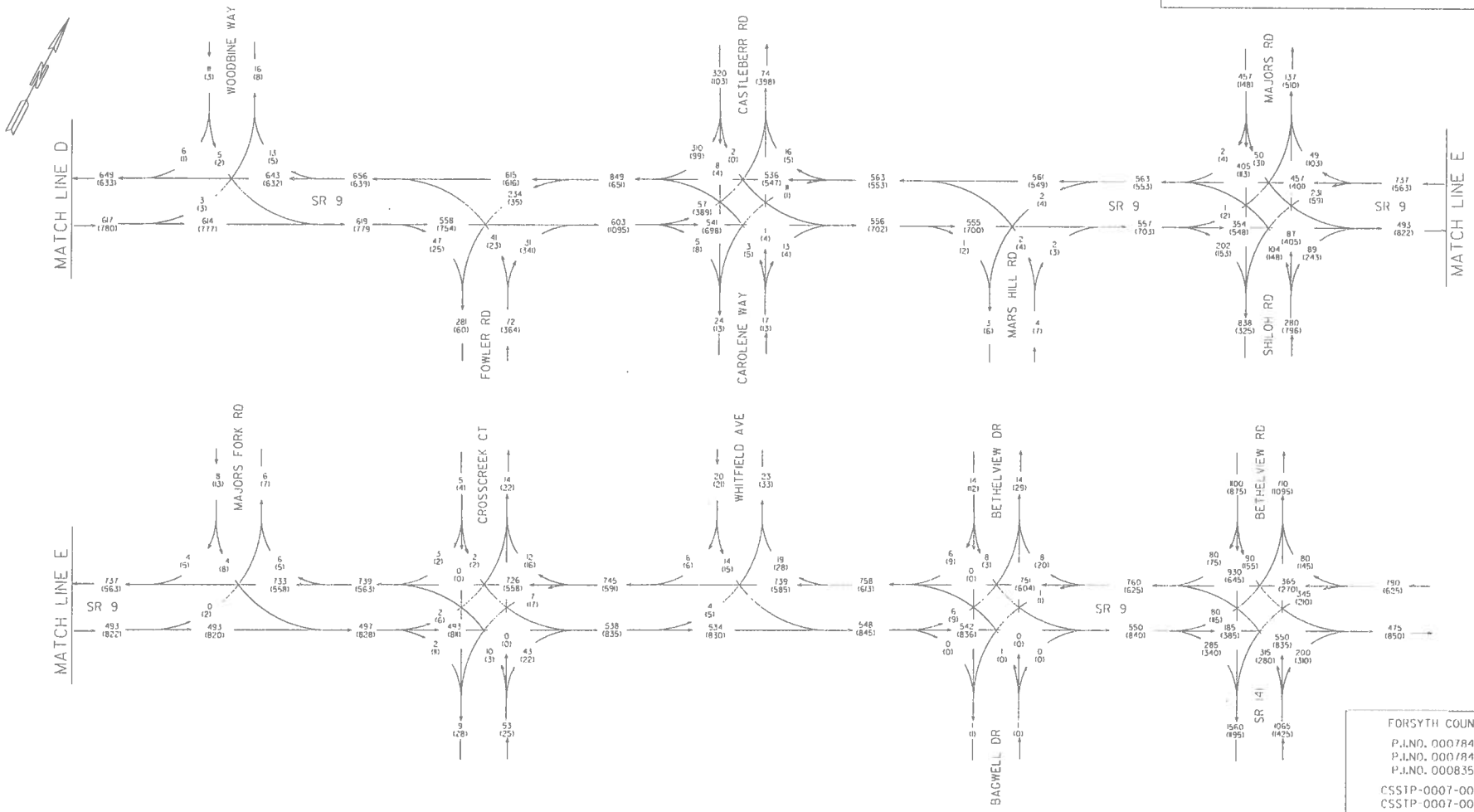

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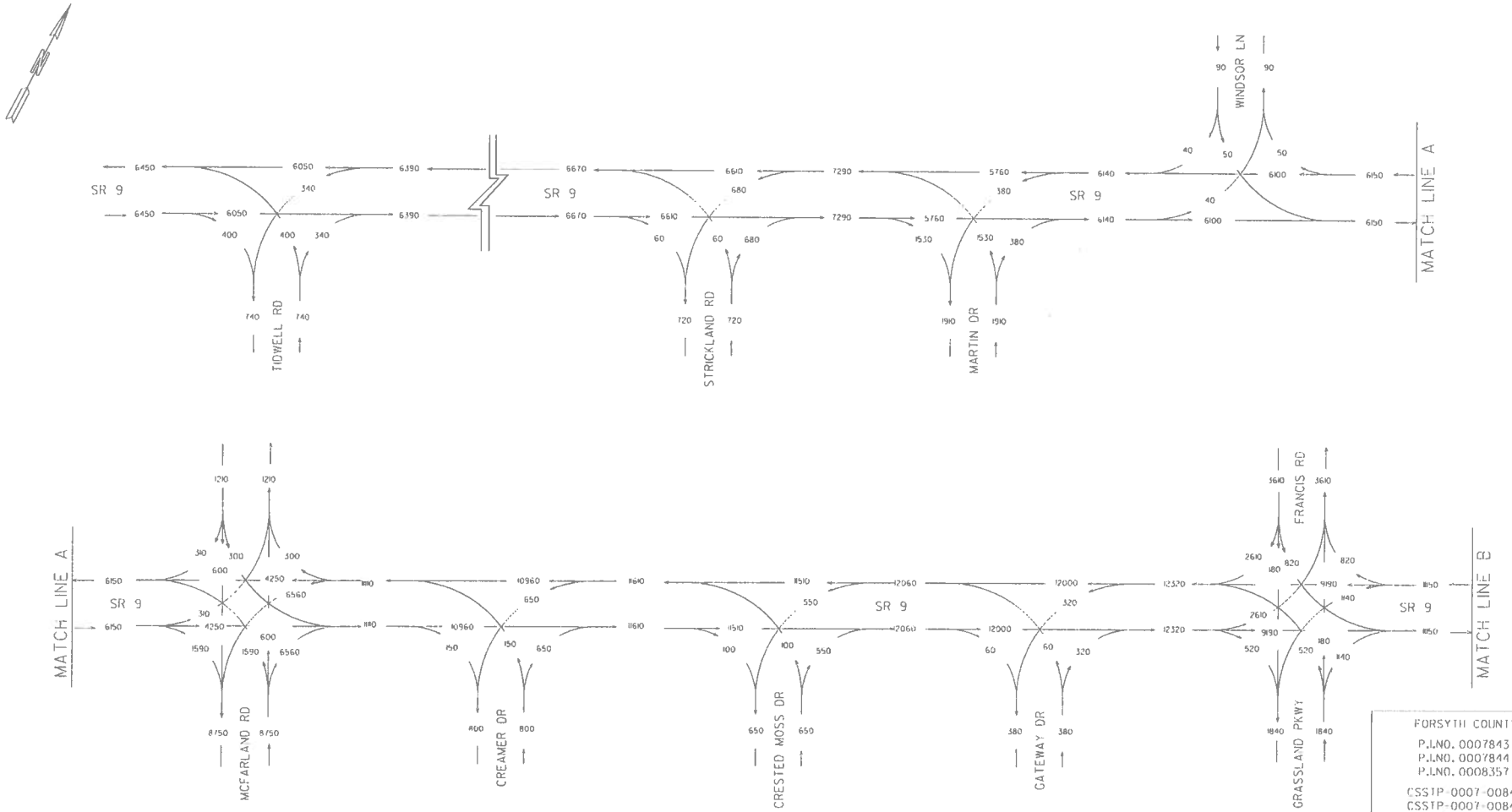

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S.U. = 7%
COMB. = 1%
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NOTE: DRAWING IS NOT TO SCALE.

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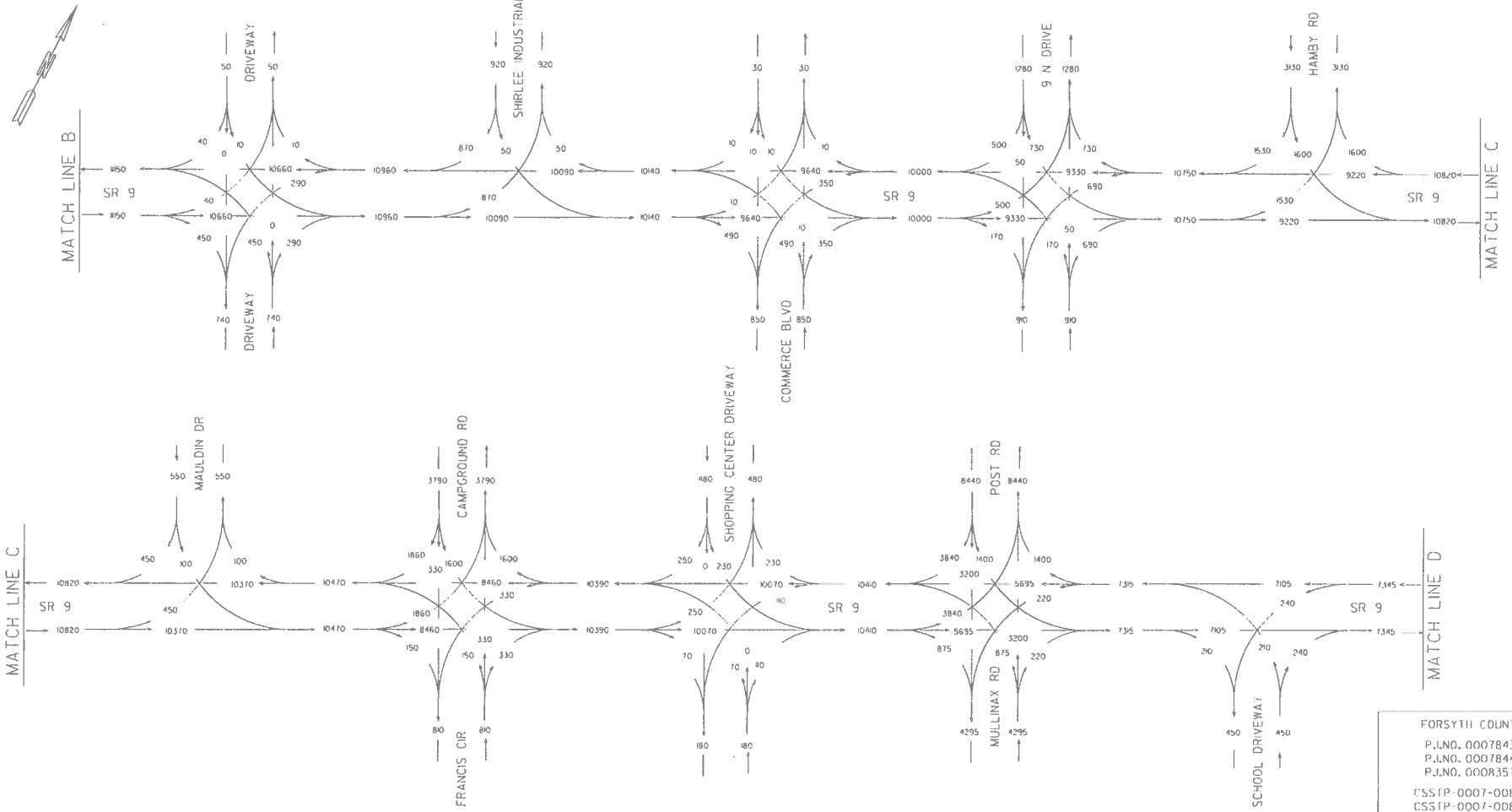

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

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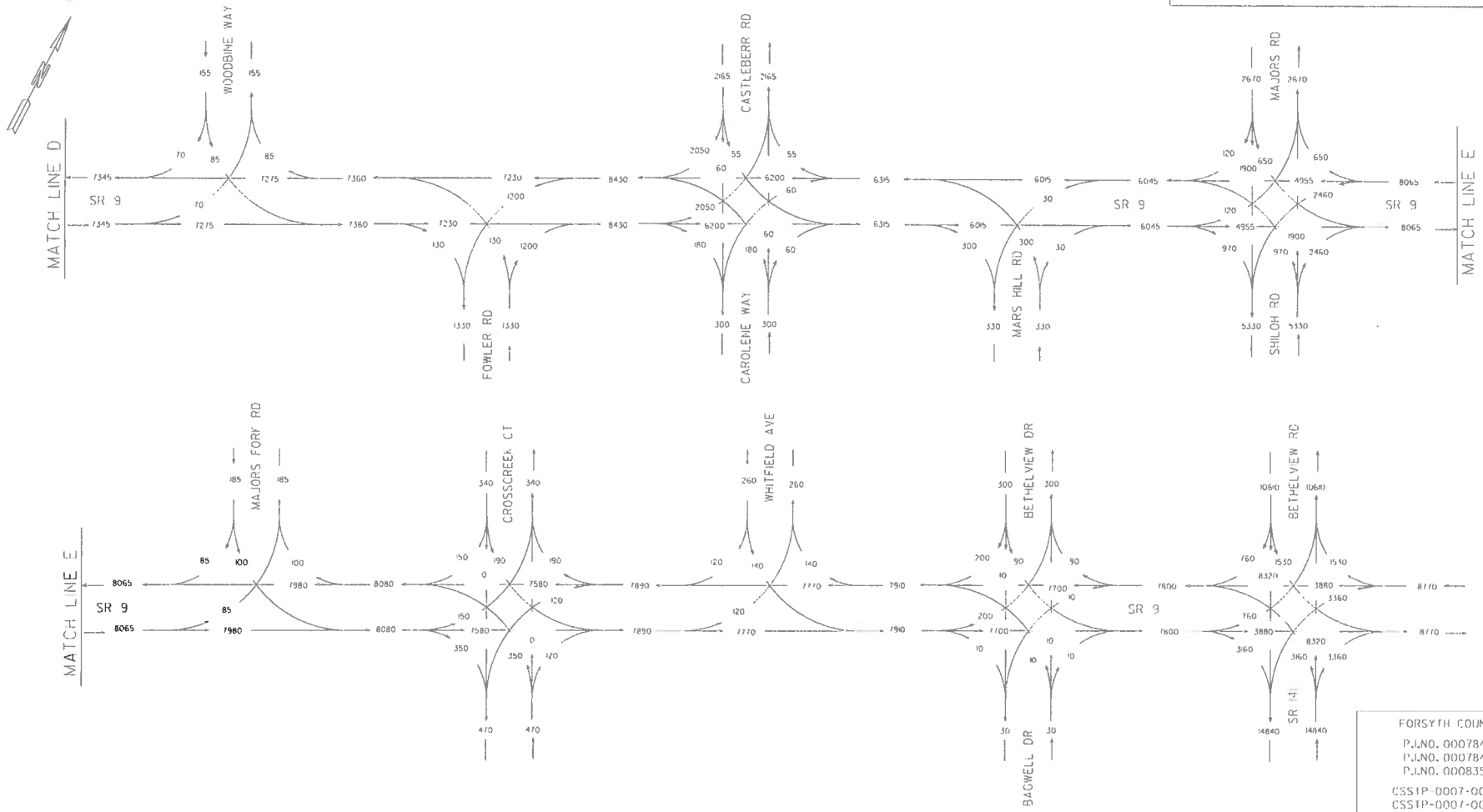

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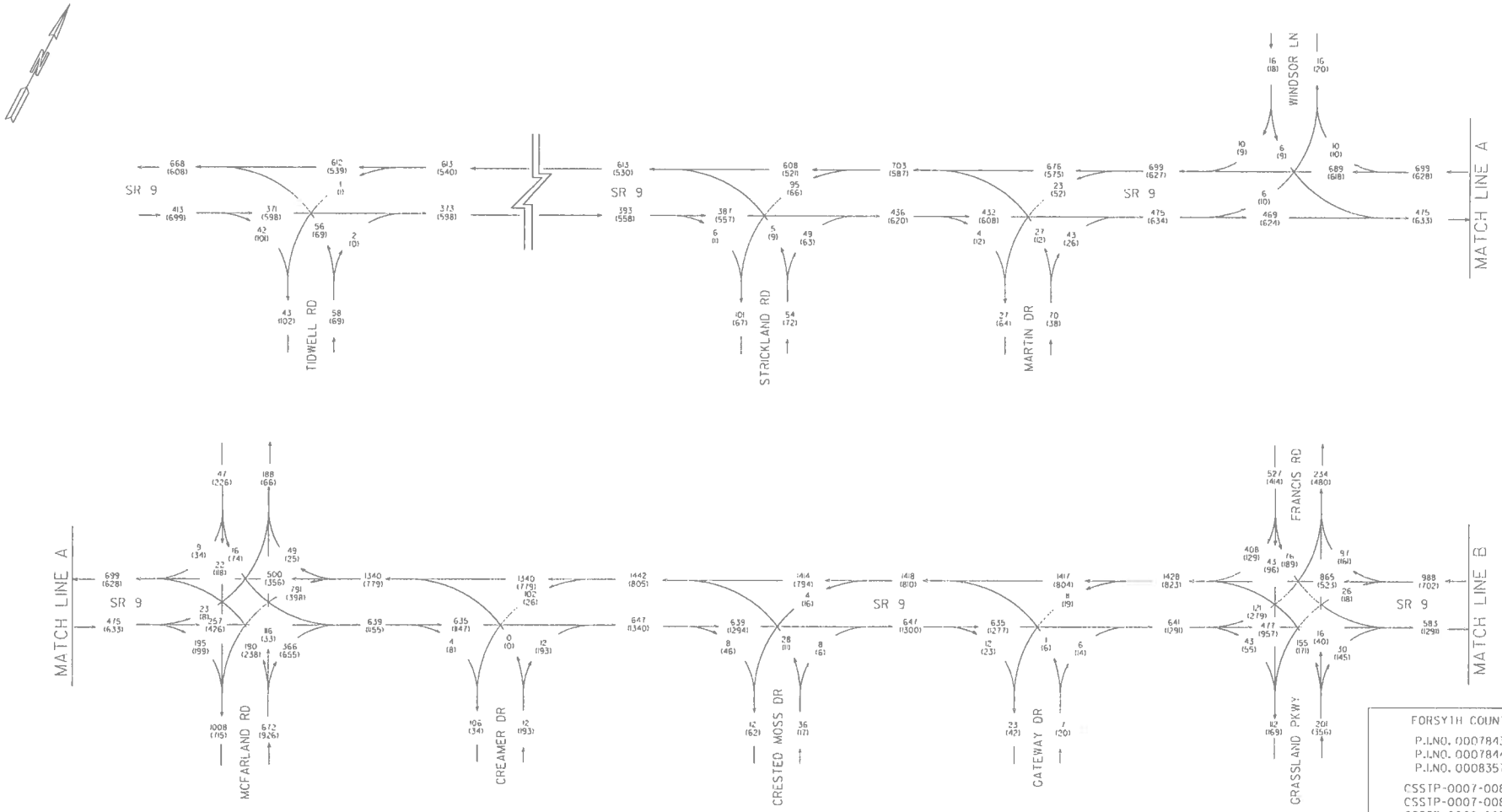

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
NO-BUILD
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COMB. = 1%
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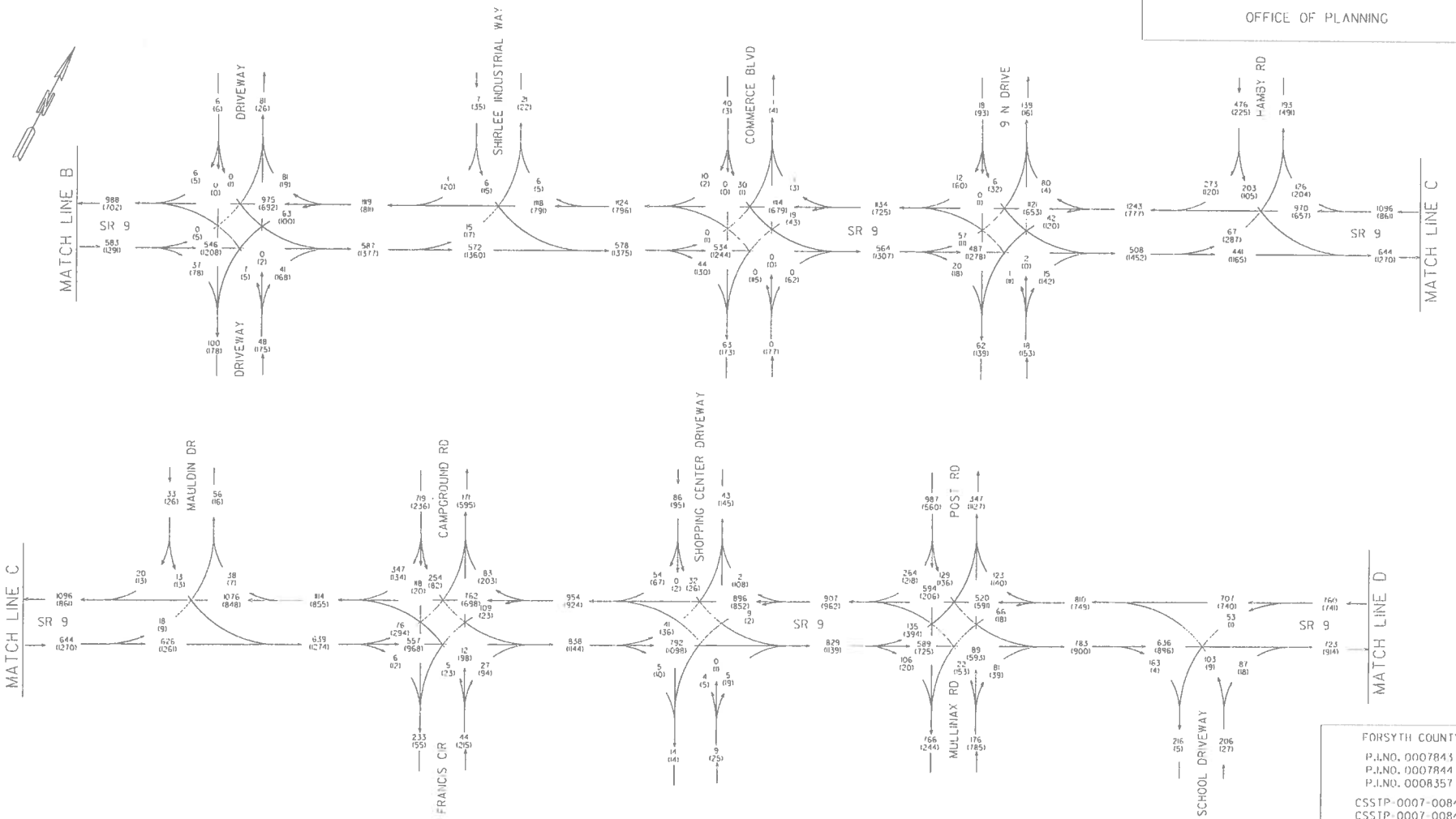

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
NO-BUILD
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2020 AM = 000
T = 10%
S.U. = 9%
COMB. = 1% 05/2012

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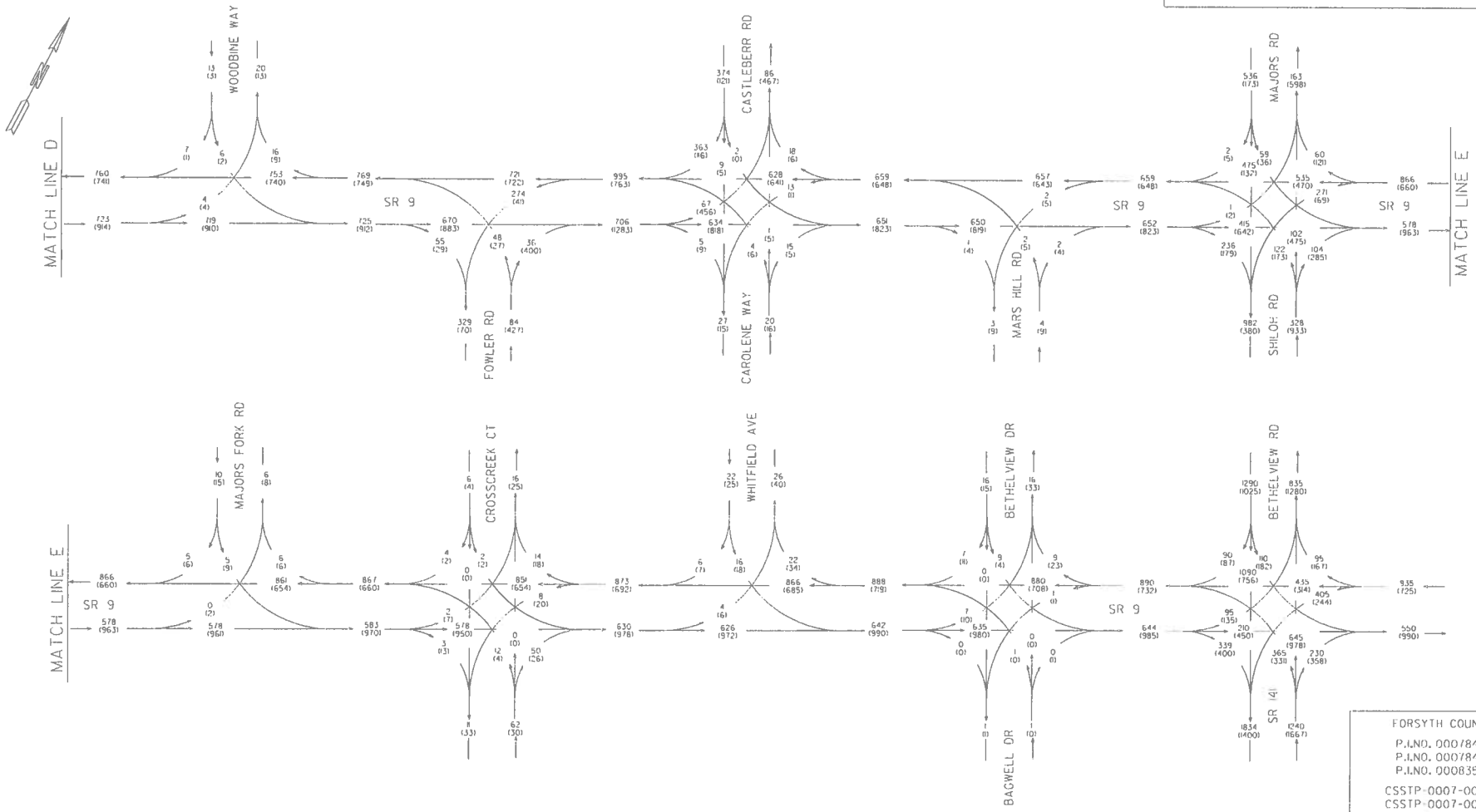

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
NO-BUILD
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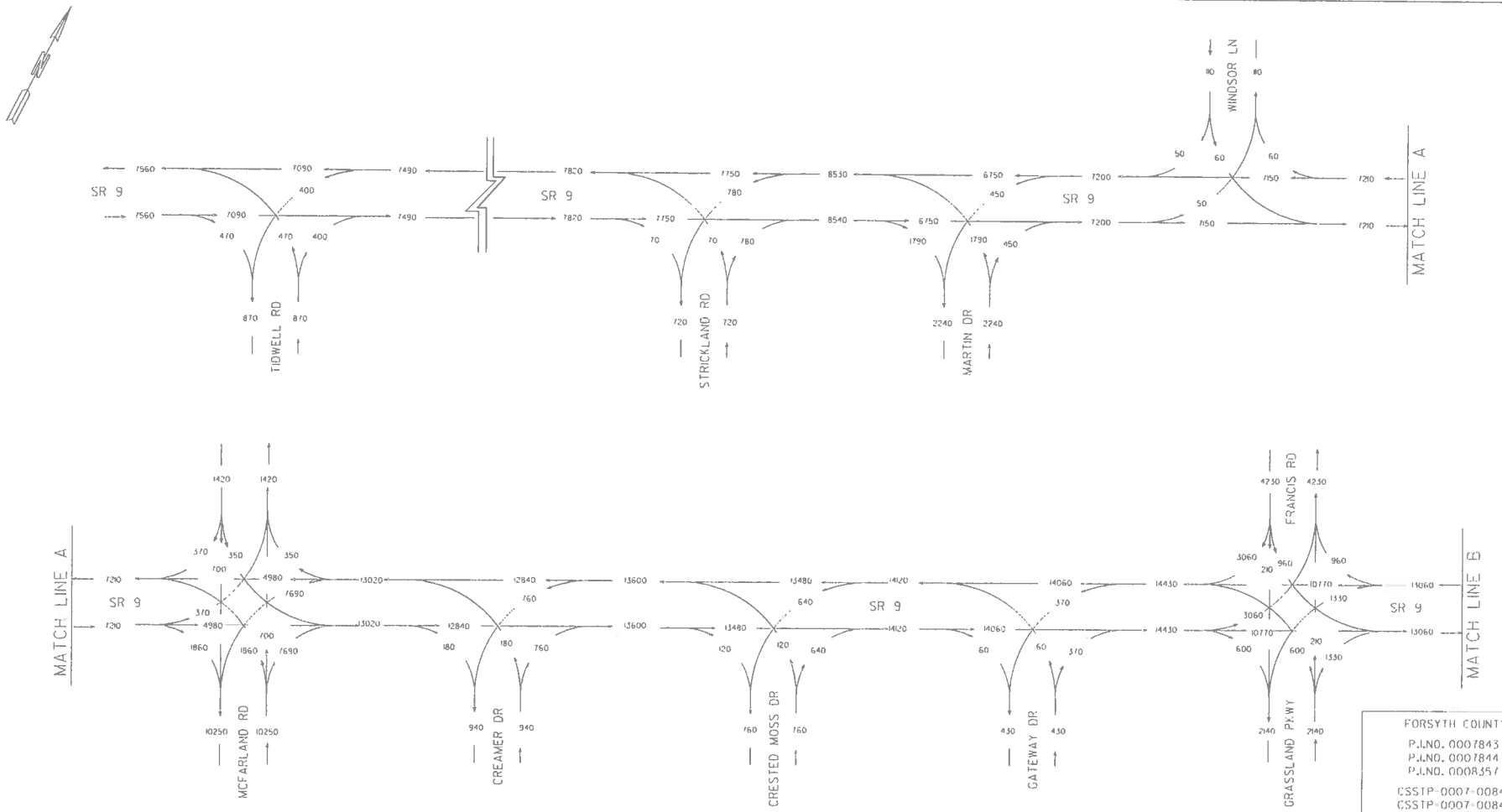

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
2020 NO-BUILD
ADT = 000
24 HOUR T = 8%
S.U. = 7%
COMB. = 1%
05/2012

NOTE: DRAWING IS NOT TO SCALE.

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SHEET 11 OF 30

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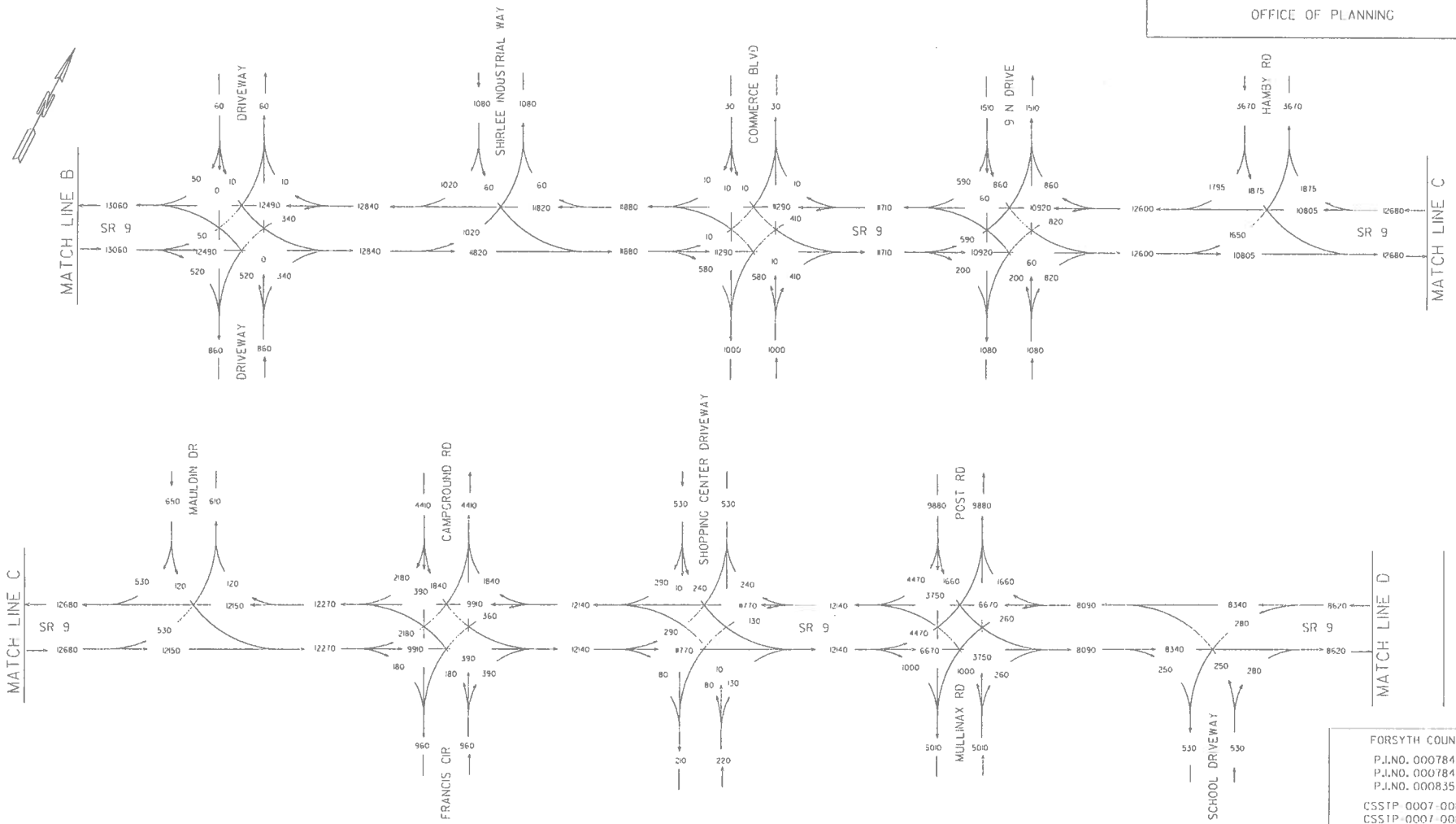

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

2020 NO-BUILD
ADT = 000
24 HOUR T = 8%
S.U. = 1%
COMB. = 1%

05/2012

NOTE: DRAWING IS NOT TO SCALE.

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SHEET 12 OF 30

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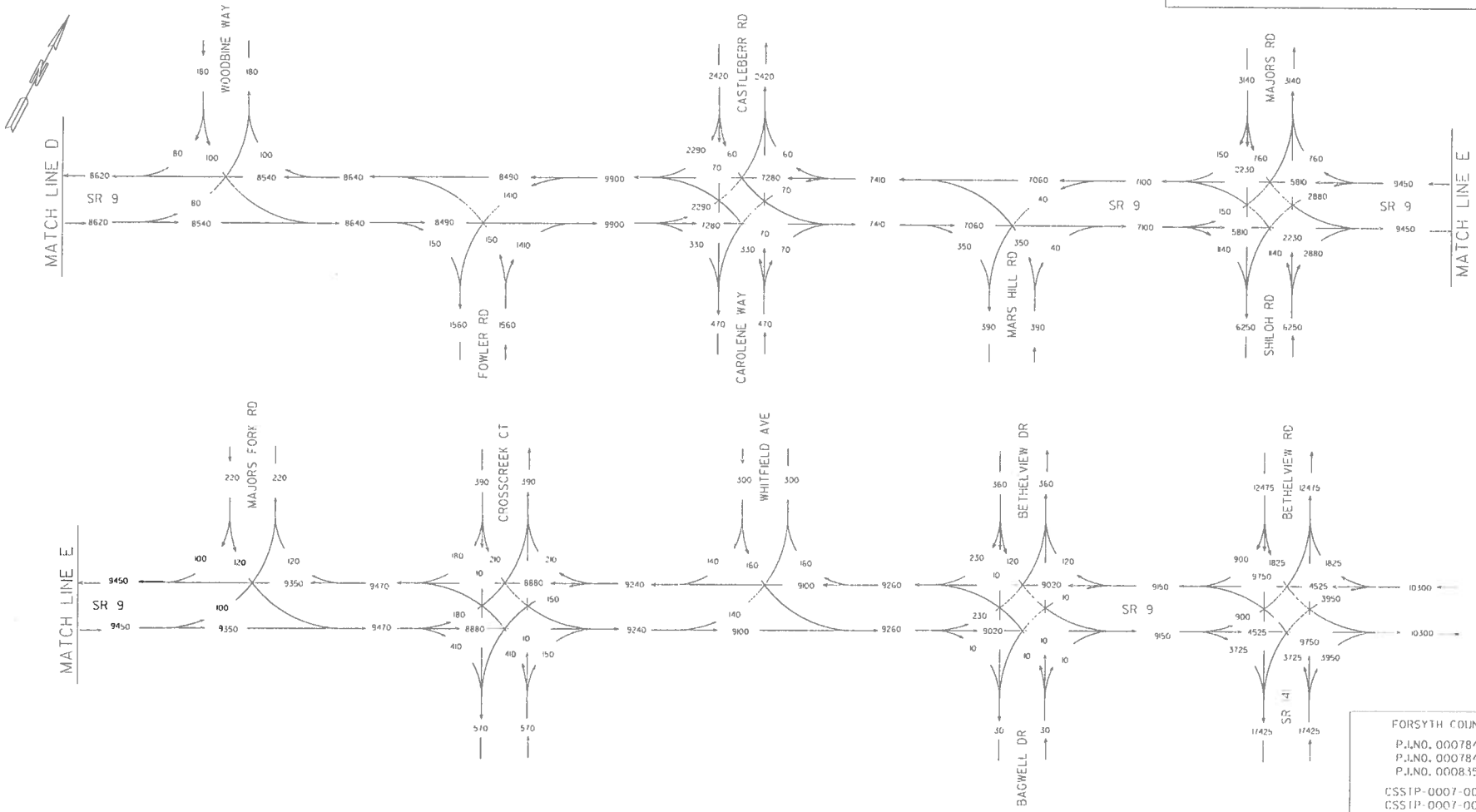

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CSSTP-0007-00844
CSSTP-0008-00357

SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

2020 NO-BUILD
ADT = 000
24 HOUR T = 8%
S.U. = 7%
COMB. = 1%

05/2012

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3577 PARKWAY LANE, SUITE 100
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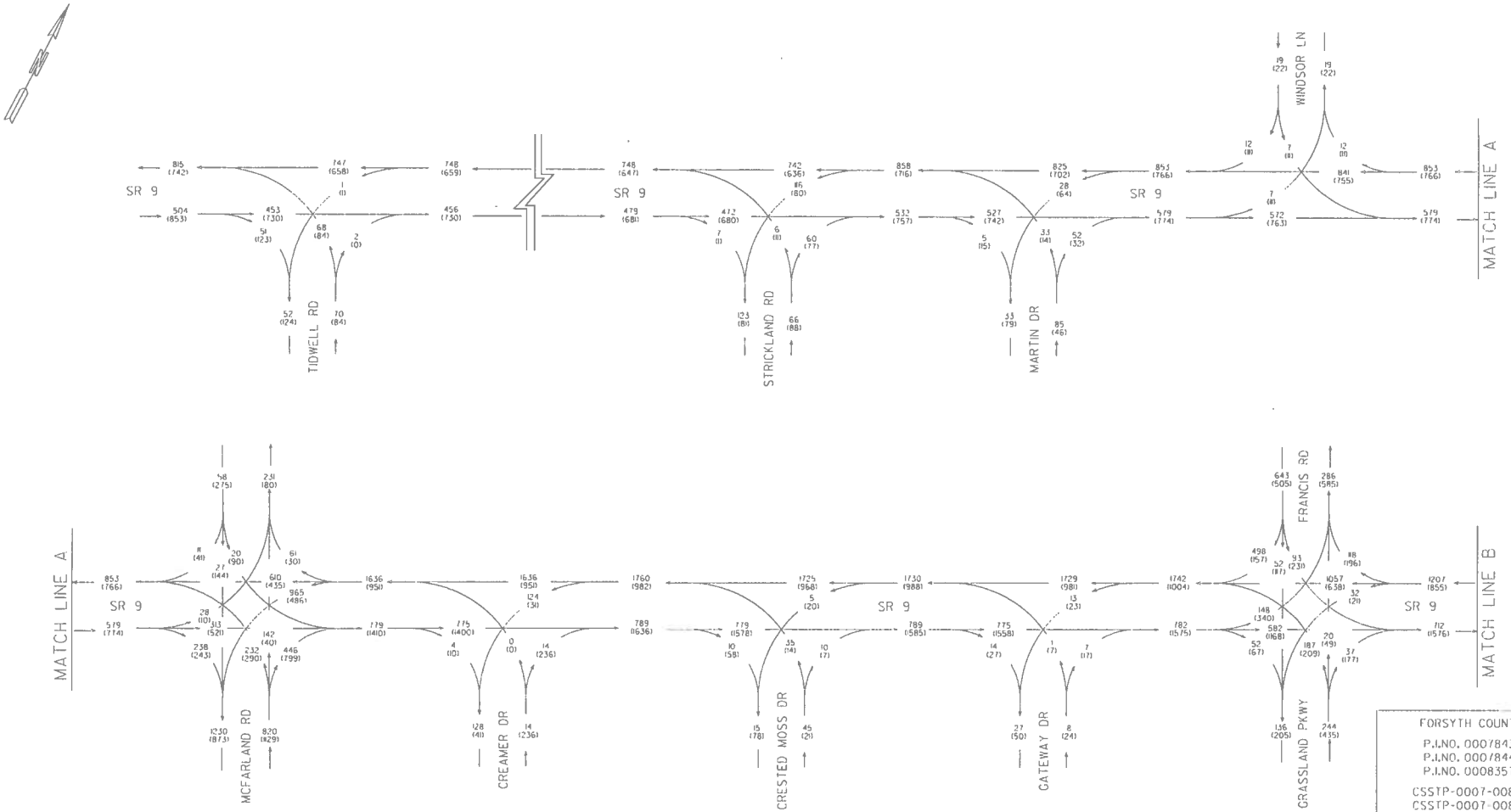

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
NO-BUILD
2040 PM = (000)
2040 AM = 000
T = 10%
S.U. = 9%
COMB. = 1%
05/2012

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SHEET 14 OF 30

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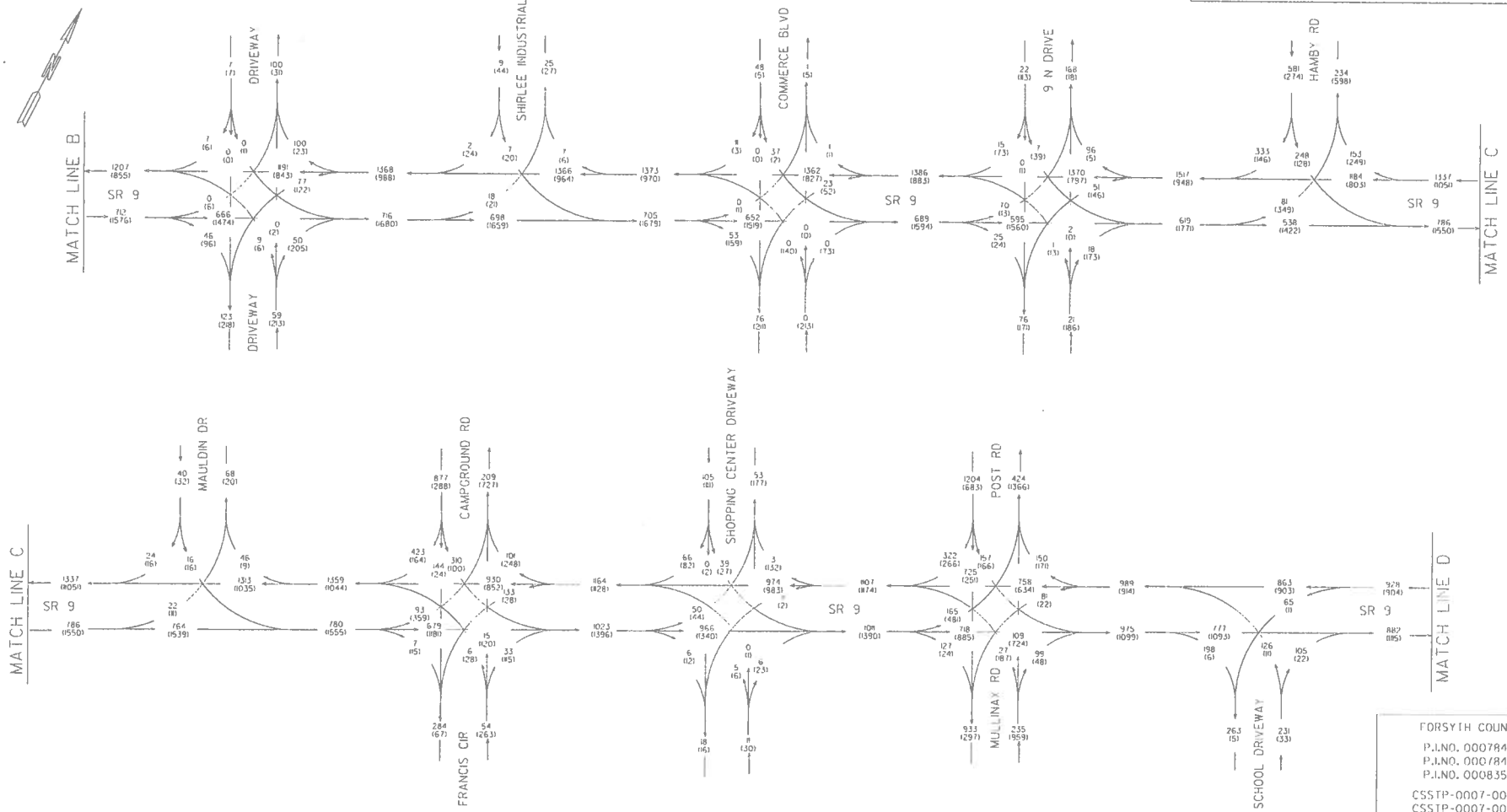

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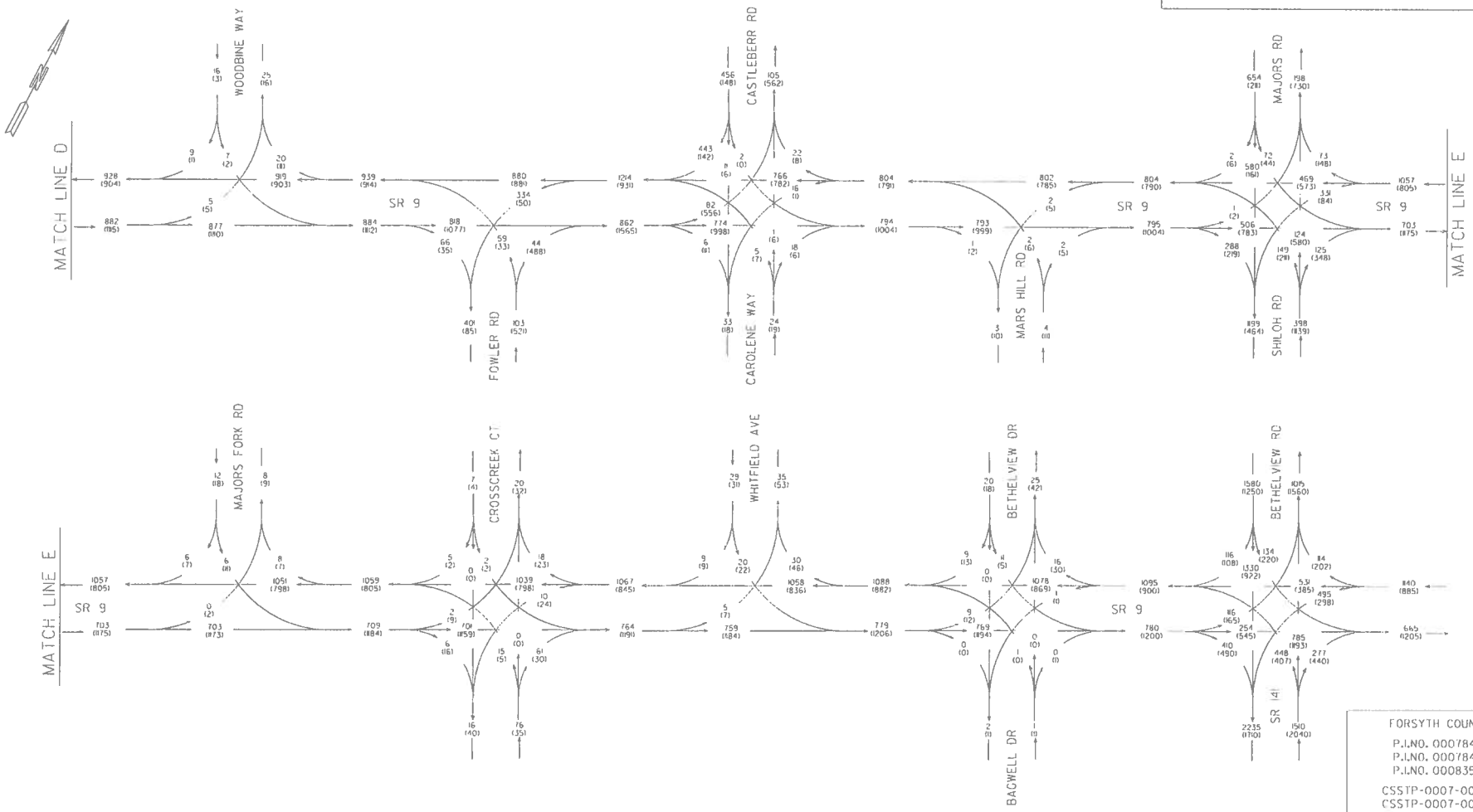
SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
NO-BUILD
2040 PM = (000)
2040 AM = 000
T = 10%
S.U. = 9%
COMB. = 1%
05/2012

NOTE: DRAWING IS NOT TO SCALE.

PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



FORSYTH COUNTY

P.I.NO. 0007843
P.I.NO. 0007844
P.I.NO. 0008357

CSSTP-0007-00843
CSSTP-0007-00844
CSSTP-0008-00357

SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

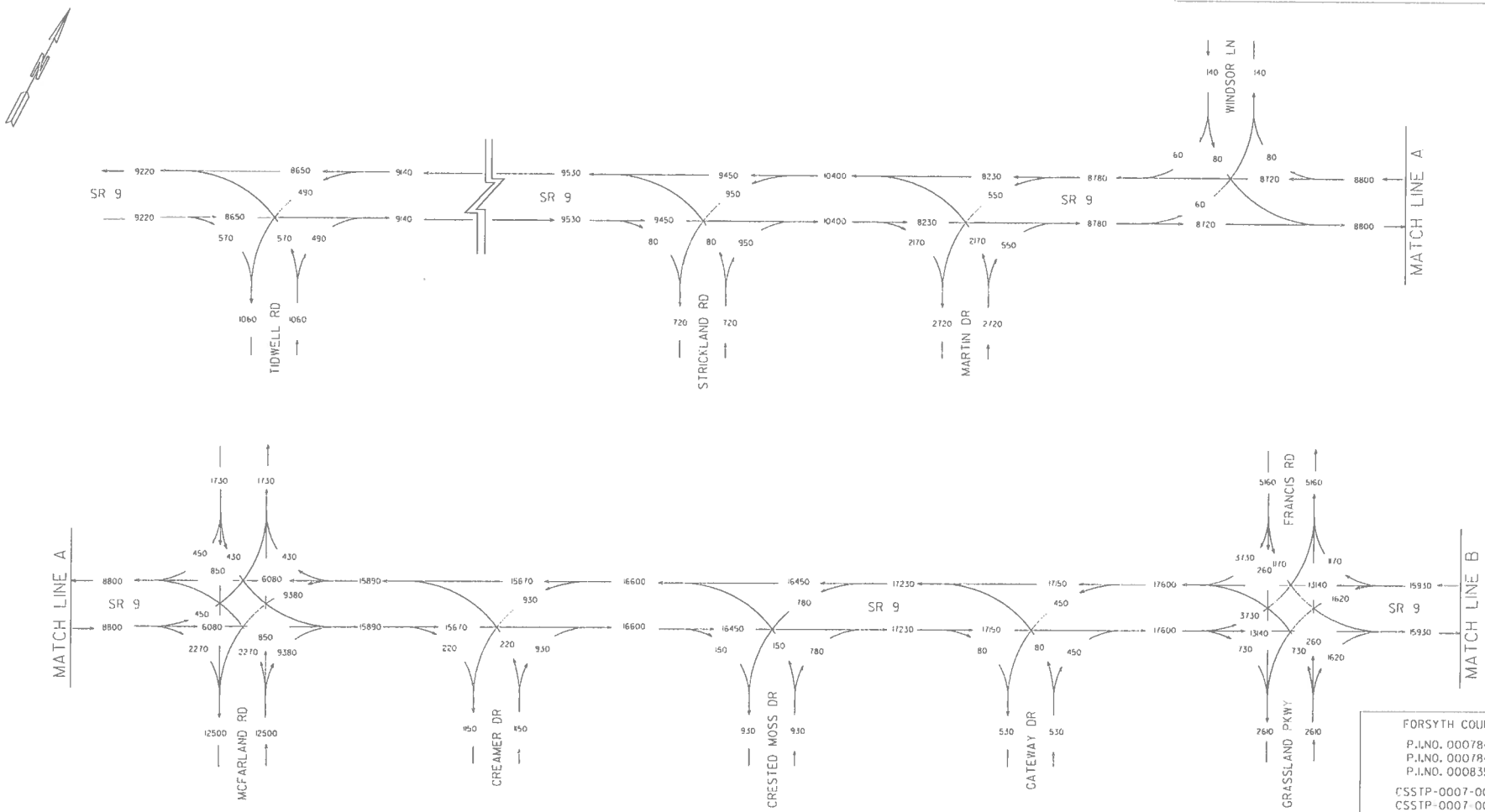
NO-BUILD
2040 PM = (000)
2040 AM = 000
T = 10%
S.U. = 9%
COMB. = 1%

05/2012

NOTE: DRAWING IS NOT TO SCALE.

PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



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P.I.NO. 0008357
CSSTP-0007-00843
CSSTP-0007-00844
CSSTP-0008-00357
SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
2040 NO-BUILD
ADT = 000
24 HOUR T = 8%
S.U. = 7%
COMB. = 1%
05/2012

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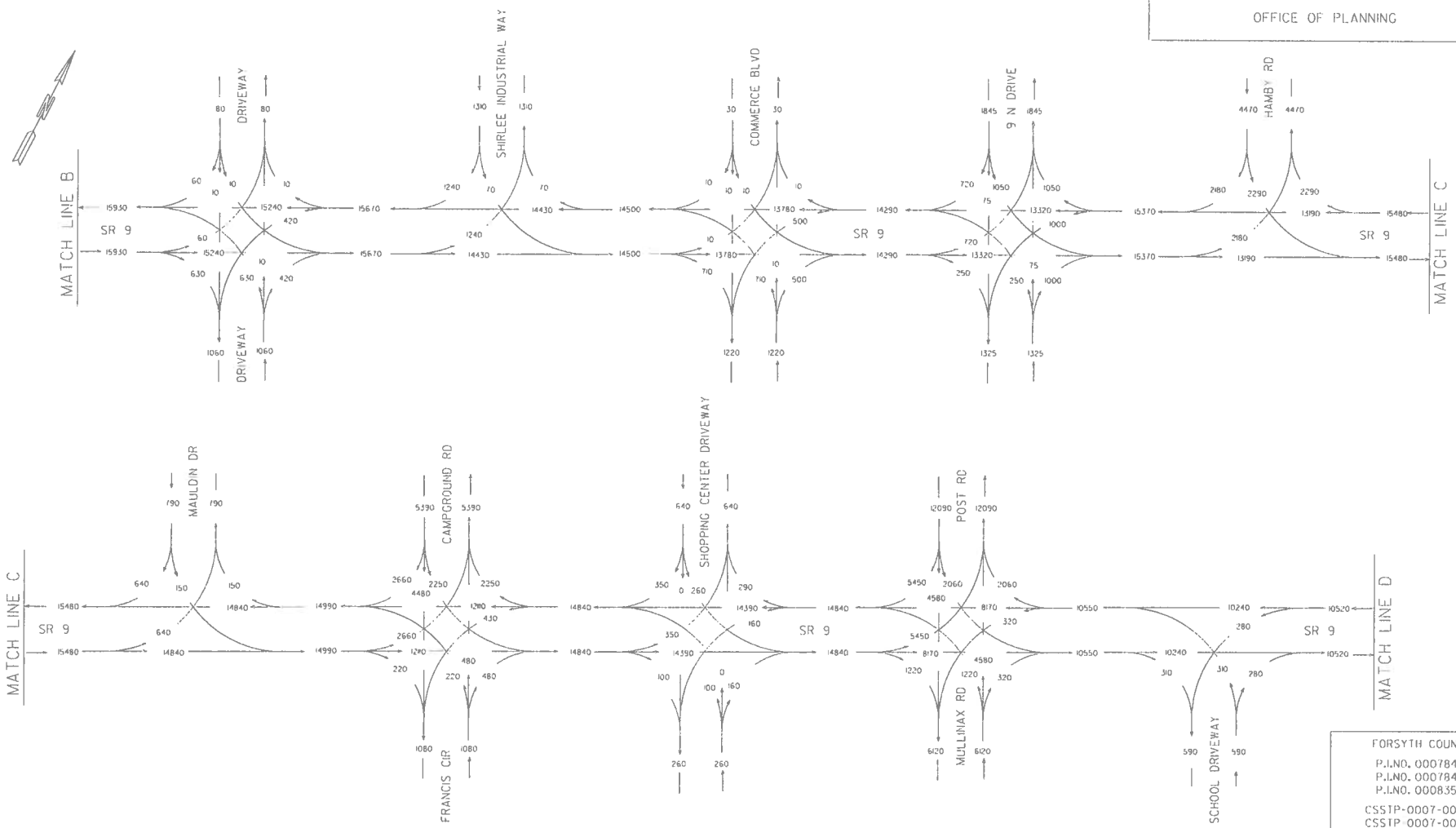

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05/2012

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PARSONS
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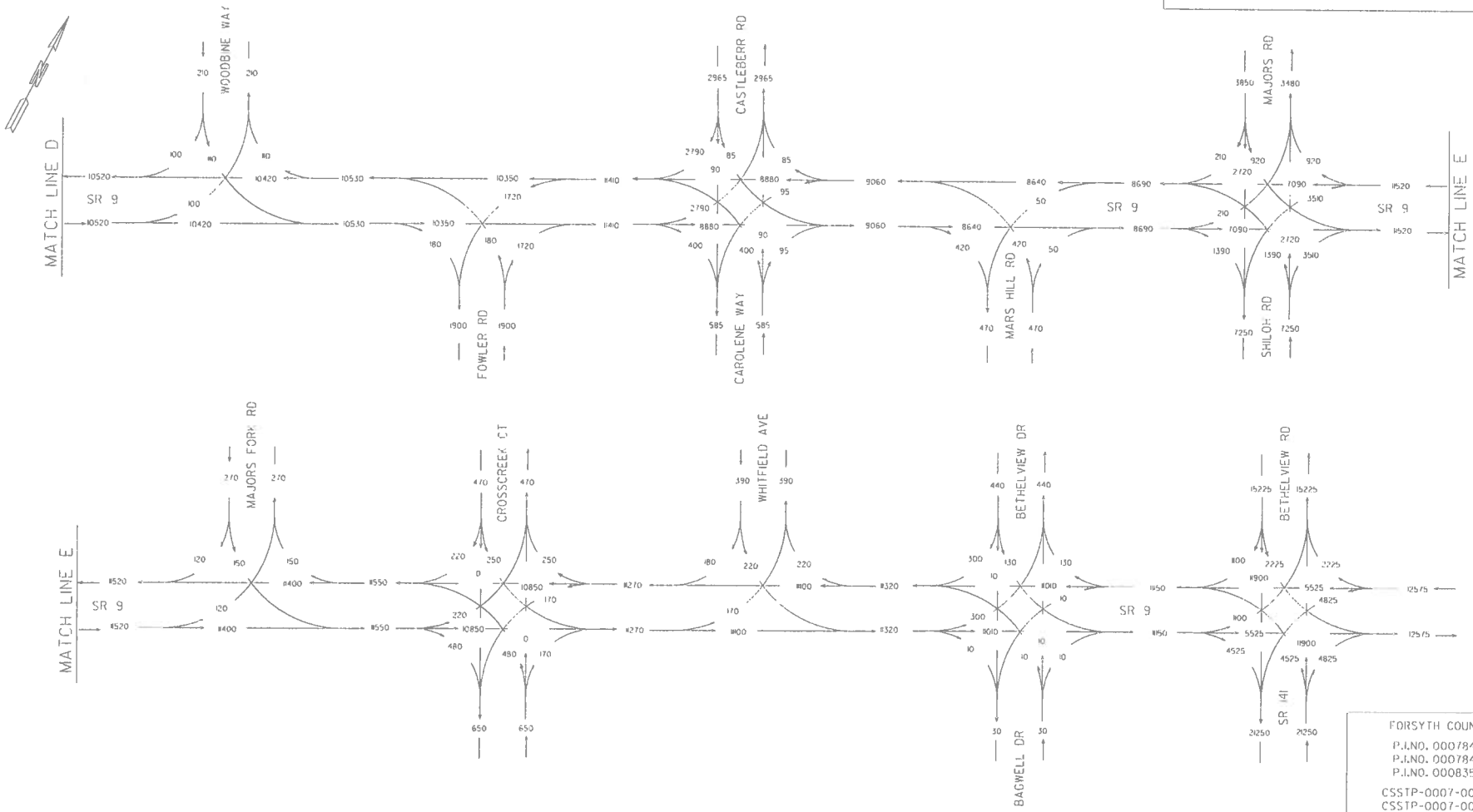
SHEET 18 OF 30

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

2040 NO-BUILD
ADT = 000
24 HOUR T = 8%
S.U. = 7%
COMB. = 1%

05/2012

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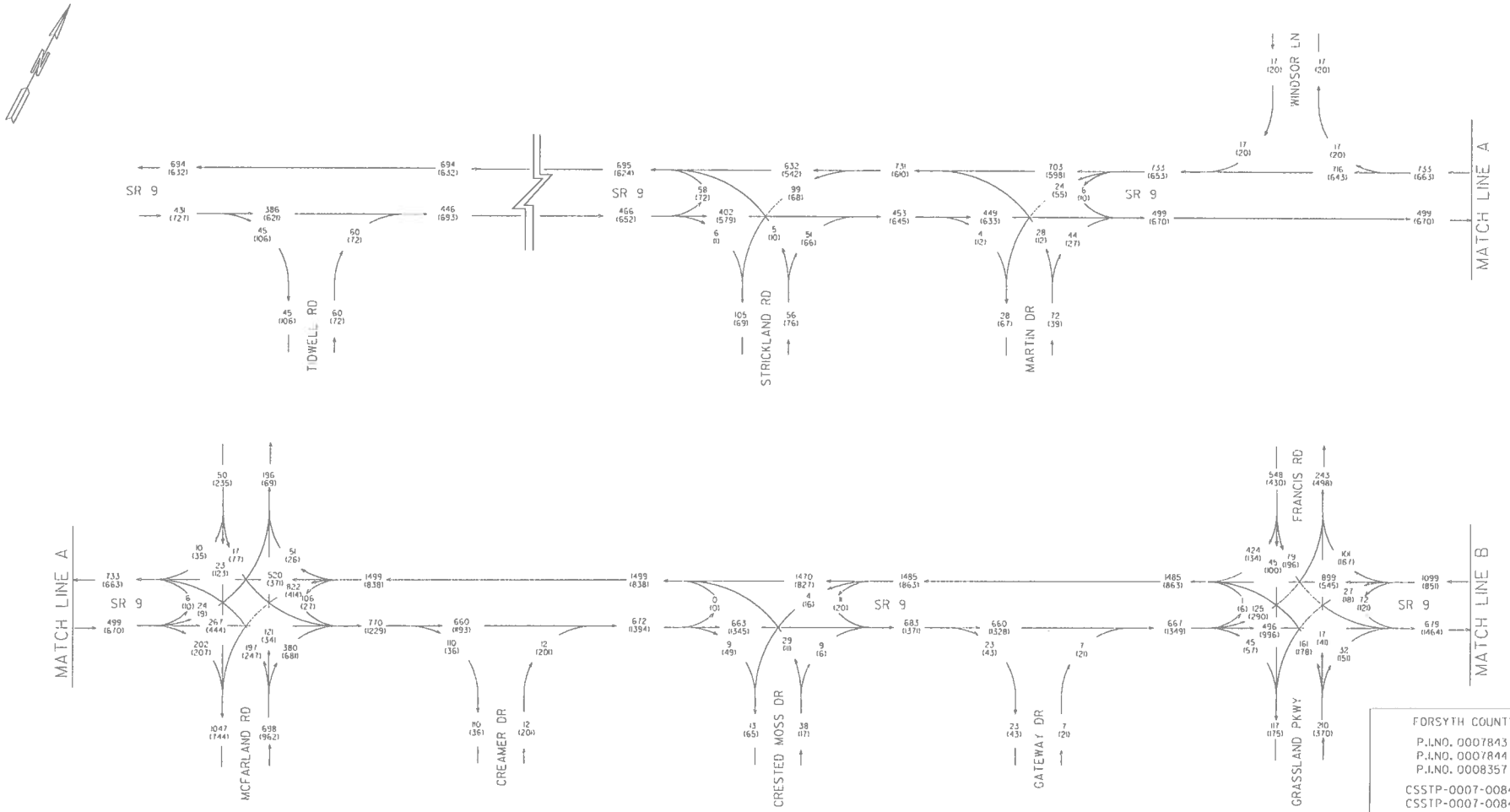

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P.I.NO. 0008357

CSSTP-0007-00843
CSSTP-0007-00844
CSSTP-0008-00357

SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
BUILD
2020 PM = (000)
2020 AM = 000
T = 10%
S.U. = 9%
COMB. = 1%

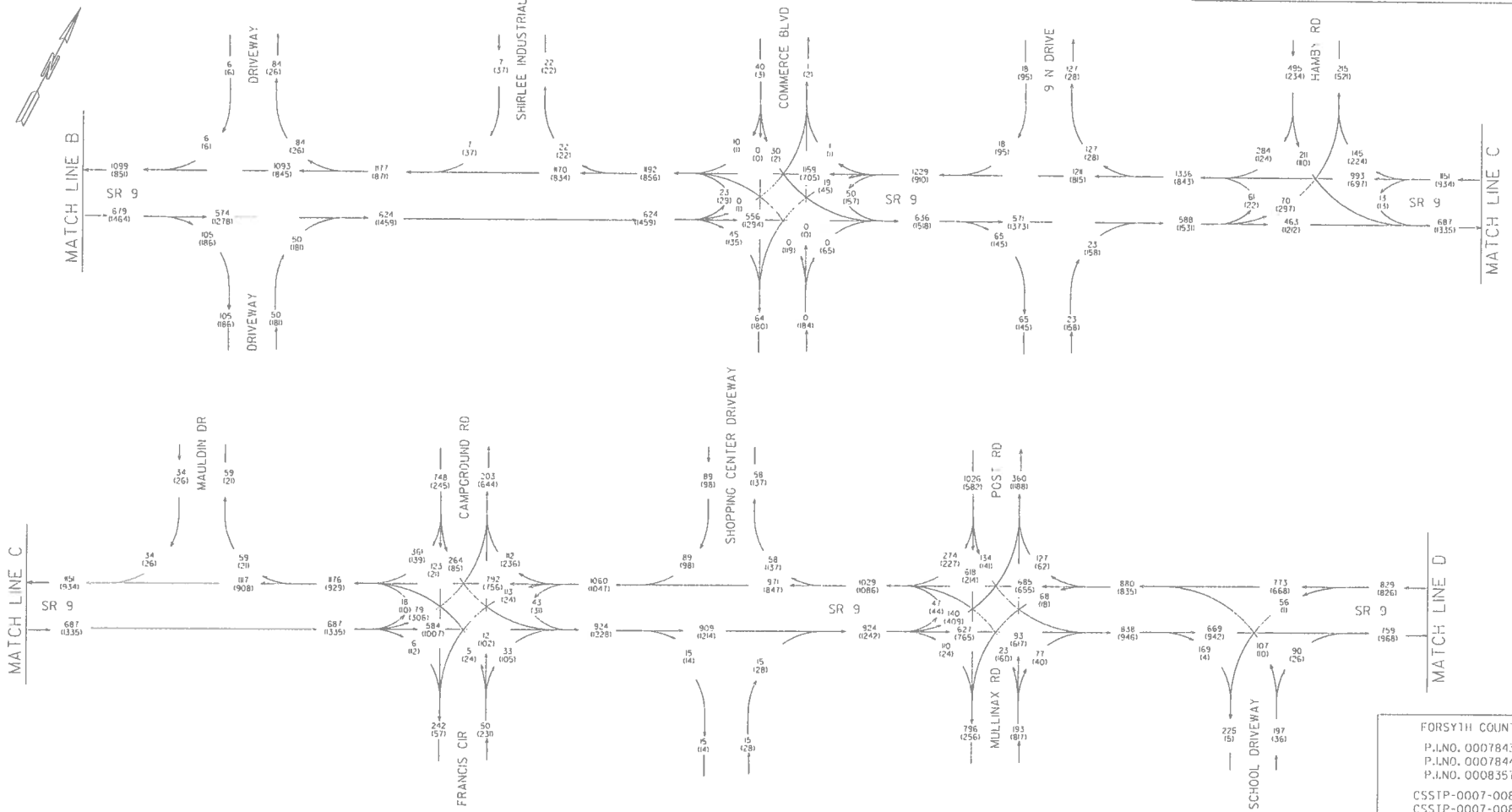
05/2012

NOTE: DRAWING IS NOT TO SCALE.

PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

SHEET 20 OF 30

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



FORSYTH COUNTY

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P.I.NO. 0008357

CSSTP-0007-00843
CSSTP-0007-00844
CSSTP-0008-00357

SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
BUILD
2020 PM = (000)
2020 AM = 000
T = 10%
S.U. = 9%
COMB. = 1%

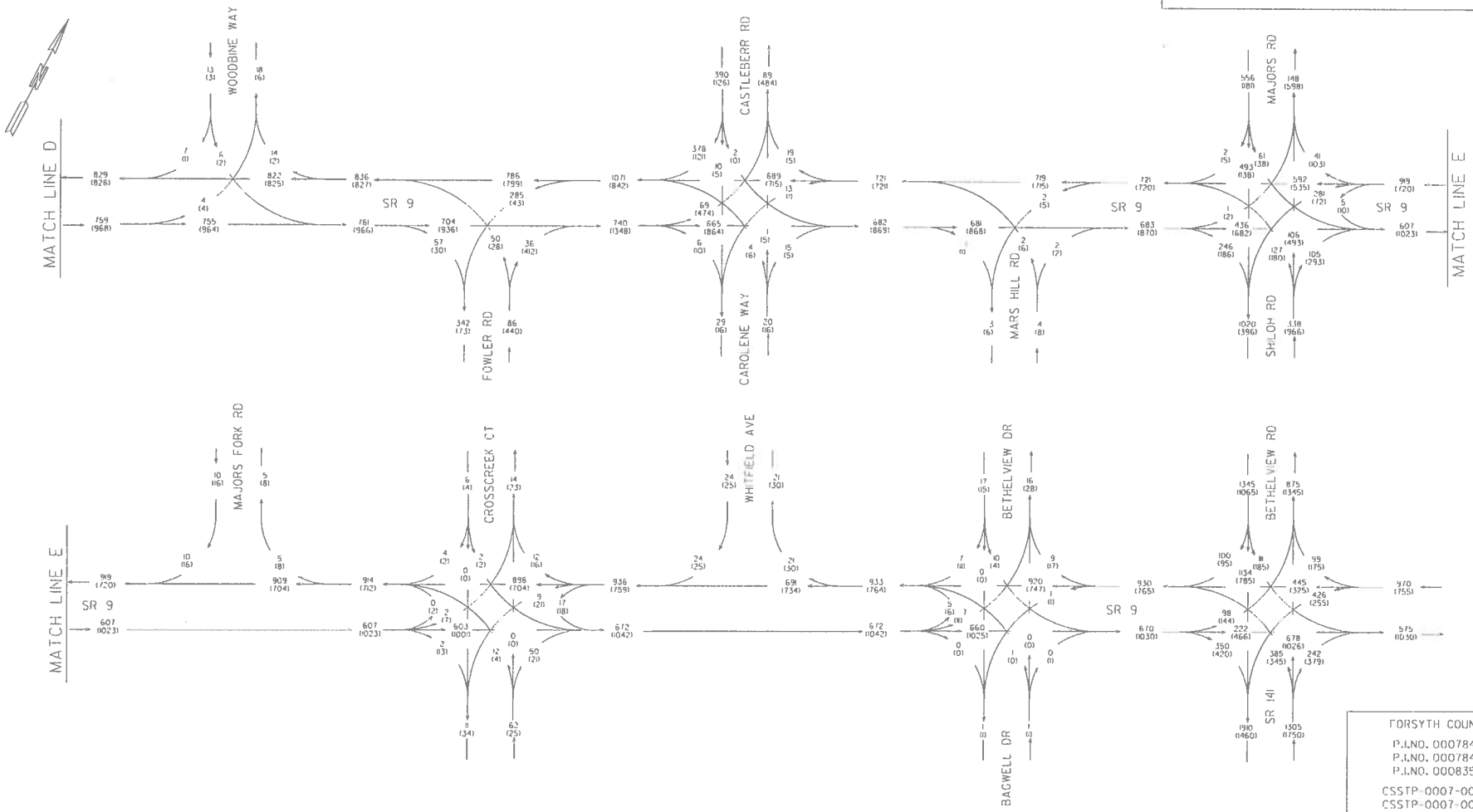
05/2012

NOTE: DRAWING IS NOT TO SCALE.

PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

SHEET 21 OF 30

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



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CSSTP-0007-00843
CSSTP-0007-00844
CSSTP-0008-00357

SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

BUILD
2020 PM = (000)
2020 AM = 000
T = 10%
S.U. = 9%
COMB. = 1% 05/2012

NOTE: DRAWING IS NOT TO SCALE.

PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

SHEET 22 OF 30

GEORGIA DEPARTMENT OF TRANSPORTATION
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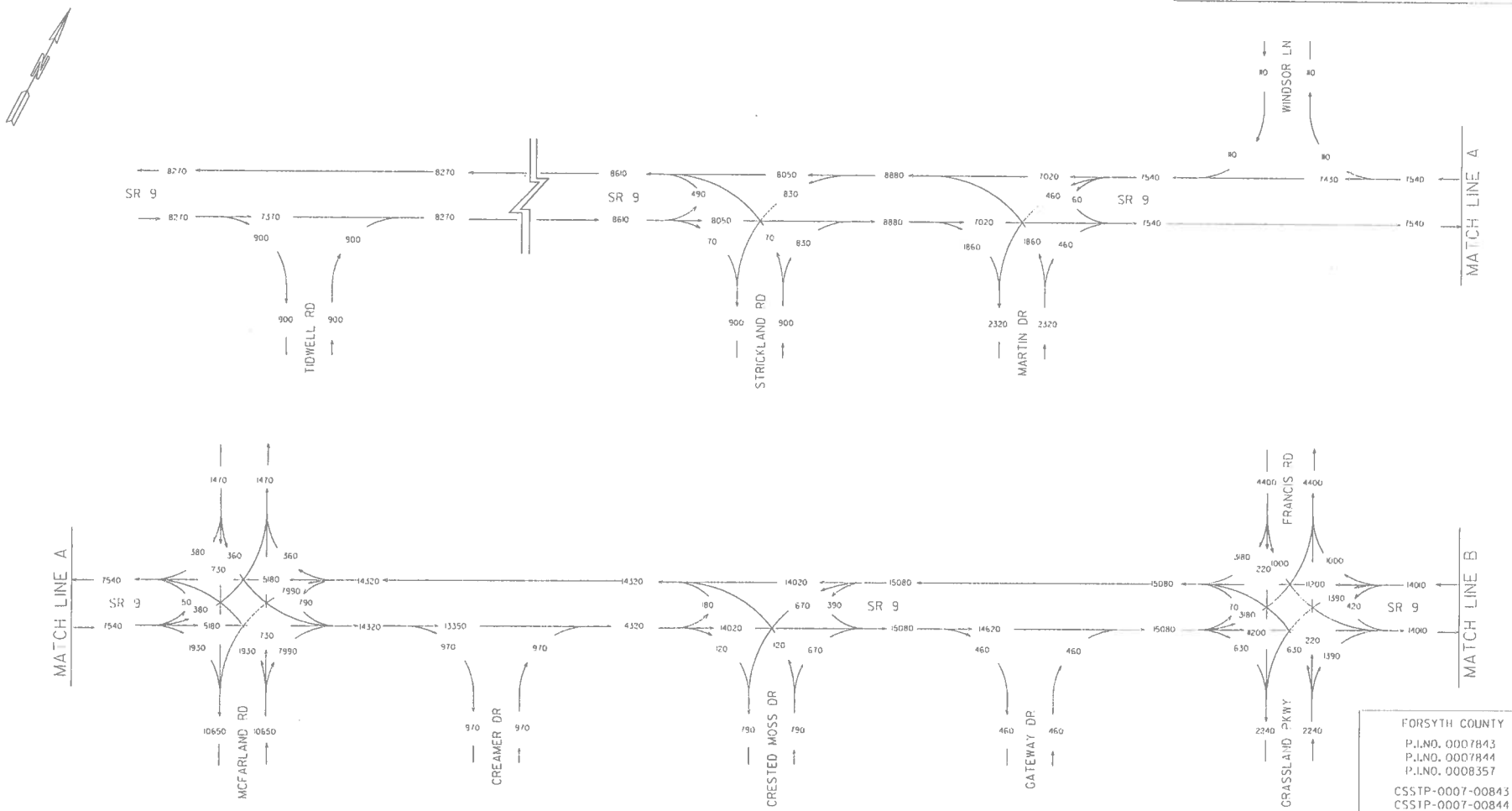

FORSYTH COUNTY

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

2020 BUILD
AD1 = 000
24 HOUR T = 8%
S.U. = 7%
COMB. = 1%

05/2012

NOTE: DRAWING IS NOT TO SCALE.

PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

SHEET 23 OF 30

GEORGIA DEPARTMENT OF TRANSPORTATION
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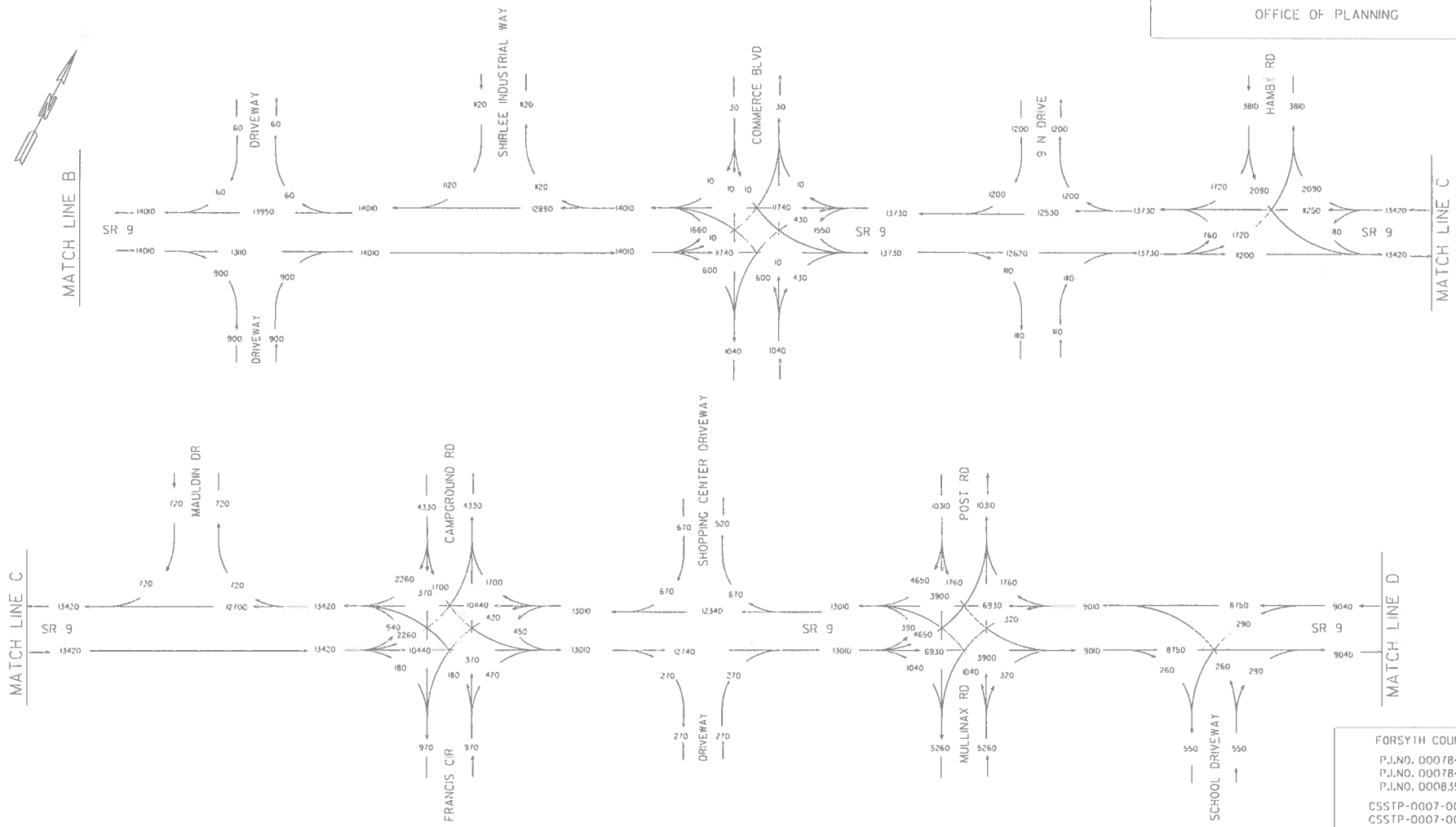

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

2020 BUILD
ADT = 000
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S.U. = 7%
COMB. = 1%

05/2012

PARSONS
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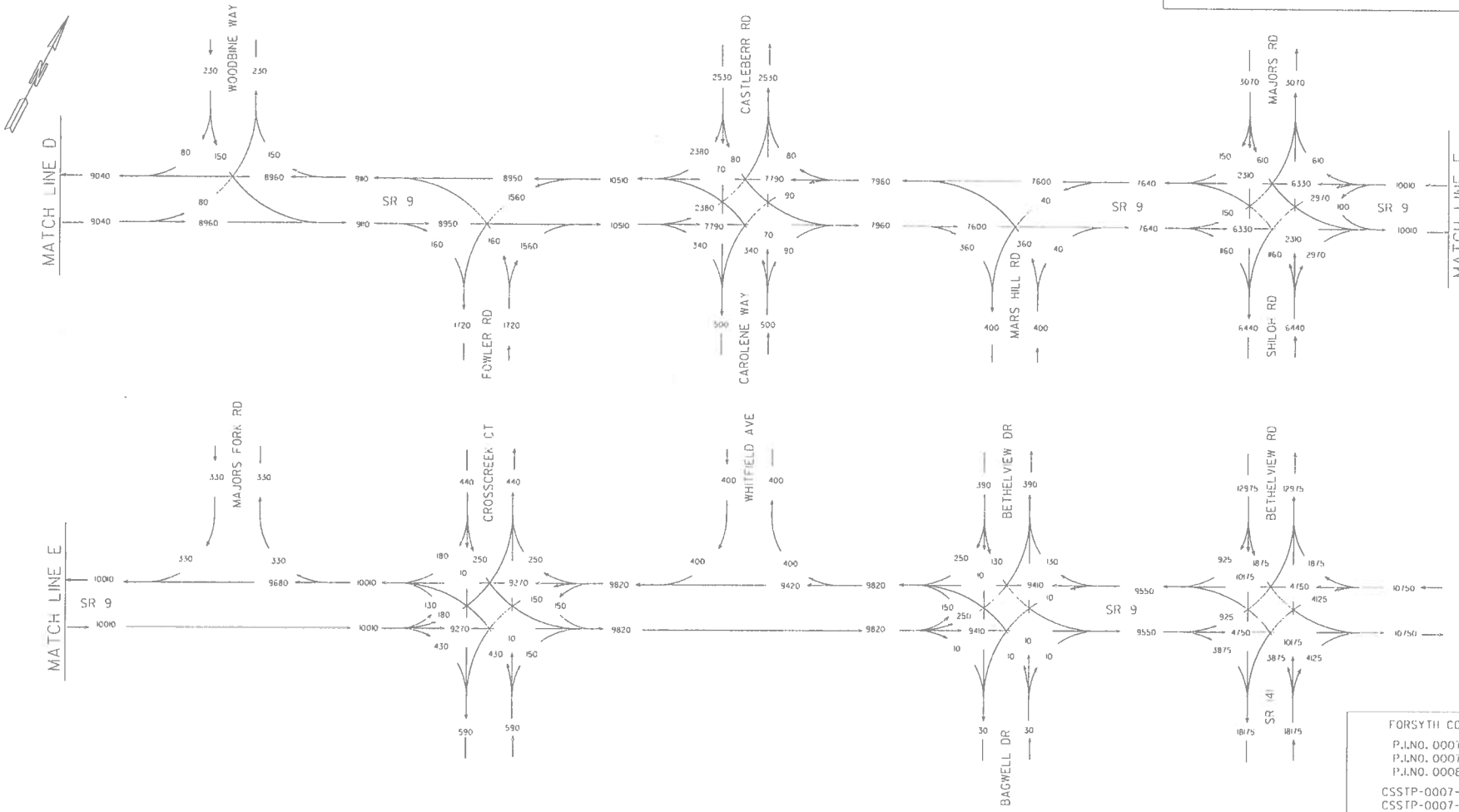
OFFICE OF PLANNING



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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

2020 BUILD
ADT = 000
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S.U. = 7%
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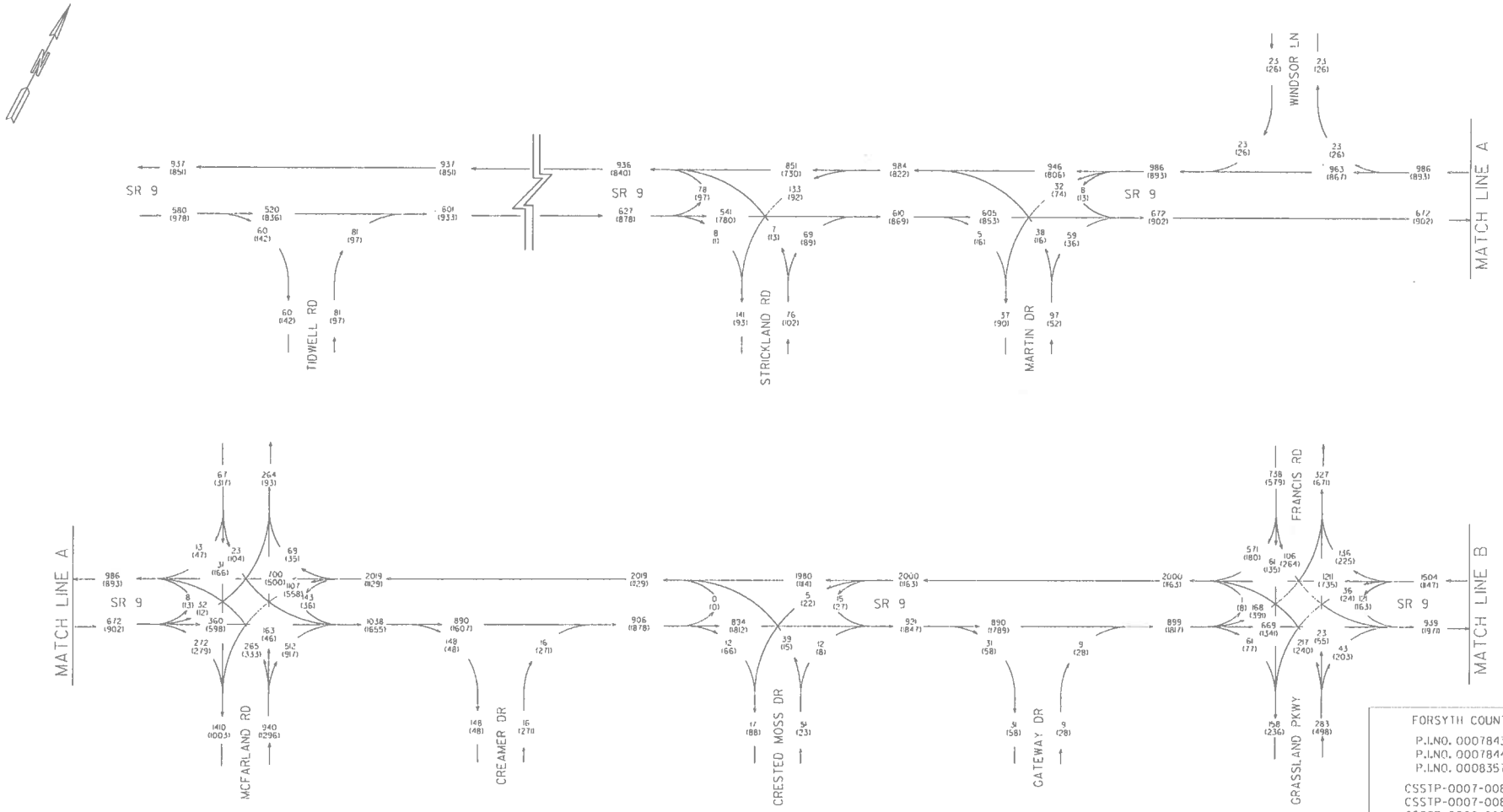

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
BUILD
2040 PM = (000)
2040 AM = 000
T = 10%
S.U. = 9%
COMB. = 1%
05/2012

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PARSONS
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SHEET 26 OF 30

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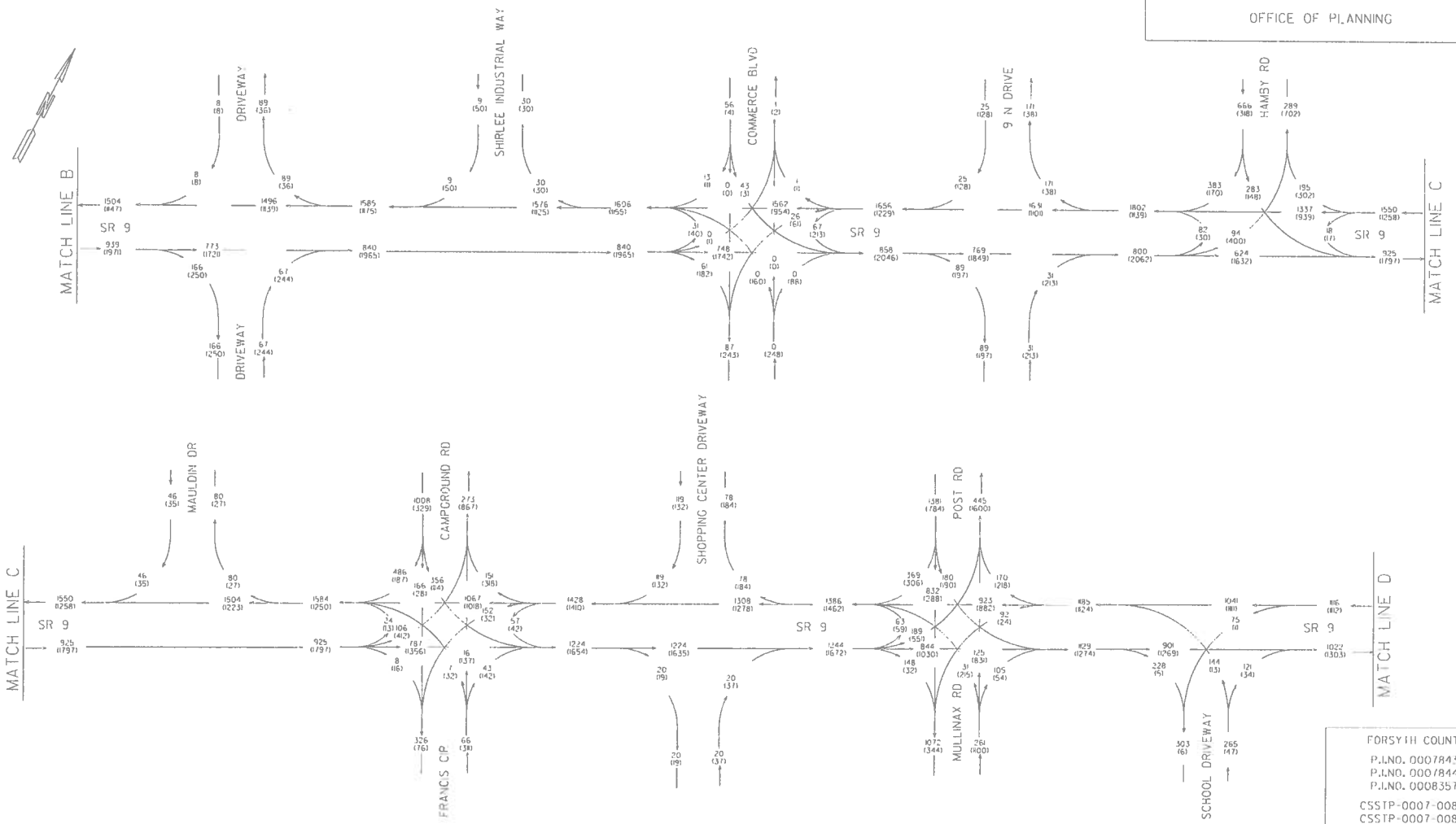

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141
BUILD
2040 PM = (000)
2040 AM = 000
T = 10%
S.U. = 9%
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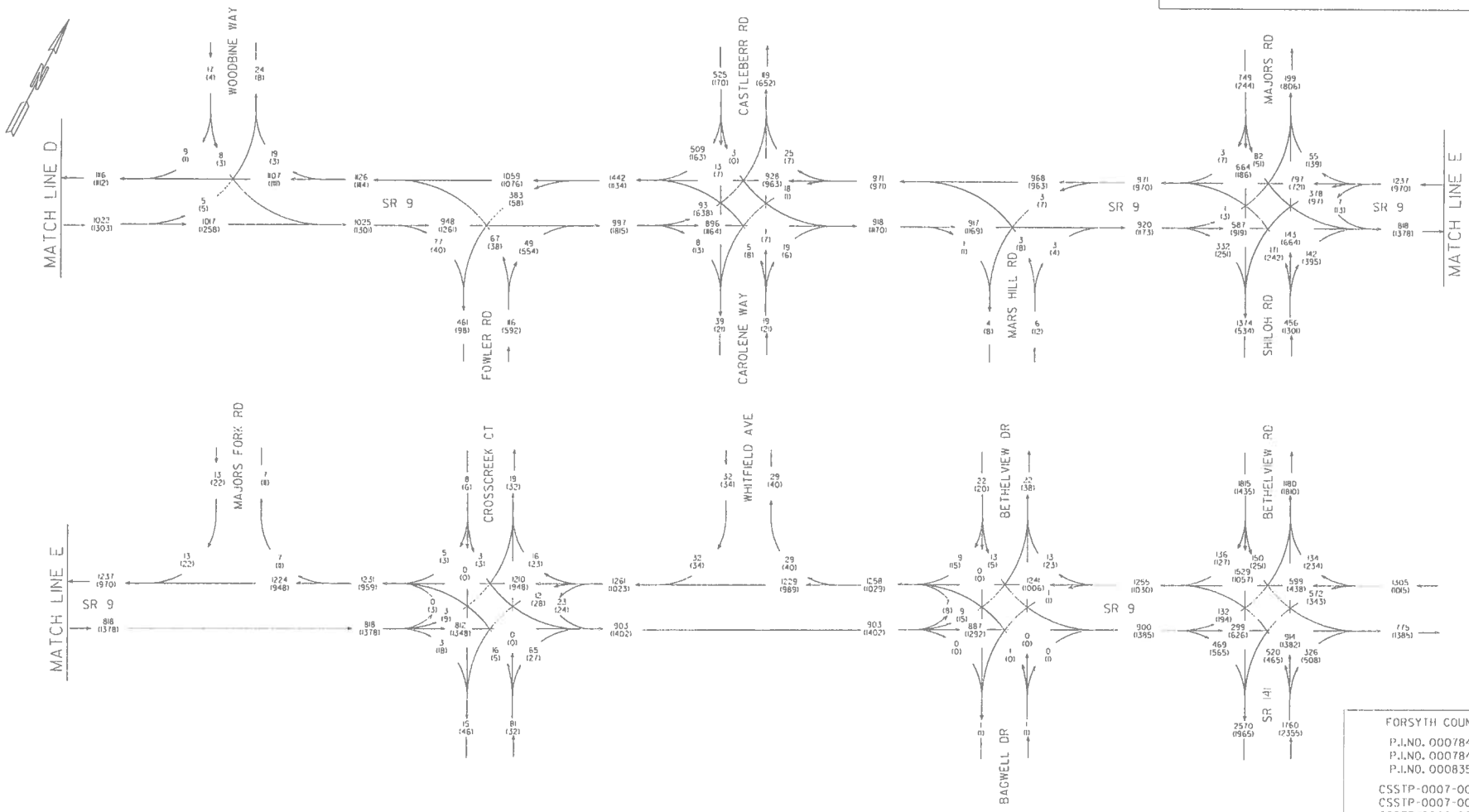

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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

BUILD
2040 PM = (000)
2040 AM = 000
T = 10%
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COMB. = 1%

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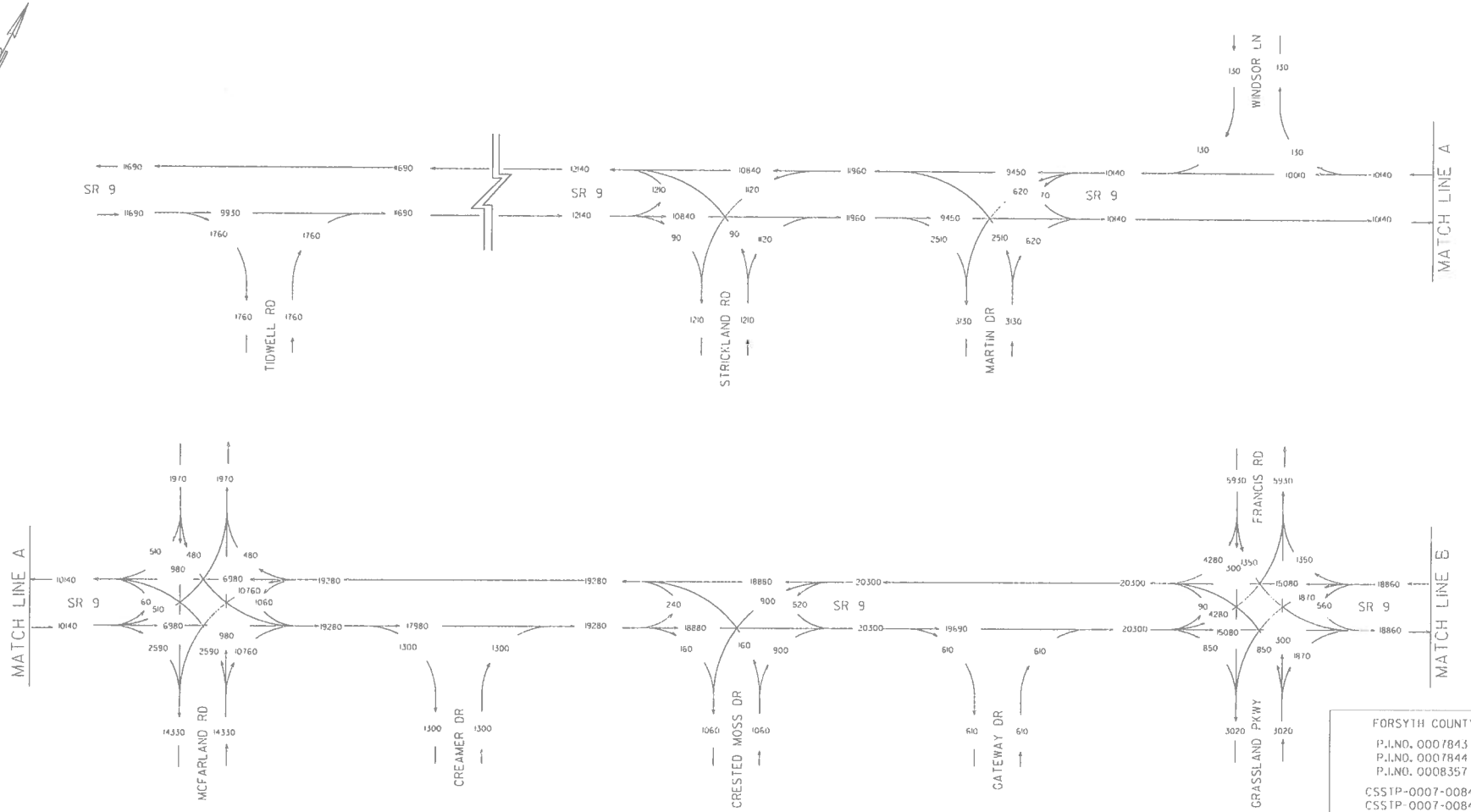

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2040 BUILD
ADT = 000
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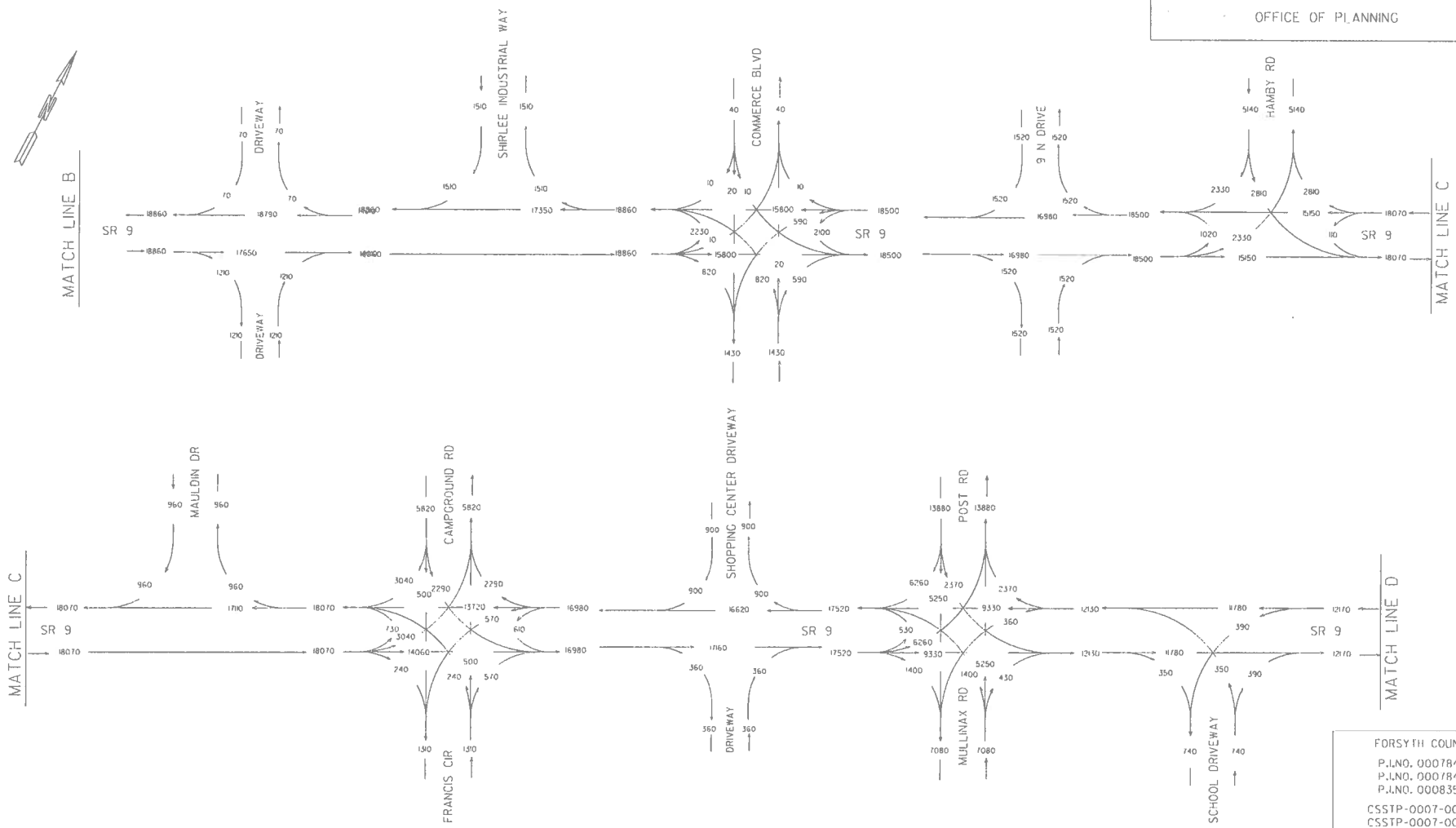

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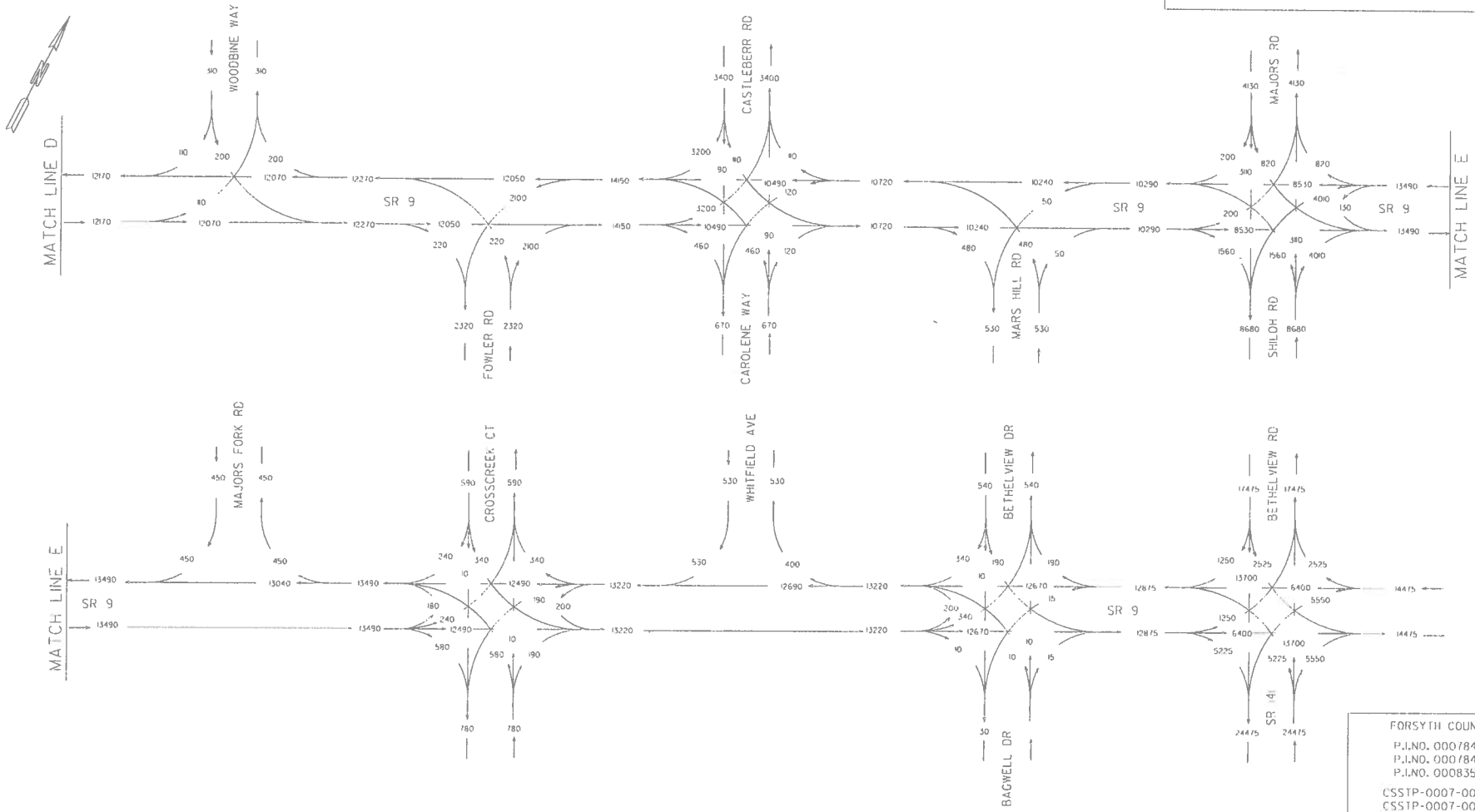

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P.I.NO. 0008357

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CSSTP-0007-00844
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SR 9 FROM FULTON/FORSYTH COUNTY LINE TO SR 141

2040 BUILD
ADT - 000
24 HOUR T = 8%
S.U. = 7%
COMB. = 1%

05/2012

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PARSONS
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NORCROSS, GA 30092

ATTACHMENT 6

Summary of TE Study

TE Summary Report

Location: Atlanta Highway (SR 9) at Fowler Road

Description of Intersection: SR 9 is two-way lane road with a left turn lane in the southbound direction. Fowler Road is a two-way lane road with a right turn lane at the intersection. The intersection is under one-way stop control on Fowler Road.

Traffic Volumes in vehicle per day (vpd): SR 9 = 23200; Fowler Rd = 2660

Latest year percent trucks: 7

Existing Traffic Control: Unsignalized; One-way stop control on minor road

Vehicular Speeds: SR 9 – 55 mph; Fowler Rd – 30 mph

Pedestrian movements: None

Other modes of transportation present: None

Delay: Left-turning vehicles from Fowler Road experience the highest delay (corresponding LOS F) under both peak periods for existing and no-build conditions. The high through volumes on SR 9 result in insufficient gaps which makes it difficult for the left-turning vehicles to complete their turning maneuver.

Parking: None

Crashes: In the last twelve-month period, five crashes occurred at the intersection. None of these crashes were correctable by a signal.

Warrant Analysis: Warrant 2 (Four hour volume) is met under existing conditions, 2020 No-Build and 2040 No-Build Conditions. Warrant 1 (Eight hour volume) is met by 2040 No-Build conditions.

Roundabout Analysis:

A planning level assessment of roundabout feasibility was performed at the intersection of SR 9 and Fowler Road. The intersection in 2012 has a total ADT of less than 25,000 vpd, hence does not warrant a multi-lane roundabout. However, for planning purposes, both single and multi-lane roundabouts were evaluated.

A planning level capacity analysis was performed to evaluate the delays and levels of service with a roundabout at the intersection. The results of the analysis are listed in the table below:

SR 9 at Fowler Road	Roundabout Lane LOS											
	HCM 2010 Model						Calibrated-Model					
	AM			PM			AM			PM		
Single Lane Roundabout Leg	*N*	*E*	*S*	*N*	*E*	*S*	*N*	*E*	*S*	*N*	*E*	*S*
2012 - Existing	C	A	E	A	E	C	B	A	C	A	C	C
2020 No-Build	D	B	F	B	F	E	C	A	F	B	E	D
2040 No-Build	F	C	F	C	F	F	F	B	F	C	F	F

* The HCM 2010 formula yields a conservative Entry Capacity and is best applied to the present year when driver familiarity is low while the Calibrated HCM Model sometimes yields a higher Entry Capacity and is best applied in the future year when driver familiarity has increased.

The analysis shows that the intersection LOS is acceptable in 2012 AM and PM conditions with a roundabout. However, by 2020 in the no-build condition the NB leg in the AM peak hour and the WB leg in the PM peak hour are at failing levels of service with a single lane roundabout. By 2040, two out of 3 legs are at LOS F for both peak periods.

Analysis was also performed using a two- lane roundabout at the intersection. The results of the analysis are shown in table below. The results show that the two lane roundabout performs at acceptable levels of service in 2012 and 2020 conditions. However, in 2040 build conditions the NB approach in AM peak hour and WB approach in the PM peak hour are at failing levels of service. However, the results of the capacity analysis at the intersection with a traffic signal show that the levels of service of all approaches are acceptable in 2040 build condition. Hence, a roundabout at this intersection is not recommended.

SR 9 at Fowler Road	Roundabout Lane LOS											
	HCM 2010 Model						Calibrated-Model					
	AM			PM			AM			PM		
Multi Lane Roundabout Leg	*N*	*E*	*S*	*N*	*E*	*S*	*N*	*E*	*S*	*N*	*E*	*S*
2012 - Existing	A	A	B	A	C	C	A	A	A	A	B	A
2020 No-Build	B	A	F	B	D	D	A	A	B	A	C	A
2040 No-Build	B	A	F	C	F	F	A	A	E	A	F	B
2020 Build	B	A	F	B	E	E	A	A	C	A	D	B
2040 Build	C	B	F	D	F	F	A	A	F	A	F	C

* The HCM 2010 formula yields a conservative Entry Capacity and is best applied to the present year when driver familiarity is low while the Calibrated HCM Model sometimes yields a higher Entry Capacity and is best applied in the future year when driver familiarity has increased.

It is recommended that a traffic signal be installed at this intersection to improve the operations and safety.

ATTACHMENT 7

Bridge Inventory Report

Processed Date:6/1/2014

Parameters: Bridge Serial Num

Bridge Inventory Data Listing

Structure ID:117-0001-0 **Forsyth** **SUFF. RATING: 95.72**

Location & Geography

Structure ID:	117-0001-0
200 Brdge Information:	02
*6A Feature Int:	BIG CREEK
*6B Critical Bridge:	0
*7A Route No Carried:	SR00009
*7B Facility Carried:	ATLANTA HIGHWAY
9 Location:	6 MI SW OF CUMMING
2 Dot District:	1
207 Year Photo:	2013
*91 Inspection Frequency:	24 Date: 07/23/2013
92A Fract Crit Insp Freq:	0 Date: 02/01/1901
92B Underwater Insp Freq:	0 Date: 02/01/1901
92C Other Spc. Insp Freq:	0 Date: 02/01/1901
* 4 Place Code:	00000
*5 Inventory Route(O/U):	1
Type:	3
Designation:	1
Number:	00009
Direction:	0
*16 Latitude:	34 - 09.3613 HMMS Prefix:SR
*17 Longtitude:	84 - 13.1270 HMMS Suffix:00
	MP: 4.19
98 Border Bridge:	000 % Shared:00
99 ID Number:	000000000000000
*100 STRAHNET:	0
12 Base Highway Network:	1
13A LRS Inventory Route:	1171000900
13B Sub Inventory Route:	0
*101 Parallel Structure:	N
*102 Direction of Traffic:	2
*264 Road Inventory Mile Post:	004.18
*208 Inspection Area:	01 Initials: JBC
Engineer's Initials:	bcn
* Location ID No:	117-00009D-004.19N

*104 Highway System:	0
*26 Functional Classification:	16
*204 Federal Route Type:	F No: 01141
105 Federal Lands Highway:	0
*110 Truck Route:	0
206 School Bus Route:	1
217 Benchmark Elevation:	0000.00
218 Datum:	0
*19 Bypass Length:	05
*20 Toll:	3
*21 Maintanance:	01
*22 Owner:	01
*31 Design Load:	6
37 Historical Significance:	5
205 Congressional District:	7
27 Year Constructed:	1975
106 Year Reconsrtucted:	0000
33 Bridge Median	0
34 Skew:	14
35 Structure Flared:	0
38 Navigation Control:	0
213 Special Steel Design:	0
267 Type of Paint:	0
*42 Type of Service On:	1
Type of Service Under:	5
214 Movable Bridge:	0
203 Type Bridge:	Q - - -
259 Pile Encasement	3
*43 Structure Type Main:	1 19
45 No.Spans Main:	005
44 Structure Type Appr:	0 00
46 No Spans Appr:	0000
226 Bridge Curve Horz	0 Vert: 0.00
111 Pier Protection	0
107 Deck Structure Type:	N
108 Wearing Structure Type:	N
Membrane Type:	N
Deck Protection:	N

Signs & Attachments

225 Expansion Joint Type:	00
242 Deck Drains:	0
243 Parapet Location:	0
Height:	0.00
Width:	0.00
238 Curb Height:	0
Curb Material:	0
239 Handrail	0 0
*240 Median Barrier Rail:	0
241 Bridge Median Height:	0
* Bridge Median Width:	0
230 Guardrail Loc. Dir. Rear:	6
Fwrd:	6
Oppo. Dir. Rear:	0
Oppo. Fwrd:	0
244 Aproach Slab	0
224 Retaining Wall:	0
233Posted Speed Limit:	55
236 Warning Sign:	0.00
234 Delineator:	0.00
235 Hazard Boards:	0
237 Utilities Gas:	32
Water:	00
Electric:	00
Telephone:	00
Sewer:	00
247 Lighting Street:	0
Navigation:	0
Aerial:	0
*248 County Continuity No.:	02

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Bridge Inventory Data Listing

Structure ID:117-0001-0

Programming Data

201 Project No:	RS-2416 (4)
202 Plans Available:	1
249 Prop Proj No:	000000000000000000000000
250 Approval Status:	0000
251 PI Number:	0000000
252 Contract Date:	02/01/1901
260 Seismic No:	00000
75 Type Work:	00 0
94 Bridge Imp. Cost:	$219
95 Roadway Imp. Cost:	$22
96 Total Imp Cost:	$328
76 Imp Length:	000000
97 Imp Year:	2013
114 Furure ADT:	017115 Year:2032

Hydralic Data

215Waterway Data:	
High Water Elev:	1016.4 Year:1950
Flood Elev:	1018.2 Freq:100
Avg Streambed Elev:	1005.5
Drainage Area:	00037
Area of Opening:	000600
113 Scour Critical	8
216 Water Depth:	01.0 Br.Height:11.0
222 Slope Protection:	0
221Spur Dikes Rear	0 Fwd:0
219 Fender System	0
220 Dolphin:	0
223 Culvert Cover:	2
Type:	1
No. Barrels:	5
Width:	10.00 Height:12.00
Length:	48 Apron:0
*265 U/W Insp. Area	0 Diver:ZZZ
*Location ID No:	117-00009D-004.19N

Measurements:

*29 ADT	011410 Year:2012
109 %Trucks:	1
* 28 Lanes On:	02 Under:00
210 No. Tracks On:	00 Under:00
* 48 Max. Span Length	0010
* 49 Structure Length:	56
51 Br. Rwdy. Width	0.00
52 Deck Width:	0.00
* 47 Tot. Horiz. Cl:	37
50 Curb / Sidewalk Width	0.00 / 0.00
32 Approach Rdwy. Width	029
*229 Shoulder Width:	
Rear Lt:	2.30 Type:2 Rt:2.20
Fwd. Lt:	2.40 Type:2 Rt:2.20
Pavement Width:	
Rear:	24.00 Type: 2
	24.00 Type: 2
Intersaction Rear:	1 Fwd: 1
36Safety Features Br. Rail:	1
Transition:	1
App. G. Rail:	1
App. Rail End:	1
53 Minimum Cl. Over:	99' 99 "
Under: N	00' 00"
*228 Minimum Vertical Cl	
Act. Odm Dir::	99' 99"
Oppo. Dir:	99' 99"
Posted Odm. Dir:	00' 00"
Oppo. Dir:	00' 00"
55 Lateral Undercl. Rt:	N 0.00
56 Lateral Undercl. Lt:	0.00
*10 Max Min Vert Cl:	99' 99" Dir:0
39 Nav Vert Cl:	000 Horiz:0000
116 Nav Vert Cl Closed:	000
245 Deck Thickness Main	0.00
Deck Thick Approach:	0.00
246 Overlay Thickness:	0.00
212 Year Last Painted:	Sup:0000 Sub:0000

65 Inventory Rating Mathod:	0
63 Operating Rating Method:	0
66 Inventory Type:	2 Rating: 36
64 Operating Type:	2 Rating: 61
231Calculated Loads:	
H-Modified:	00 0
HS-Modified:	00 0
Type 3:	00 0
Type 3s2:	00 0
Timber:	00 0
Piggyback:	00 0
261 H Inventory Rating:	20
262 H Operating Rating	34
67 Structural Evaluation:	7
58 Deck Condition:	N
59 Superstructure Condition:	N
* 227 Collision Damage:	0
60A Substructure Condition:	N
60B Scour Condition:	8
60C Underwater Condition	N
71 Waterway Adequacy:	8
61 Channel Protection Cond.:	8
68 Deck Geometry:	N
69 UnderClr. Horz/Vert:	N
72 Appr. Alignment:	8
62 Culvert:	7

Posting Data

70 Bridge Posting Required	5
41 Struct Open, Posted, CL:	A
* 103 Temporary Structure:	0
232 Posted Loads	
H-Modified:	00
HS-Modified:	00
Type 3:	00
Type 3s2:	00
Timber:	00
Piggyback	00
253 Notification Date:	02/01/1901
258 Fed Notify Date:	02/01/1901

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ATTACHMENT 8

Concept Level Hydrology Study for MS4 Permit

BMP Infeasibility Summary: 0008357

ID	Station	Offset	Side	Reason for Infeasibility	Criteria found infeasible	Reference page
32	188+50.00	56.45	L	Displacement of a property	1, 2, 3, 4	A-1, A-2, 1 OF 7
33	189+72.00	51.43	R	Displacement of a property	1, 2, 3, 4	A-1, A-2, 1 OF 7
34	192+46.12	40.26	R	Displacement of a property	1, 2, 3, 4	A-1, A-2, 1 OF 7
35	193+58.78	55.04	L	Additional cost	1, 2, 3, 4	A-1, A-2, 1 OF 7
37A	207+22.57	88.47	L	The site does not allow for gravity flow to the appropriate BMP	1, 2, 3, 4	A-1, A-2, 1 OF 7
37	212+71.12	52.3	L	Additional cost	1, 2, 3, 4	A-1, A-2, 2 OF 7
39A	228+31.14	60.56	L	Elevation change does not allow for pond	1, 2, 3, 4	A-1, A-2, 2 OF 7
39	231+64.47	40.61	L	Connect to existing/Impact advserse ESA area	1, 2, 3, 4	A-1, A-2, 2 OF 7
43	243+02.48	88.34	R	Displacement of a property/Additional cost	1, 2, 3, 4	A-1, A-2, 3 OF 7
44	244+49.59	78.08	R	Additional cost	1, 2, 3, 4	A-1, A-2, 3 OF 7
47	256+99.44	62.59	R	Additional cost	1, 2, 3, 4	A-1, A-2, 3 OF 7
48	260+98.34	57.8	R	Additional cost	1, 2, 3, 4	A-1, A-2, 3 OF 7
51A	282+88.82	49.17	L	Pond would impact "Traditions" development	1, 2, 3, 4	A-1, A-2, 4 OF 7
51	278+75.41	55.08	L	Pond would impact "Traditions" development	1, 2, 3, 4	A-1, A-2, 4 OF 7
53	290+85.82	60.56	L	Pond would impact "Traditions" development	1, 2, 3, 4	A-1, A-2, 4 OF 7
54	293+85.87	49.2	L	Pond would impact "Traditions" development	1, 2, 3, 4	A-1, A-2, 4 OF 7
55	298+51.76	77.74	L	Pond would impact "Traditions" development	1, 2, 3, 4	A-1, A-2, 5 OF 7
56	308+71.45	49.71	R	Additional cost	1, 2, 3, 4	A-1, A-2, 5 OF 7
57B	318+38.82	53.75	R	Additional cost/Displacement of a property	1, 2, 3, 4	A-1, A-2, 5 OF 7
58A	320+26.66	58.62	R	Additional cost	1, 2, 3, 4	A-1, A-2, 6 OF 7
60	324+88.88	67.18	R	Additional cost/The site does not allow for gravity flow to the appropriate BMP	1, 2*, 3*, 4	A-1, A-2, 6 OF 7
61	328+36.20	64.95	L	Additional cost/The site does not allow for gravity flow to the appropriate BMP	1, 2*, 3*, 4	A-1, A-2, 6 OF 7
62	332+00.83	53.21	L	Additional cost/Displacement of a property	1, 2, 3, 4	A-1, A-2, 6 OF 7
64	337+11.53	57.61	R	Additional cost	1, 2, 3, 4	A-1, A-2, 6 OF 7
65	340+03.42	50.8	R	Additional cost/Displacement of a property	1, 2, 3, 4	A-1, A-2, 6 OF 7
66A	347+86.18	67.74	R	Additional cost	1, 2, 3, 4	A-1, A-2, 6 OF 7
66	343+77.30	49.39	R	Additional cost	1, 2, 3, 4	A-1, A-2, 6 OF 7
67	358+89.28	83.85	R	Additional cost/Displacement of a property	1, 2, 3, 4	A-1, A-2, 7 OF 7

Notes:

* Criteria 2 and/or 3 can be met with oversized inline storage pipes.

Standard design criteria details in accordance with p. 2-1 of "GDOT Guidelines for Design of Post-Construction BMPs" listed below:

1. **Stormwater runoff quality and reduction**- demonstrate that 80% of the total suspended solids (TSS) from runoff generated by a 1.2-inch rainfall event.
2. **Stream channel protection**- detain the 1-year 24-hour rainfall event for 24 hours.
3. **Overbank protection**- calculated post-construction peak discharge rate that is less than or equal to pre-construction rates, for the 25-year 24-hour rainfall event.
4. **Extreme flood protection**- control the 100-year 24-hour flood such that flooding is not exacerbated.

Pond Feasibility: 0008357

			Pre Development									Post Development																	
			Offsite		Paved		Total					Offsite		Paved															
Outfall ID	Station	Side	Area	C	Area	C	Area	Wt C	Tc	I	$Q_{25\text{-}pre}$	Area	C	Area	C	Total Area	Wt C	Tc	I	$Q_{25\text{-}post}$	V max BlueBook method	V max SCS method	Procedure	Storage	Bottom Width of Pond	Top Width	Top Length	Reqd Area (ac)
			Ac		Ac		Ac		min	in/hr	cfs	Ac		Ac		Ac		min	in/hr	cfs								
30	185+87.20	L	1.5	0.4	0.61	0.95	2.11	0.559005	5	8.282	9.768884	1.23	0.4	0.88	0.95	2.11	0.629384	5	8.282	10.99879	3594.51016	5989.198252	Mod. Rational Method	3594.51	9	129	138	0.408678
32	188+50.00	L	0.27	0.4	0.12	0.95	0.39	0.569231	5	8.282	1.838654	0.16	0.4	0.23	0.95	0.39	0.724359	5	8.282	2.339729	1064.15107	1172.126338	Mod. Rational Method	1064.151	1	121	122	0.338889
33	189+72.00	R	0.11	0.4	0.27	0.95	0.38	0.790789	5	8.282	2.488809	0.11	0.4	0.27	0.95	0.38	0.790789	5	8.282	2.488809	441.999242	1078.623382	Mod. Rational Method	441.9992	1	121	122	0.338889
34	192+46.12	R	0.16	0.4	0.08	0.95	0.24	0.583333	5	8.282	1.159512	0.07	0.4	0.17	0.95	0.24	0.789583	5	8.282	1.569482	802.803627	801.453906	Mod. Rational Method	802.8036	1	121	122	0.338889
35	193+58.78	L	0.37	0.4	0.27	0.95	0.64	0.632031	5	8.282	3.35016	0.26	0.4	0.38	0.95	0.64	0.726563	5	8.282	3.851235	1348.7563	1816.628854	Mod. Rational Method	1348.756	1	121	122	0.338889
36	206+89.70	R	4.01	0.4	1.19	0.95	5.2	0.525865	5	8.282	22.64774	3.26	0.4	1.94	0.95	5.2	0.605192	5	8.282	26.06416	9160.20353	14760.10944	SCS Method	14760.11	31	151	182	0.6309
37A	207+22.57	L	0.54	0.4	0	0.95	0.54	0.4	5	8.282	1.788961	0.29	0.4	0.25	0.95	0.54	0.65463	5	8.282	2.927767	1932.63759	2163.925546	Mod. Rational Method	1932.638	3	123	126	0.355785
37	212+71.12	L	1.58	0.4	0.12	0.95	1.7	0.438824	5	8.282	6.17854	1.31	0.4	0.39	0.95	1.7	0.526176	5	8.282	7.40845	2929.82914	4825.420392	Mod. Rational Method	2929.829	7	127	134	0.39068
38A	219+35.80	L	0.67	0.4	0	0.95	0.67	0.4	5	8.282	2.219636	0.24	0.4	0.43	0.95	0.67	0.752985	5	8.282	4.178383	3133.2638	2998.105487	Mod. Rational Method	3133.264	8	128	136	0.399633
38	219+34.99	R	1.06	0.4	0.87	0.95	1.93	0.647927	5	8.282	10.35692	1.14	0.4	0.79	0.95	1.93	0.62513	5	8.282	9.992504	1262.23827	5478.271387	Mod. Rational Method	1262.238	1	121	122	0.338889
39A	228+31.14	L	1.57	0.4	0.71	0.95	2.28	0.571272	5	8.282	10.7876	0.79	0.4	1.49	0.95	2.28	0.75943	5	8.282	14.34067	7104.72807	7423.466804	Mod. Rational Method	7104.728	18	138	156	0.494215
39	231+64.47	L	1.08	0.4	0.62	0.95	1.7	0.600588	5	8.282	8.456152	0.4	0.4	1.3	0.95	1.7	0.820588	5	8.282	11.5537	6004.53851	5676.965168	Mod. Rational Method	6004.539	15	135	150	0.464876
41	237+00	R	0.28	0.4	0.38	0.95	0.66	0.716667	5	8.282	3.917492	0.16	0.4	0.5	0.95	0.66	0.816667	5	8.282	4.464119	1519.77289	1873.398505	Mod. Rational Method	1519.773	1	121	122	0.338889
43	243+02.48	R	0.1	0.15	0.07	0.95	0.17	0.5	5	8.282	0.662578	0.04	0.15	0.13	0.95	0.17	0.75	5	8.282	0.993867	629.62329	638.6585813	Mod. Rational Method	629.6233	1	121	122	0.338889
44	244+49.59	R	2.54	0.15	0.12	0.95	2.66	0.18299	5	8.282	4.410285	2.03	0.15	0.63	0.95	2.66	0.331443	5	8.282	7.988206	5305.41396	11547.61503	Mod. Rational Method	5305.414	14	134	148	0.45528
45A	245+70.20	R	0.3	0.15	0.19	0.95	0.49	0.503488	5	8.282	1.793102	0.15	0.15	0.34	0.95	0.49	0.745349	5	8.282	2.654453	1772.50465	1840.83944	Mod. Rational Method	1772.505	2	122	124	0.347291
46	247+90.16	R	0.53	0.4	0.18	0.95	0.71	0.541429	5	8.282	3.138963	0.32	0.4	0.39	0.95	0.71	0.725	5	8.282	3.963045	2139.91167	2133.871025	Mod. Rational Method	2139.912	4	124	128	0.364371
47A	250+45.33	R	0.59	0.4	0.19	0.95	0.78	0.530625	5	8.282	3.515805	0.41	0.4	0.37	0.95	0.78	0.654375	5	8.282	4.335745	1792.91899	2214.016415	Mod. Rational Method	1792.919	3	123	126	0.355785
47	256+99.44	R	37.86	0.4	0.98	0.95	38.84	0.413877	6	7.961	127.9743	36.63	0.4	1.77	0.95	38.4	0.425352	5	8.282	135.2777	29368.2028	110246.6636	SCS Method	110246.7	106	226	332	1.722498
48	260+98.34	R	0.99	0.4	0.23	0.95	1.22	0.503689	7	7.667	4.711475	0.41	0.4	0.8	0.95	1.21	0.763636	5	8.282	7.652776	4663.80503	4888.868827	Mod. Rational Method	4663.805	12	132	144	0.436364
50	272+60.11	R	1.17	0.4	0.13	0.95	1.3	0.455	5	8.282	4.898936	0.99	0.4	0.31	0.95	1.3	0.531154	5	8.282	5.718876	2099.06211	3690.027359	Mod. Rational Method	2099.062	4	124	128	0.364371
51A	298+51.82	L	0.65	0.4	0	0.95	0.65	0.4	5	8.282	2.153379	0.22	0.4	0.43	0.95	0.65	0.763846	5	8.282	4.112125	3118.11339	2908.609801	Mod. Rational Method	3118.113	8	128	136	0.399633
51	278+75.41	R	6.95	0.4	1.08	0.95	8.03	0.473973	6	7.961	30.29987	6.13	0.4	1.9	0.95	8.03	0.530137	5	8.282	35.25743	11255.2399	22793.01515	SCS Method	22793.02	42	162	204	0.758678
53	290+85.82	L	1.36	0.4	0.11	0.95	1.47	0.441156	5	8.282	5.371023	1.22	0.4	0.25	0.95	1.47	0.493537	5	8.282	6.008754	1919.65488	4172.569398	Mod. Rational Method	1919.655	3	123	126	0.355785
54	293+85.87	L	0.31	0.4	0	0.95	0.31	0.4	5	8.282	1.026996	0.13	0.4	0.18	0.95	0.31	0.719355	5	8.282	1.846936	1333.7656	1345.774684	Mod. Rational Method	1333.766	1	121	122	0.338889
55	298+51.76	L	14.14	0.15	1.59	0.95	15.73	0.230865	5	8.282	30.0769	11.78	0.15	3.95	0.95	15.73	0.35089	5	8.282	45.71374	27718.0884	60407.91847	SCS Method	60407.92	75	195	270	1.208678
56A	306+21.50	R	3.75	0.4	0.27	0.95	4.02	0.43694	5	8.282	14.54773	3.31	0.4	0.71	0.95	4.02	0.497139	5	8.282	16.55203	5606.24215	11410.69999	Mod. Rational Method	5606.242	15	135	150	0.464876
56	308+71.45	R	0.64	0.4	0.22	0.95	0.86	0.540698	5	8.282	3.851235	0.53	0.4	0.33	0.95	0.86	0.611047	5	8.282	4.352309	1440.87521	2441.095022	Mod. Rational Method	1440.875	1	121	122	0.338889
57	311+62.15	L	0.14	0.4	0	0.95	0.14	0.4	5	8.282	0.463805	0.04	0.4	0.1	0.95	0.14	0.792857	5	8.282	0.919327	716.624469	645.1703943	Mod. Rational Method	716.6245	1	121	122	0.338889
57B	318+38.82	R	0.81	0.4	0.33	0.95	1.14	0.559211	5	8.282	5.279918	0.42	0.4	0.72	0.95	1.14	0.747368	5	8.282	7.056456	3529.75075	3711.733402	Mod. Rational Method	3529.751	9	129	138	0.408678
58A	320+26.66	R	2.46	0.4	0.13	0.95	2.59	0.427606	5	8.282	9.172564	2.27	0.4	0.32	0.95	2.59	0.467954	5	8.282	10.03806	2947.23071	7351.669892	Mod. Rational Method	2947.231	7	127	134	0.39068
60	324+88.88	R	17.29	0.4	0.82	0.95	18.11	0.424903	5	8.282	63.73172	16.43	0.4	1.68	0.95	18.11	0.451022	5	8.282	67.64921	17335.5464	51404.91959	SCS Method	51404.92	69	189	258	1.119421
61	328+36.20	L	1.76	0.4	0.29	0.95	2.05	0.477805	5	8.282	8.112439	1.62	0.4	0.43	0.95	2.05	0.515366	5	8.282	8.750171	2415.87129	5818.889297	Mod. Rational Method	2415.871	5	125	130	0.373049
62	332+00.83	L	13.72	0.4	0.51	0.95	14.23	0.419712	5	8.282	49.46559	13.32	0.4	0.91	0.95	14.23	0.435172	5	8.282	51.28768	11602.8355	40391.60717	SCS Method	40391.61	59	179	238	0.978007
64	337+11.53	R	0.43	0.4	0.2	0.95	0.63	0.574603	5	8.282	2.998165	0.22	0.4	0.41	0.95	0.63	0.757937	5	8.282	3.954762	1931.37848	2051.221091	Mod. Rational Method	1931.378	3	123	126	0.355785
65	340+03.42	R	0.73	0.4	0.29	0.95	1.02	0.556373	5	8.282	4.700163	0.44	0.4	0.58	0.95	1.02	0.712745	5	8.282	6.021178	2776.88774	3065.56119	Mod. Rational Method	2776.888	6	126	132	0.381818
66A	347+86.18	R	2.28	0.5	0.51	0.95	2.79	0.582258	5	8.282	13.45447	1.82	0.5	0.97	0.95	2.79	0.656452	5	8.282	15.1689	4980.75141	7919.366409	Mod. Rational Method	4980.751	13	133	146	0.445776
66	343+77.30	R	1.21	0.5	0.12	0.95	1.33	0.540602	6	7.961	5.724016	0.89	0.5	0.44	0.95	1.33	0.648872	5	8.282	7.14756	2834.19302	3775.181836	Mod. Rational Method	2834.193	7	127	134	0.39068
67	358+89.28	R	19.6	0.5	1.42	0.95	21.02	0.5304	7	7.667	85.48126	19.34	0.5	1.68	0.95	21.02	0.535966	5	8.282	93.30755	17909.5343	59664.90391	SCS Method	59664.9	75	195	270	1.208678

Drainage Area Cost Analysis: 0008357

ID	First Station	Last Station	Distance	Unit Cost	Construction Cost	10% of Cost	Est. ROW Cost	Allowable Area	Required Area	Feasibility	Greater Than 10%	PI Number
32	18615.42	18819.26	203.84	$ 1,080.68	$ 220,285.81	$ 22,028.58	$ 180,000.00	0.12	0.338888889	Not Feasible	No	8357
33	18584.97	18953.5	368.53	$ 1,080.68	$ 398,263.00	$ 39,826.30	$ 180,000.00	0.22	0.338888889	Not Feasible	No	8357
34	18953.5	19236.03	282.53	$ 1,080.68	$ 305,324.52	$ 30,532.45	$ 180,000.00	0.17	0.338888889	Not Feasible	No	8357
35	18819.16	19325.58	506.42	$ 1,080.68	$ 547,277.97	$ 54,727.80	$ 180,000.00	0.30	0.338888889	Not Feasible	No	8357
37A	20638.77	20769.56	130.79	$ 1,080.68	$ 141,342.14	$ 14,134.21	$ 180,000.00	0.08	0.355785124	Not Feasible	No	8357
37	20769.56	21183.37	413.81	$ 1,114.80	$ 461,315.39	$ 46,131.54	$ 180,000.00	0.26	0.390679522	Not Feasible	No	8357
39A	21814.66	23186.73	1372.07	$ 1,114.80	$ 1,529,583.64	$ 152,958.36	$ 180,000.00	0.85	0.494214876	Feasible		8357
39	22780.18	23740.59	960.41	$ 1,114.80	$ 1,070,665.07	$ 107,066.51	$ 180,000.00	0.59	0.464876033	Feasible		8357
43	24314.18	24451.11	136.93	$ 1,114.80	$ 152,649.56	$ 15,264.96	$ 180,000.00	0.08	0.338888889	Not Feasible	No	8357
44	24451.11	24571	119.89	$ 1,114.80	$ 133,653.37	$ 13,365.34	$ 180,000.00	0.46	0.455280073	Feasible		8357
47	25296.65	27077.65	1781	$ 1,114.80	$ 1,985,458.80	$ 198,545.88	$ 180,000.00	1.10	1.722497704	Not Feasible	No	8357
48	25759.37	26953.94	1194.57	$ 1,114.80	$ 1,331,706.64	$ 133,170.66	$ 180,000.00	0.74	0.436363636	Feasible		8357
51A	28286.65	28905.96	619.31	$ 1,114.80	$ 690,406.79	$ 69,040.68	$ 180,000.00	0.38	0.399632691	Not Feasible	No	8357
51	27284.49	28905.96	1621.47	$ 1,114.80	$ 1,807,614.76	$ 180,761.48	$ 180,000.00	1.00	0.758677686	Feasible		8357
53	28905.96	29067.65	161.69	$ 1,114.80	$ 180,252.01	$ 18,025.20	$ 180,000.00	0.10	0.355785124	Not Feasible	No	8357
54	29067.65	29359.67	292.02	$ 1,114.80	$ 325,543.90	$ 32,554.39	$ 180,000.00	0.18	0.338888889	Not Feasible	No	8357
55	29067.65	30639.19	1571.54	$ 1,114.80	$ 1,751,952.79	$ 175,195.28	$ 180,000.00	0.97	1.208677686	Not Feasible	No	8357
56	30963.53	31348.83	385.3	$ 1,114.80	$ 429,532.44	$ 42,953.24	$ 180,000.00	0.24	0.338888889	Not Feasible	No	8357
57B	31348.83	31825.77	476.94	$ 1,114.80	$ 531,692.71	$ 53,169.27	$ 180,000.00	0.30	0.408677686	Not Feasible	No	8357
58A	31825.77	32010.1	184.33	$ 1,114.80	$ 205,491.08	$ 20,549.11	$ 180,000.00	0.11	0.390679522	Not Feasible	No	8357
60	32010.1	32914.75	904.65	$ 1,114.80	$ 1,008,503.82	$ 100,850.38	$ 180,000.00	0.56	1.119421488	Not Feasible	No	8357
61	32914.75	33226.81	312.06	$ 1,114.80	$ 347,884.49	$ 34,788.45	$ 180,000.00	0.19	0.373048669	Not Feasible	No	8357
62	33226.81	33755.07	528.26	$ 1,114.80	$ 588,904.25	$ 58,890.42	$ 180,000.00	0.33	0.978007346	Not Feasible	No	8357
64	33755.07	34029.89	274.82	$ 1,114.80	$ 306,369.34	$ 30,636.93	$ 180,000.00	0.17	0.355785124	Not Feasible	No	8357
65	34029.89	34433.43	403.54	$ 1,114.80	$ 449,866.39	$ 44,986.64	$ 180,000.00	0.25	0.381818182	Not Feasible	No	8357
66A	34722.48	35400	677.52	$ 1,114.80	$ 755,299.30	$ 75,529.93	$ 180,000.00	0.42	0.445775941	Not Feasible	No	8357
66	34433.43	34563.81	130.38	$ 1,114.80	$ 145,347.62	$ 14,534.76	$ 180,000.00	0.08	0.390679522	Not Feasible	No	8357
67	35807.96	36306.7	498.74	$ 1,114.80	$ 555,995.35	$ 55,599.54	$ 180,000.00	0.31	1.208677686	Not Feasible	No	8357

PARSONS

CLIENT GDOT JOB NO. 7844 SHEET 1 OF 2
SUBJECT Sample Calculations BY BJD DATE 7/17/18
MS4 Design CKD. REVISION

ID24

Stationing = 107+45.34 - 109+96.10 → Total Distance = 250.76 Ft

Project Cost = $10.8M/2.22 mi → Unit Cost = $921.376/Foot

Construction Cost = Unit Cost × Distance = 921.376 × 250.76 = $231,044.25

10% of Construction Cost = $23,104.42

ROW Cost = $3,897,000/10.49 Acres → $371,496.66

Allowable Area = 10% of Cost/ROW Cost = $23,104.42/$371,496.66 = 0.0622 Acres

Pre-Development

Offsite Area = 6.32 Acres Paved Area = 1.42 Acres Total Area = 7.74 Acres C=0.4(grass)

$$Wt\ C = \frac{\text{Offsite Area} \times C + \text{Paved Area} \times C}{\text{Total Area}} = \frac{6.32 \times 0.4 + 1.42 \times 0.95}{7.74} = 0.50090$$

Time is assumed to be 5 min.

City: Roswell Design Year: 2025 $a = 80.18$, $b = 14$, $n = 0.771$

$$i = \frac{a}{(b+t_c)^n} = \frac{80.18}{(14+5)^{0.771}} = 8.282 \qquad Q_{25\text{-}pre} = C \cdot I \cdot A = (.50090)(8.282)(7.74) = 32.11 \text{ cfs}$$

Post-Development

Offsite Area = 5.09 Acres Paved Area = 2.65 Acres Total Area = 7.74 Acres C=0.4(grass)

$$Wt\ C = \frac{5.09 * 0.4 + 2.65 * 0.95}{7.74} = 0.58831$$

i remains the same $\qquad Q_{25\text{-}post} = C \cdot I \cdot A = (.58831)(8.282)(7.74) = 37.71 \text{ cfs}$

calc_pad_8-5x11 4 per inch.xl

PARSONS

CLIENT GDOT
SUBJECT Sample Calculations
MS4 Design

JOB NO. 7844
BY BJD
CKD.

SHEET 2 OF 2
DATE 7/17/13
REVISION

Area of Watershed = A_m = 7.74 Acres = 0.01209 mi^2

$\frac{Q_o}{Q_i} = \frac{32.11}{37.71} = 0.851$ $\frac{V_s}{V_r} = 0.17$ (For Type II) From Fig. 8.5, GDOT Drainage Manual

Depth of Runoff = Q_D = 4.60 in. Fig 2.1.5-2 Blue Book $k_r = 53.33 \rightarrow$ constant

$V_r = k_r \cdot Q_D \cdot A_m = (53.33)(4.60)(0.01209) = 2.97$

$V_s = V_r\left(\frac{V_s}{V_r}\right) = 2.97(0.17) = 0.505$ Ft·Ac = 21,993 Ft^3

Pond Design

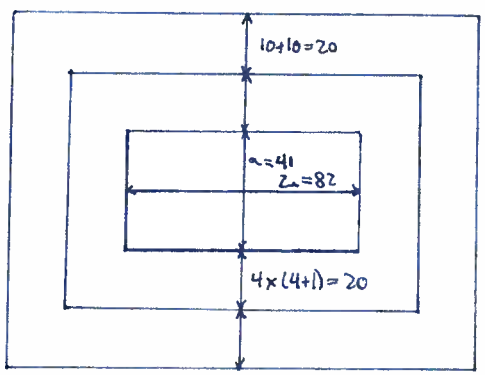
Assume bottom width is a and length is 2a → bottom area = $B_1 = 2a^2$ Ft.

Assume depth = d = 4 Ft.

Top width = (a+32) Ft, Top length = (2a+32) Ft → Top area = (a+32)(2a+32) = B_2

Volume of Frustrum = $\frac{d}{3}(B_1 + B_2 + \sqrt{B_1 B_2})$ and should be greater than 21,969.86 Ft^3

By iteration, a = 41



Reqd. Area = $A_r = (a+80) \times (2a+80) = 32{,}522\ Ft^2$ = 0.747 Ac.

0.747 Acres > 0.06 Acres → Pond Not Feasible

0.747 Acres × $\frac{\$371{,}496}{Acre}$ = \$277,508

\$277,508 > \$23,104 → Pond Not Feasible

calc_pad_8-5x11 4 per inch.si

PARSONS

3577 Parkway Lane, Suite 100, Norcross, Georgia 30092, (770) 466-4900

	Job No.		Sheet:	24
SCS Storage Estimation	By	SKC	Date:	7/17/2013
160+25 L	Checked		Rev.	

Q_{pre} = 32.11 cfs

Q_{post} = 37.71 cfs

Area of Watershed, A_m = 7.74 ac = 0.01209 Sq. Mi

Q_o/Q_i = 32.11/37.71 = 0.85

From Fig 8.5, GDOT Drainage Manual, V_s/V_r = 0.17 (For Type II)

Depth of Direct Runoff, Q_D = 4.60 in Fig 2.1.5-2 Blue book

K_r = 53.33 P= 6.48 in

$V_r = K_r \cdot Q_D \cdot A_m$ = 2.97 Ac. ft CN= 83

$V_s = V_r (V_s/V_r)$ = 0.50 Ac. ft = 21969.86 ft^3 (Estimation Purpose Only Not for Constructions)

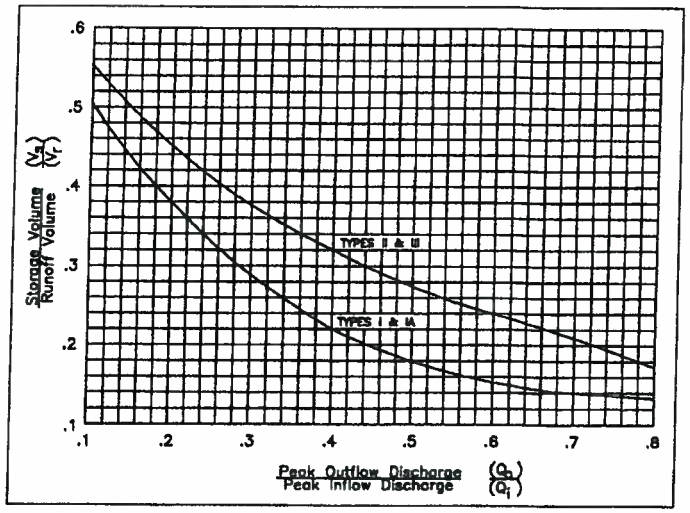


Figure 8.5. SCS detention basin routing curves.[2]

H:\647465 GDOT Full Design Svcs\TO 01 w Otls\01 CONCEPT\00 Rdwy\01 Concept Design\Drainage\Storage Volume SCS Estimation.xlsm

PARSONS

CLIENT GDOT
SUBJECT Sample Calculations
MS4 Design

JOB NO. 7843
BY BJD
CKD.

SHEET 1 OF 3
DATE 7/17/13
REVISION

ID1

Stationing = 11+91.43 - 17+58.26 → Total Distance = 566.83 ft

Project Cost = \$4M/0.98 mi. → Unit Cost = \$773.036/Foot

Construction Cost = Unit Cost x Distance = 773.036 x 566.83 = \$438,180.00

10% of Construction Cost = \$43,818.00

ROW Cost = \$1,436,000/3.69 Acres = \$389,159/acre

Allowable Area = 10% of Cost/ROW Cost = \$43,818.00/\$389,159 = 0.1126 Acres

Pre-Development

Offsite Area = 3.61 Acres Paved Area = 0.46 Acres Total = 4.07 Acres C=0.5 (developed)

$$\text{Wt } C = \frac{\text{Offsite Area} \times C + \text{Paved Area} \times C}{\text{Total Area}} = \frac{3.61 \times 0.5 + 0.46 \times 0.95}{4.07} = 0.55086$$

Time is assumed to be 5 min.

City: Roswell Design Year: 2025 $a = 80.18$, $b = 14$, $n = 0.771$

$$i = \frac{a}{(b+t_c)^n} = \frac{80.18}{(14+5)^{0.771}} = 8.282 \qquad Q_{25\text{-}pre} = C \cdot I \cdot A = (.55086)(8.282)(4.07) = 18.57 \text{ cfs}$$

Post-Development

Offsite Area = 3.15 Acres Paved Area = 0.92 Acres Total = 4.07 Acres C=0.5 (developed)

$$\text{Wt } C = \frac{3.15 \times 0.5 + 0.92 \times 0.95}{4.07} = 0.60172$$

i remains the same $\quad Q_{25\text{-}post} = C \cdot I \cdot A = (.60172)(8.282)(4.07) = 20.28 \text{ cfs}$

calc_pad_8-5x11 4 per inch.al

PARSONS

CLIENT GDOT JOB NO. 7843 SHEET 2 OF 3
SUBJECT Sample Calculations BY RJD DATE 7/17/15
MS4 Design CKD. REVISION

Using eqn. 2.2.13a (Blue Book)

$$V_{preliminary} = 60[CAa - (2CabAQ_a)^{1/2} + Q_a/2(b - t_c)]$$

$C = 0.6017$
$A = 4.07$ Acres
$a = 219.74$
$b = 21.54$ > Table 2.2.6-1 (Blue Book)
$Q_a = 18.57$ cfs
$t_c = 5$ min

$$= 60[(0.6017)(4.07)(219.74) - (2(0.6017)(219.74)(21.54)(4.07)(18.57))^{1/2} + (18.57)/2\,(21.54 - 5)]$$

$$= 60[538.13 - 656.12 + 153.57] = 2135 \text{ ft}^3$$

$P_{180} = 1.31 \times 3$ in. $= 3.93$ in. Table A-2 (Blue Book)

$$T_d = \sqrt{\frac{2CAab}{Q_a}} - b \quad \text{Eq. 2.2.12 (Blue Book)}$$

$C = 0.6017$
$A = 4.07$
$a = 219.74$
$b = 21.54$
$Q_a = 18.57$

$$= \sqrt{\frac{2(0.6017)(4.07)(219.74)(21.54)}{(18.57)}} - 21.54$$

$$= \sqrt{1248.38} - 21.54 = 13.79 \text{ min}$$

$$\therefore i = \frac{80.18}{(13.79 + 14)^{0.771}} = \frac{a}{(t+b)^x} = 6.18 \text{ in/hr}$$

$$\therefore P_{td} = I_d \times \frac{T_d}{60} = 6.18 \times \frac{13.79}{60} = 1.4204 \text{ in}$$

$$V_{max} = V_{preliminary} \times \frac{P_{180}}{P_{td}} = 2135 \times \frac{3.39}{1.4204} = 5907.17 \text{ ft}^3 \quad \text{Eq. 2.2.13b (Blue Book)}$$

calc_pad_8-5x11 4 per Inch.al

PARSONS

CLIENT GDOT
SUBJECT Sample Calculations
MS4 Design

JOB NO. 7843
BY BJD
CKD.

SHEET 3 OF 3
DATE 7/17/13
REVISION

Design of Pond

Assume bottom width is a and length is 2a

→ Bottom Area = $2a^2$ Ft. = B_1

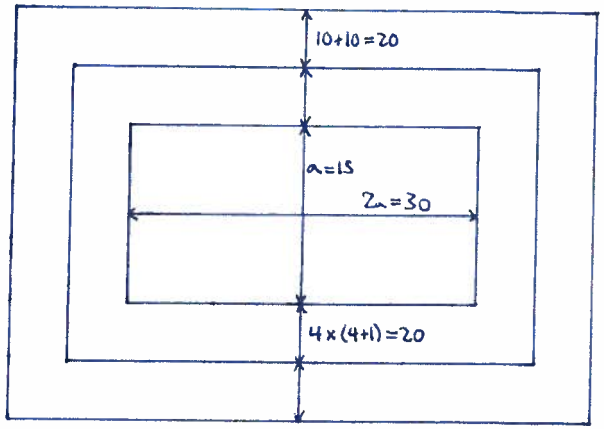
Assume depth is 4 Ft. = d

Top Width = (a+32) Ft., Top Length = (2a+32) Ft.

∴ Top Area = (a+32)(2a+32) = B_2

Volume of Frustrum = $\frac{d}{3}(B_1 + B_2 + \sqrt{B_1 B_2})$ and should be greater than 5907.17 Ft^3

By iteration, a = 15



Reqd. Area = A_r = a + (20+20+20+20) x (2a + 20+20+20+20) Ft^2 = $\frac{A_r}{43{,}560}$ = A_c

a = 15

A_r = (135+80) x (150x2+80) = 20,250 Ft^2 = 0.465 Ac.

0.465 Ac. > 0.11 Ac. → Pond Not Feasible

0.465 Acre x $\frac{\$389{,}159}{\text{Acre}}$ = \$180,911

\$180,911 > \$43,818 → Pond Not Feasible

calc_pad_8-5x11 4 per inch.ai

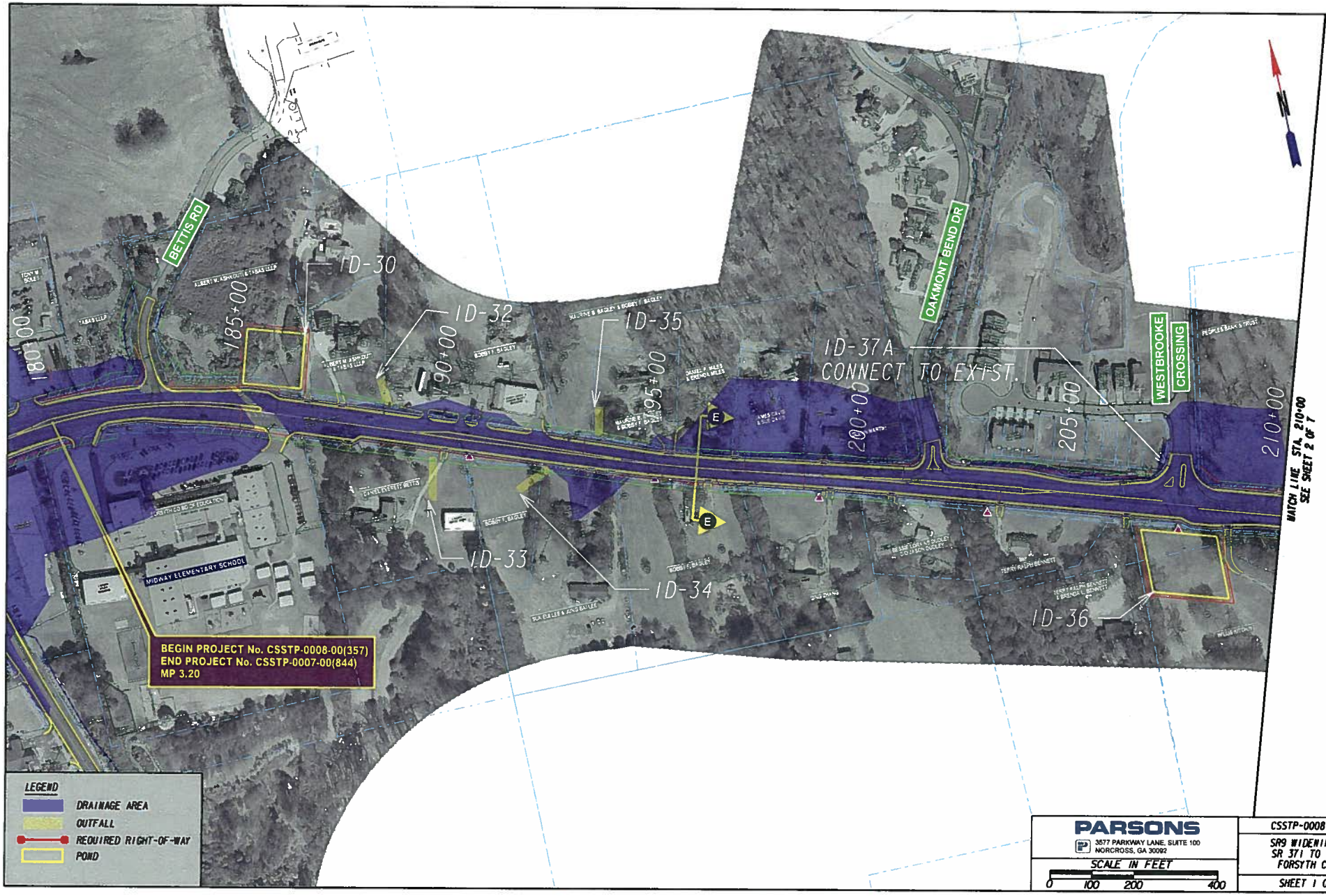
PARSONS

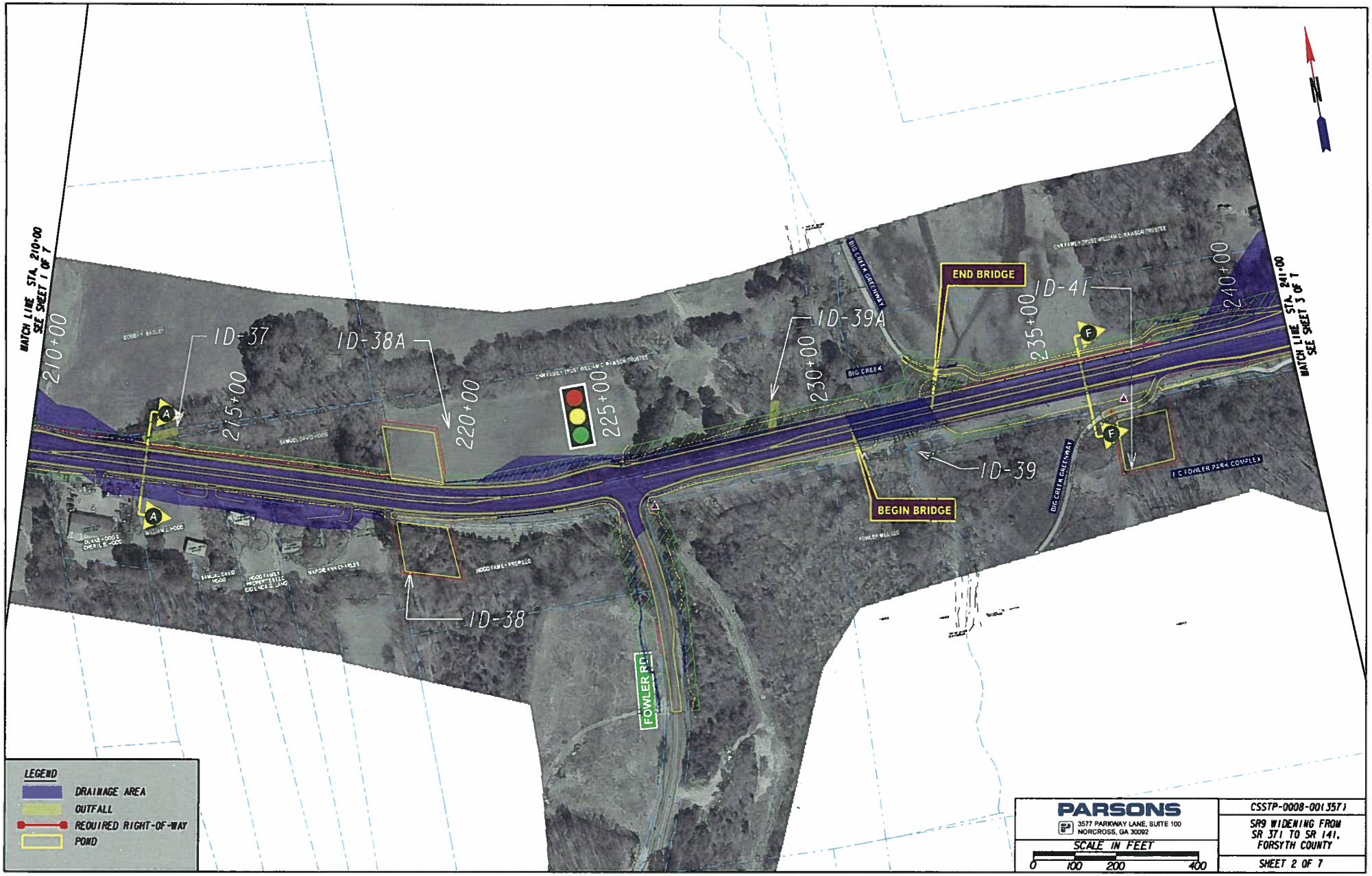
3577 Parkway Lane, Suite 100, Norcross, Georgia 30092, (770) 466-4900

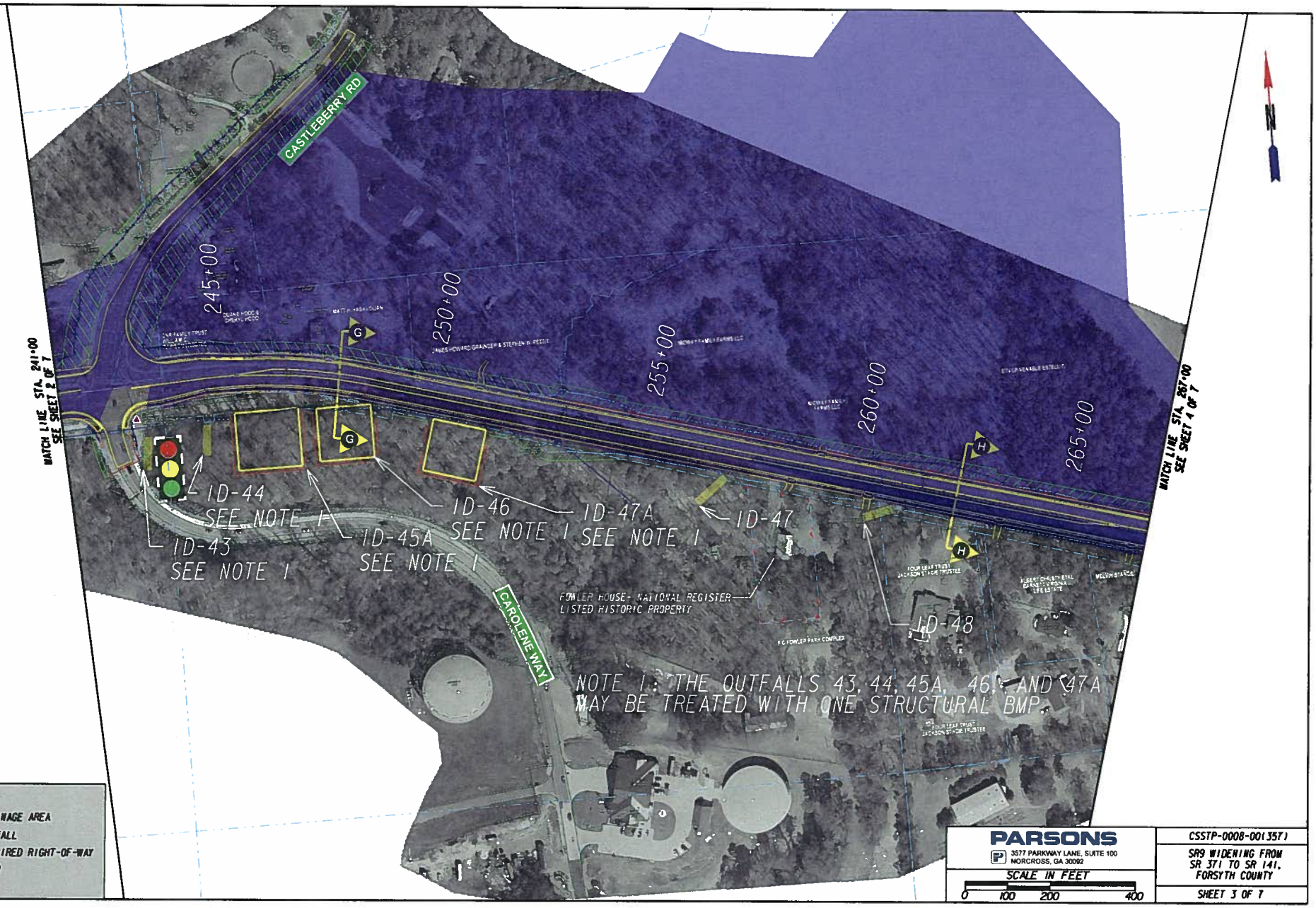
	Job No.		Sheet:	1
Storage Volume/Mod. Rational Method	By	SKC	Date:	7/17/2013
13+50 R	Checked		Rev.	

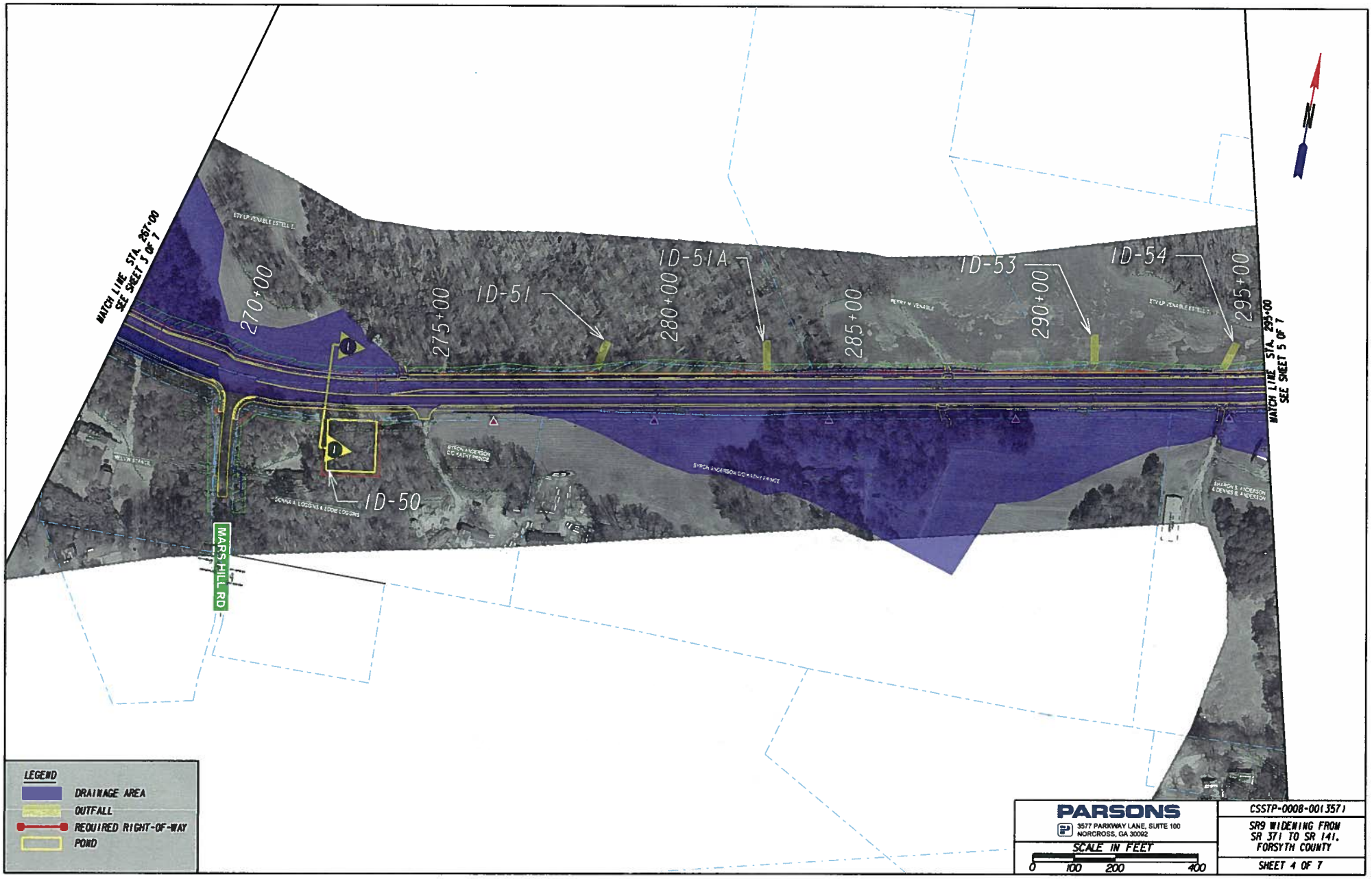
City	Roswell		
Return Period	25 yr		
T_c=	5 min		
C_{pre}=	0.5509	C_{Post}=	0.6017
Total Area	4.07 acres		
a= 80.18	b= 14	n= 0.771	Table 4.6 GDOT
a= 219.74	b= 21.54		Table 2.2.6-1 Blue book
P_{180}=	3.9300 in		Table A-12 Blue Book
i=	8.2822 in/hr		Eqn 4.7 GDOT
C_a=	0.5509		C_{pre}
C=	0.6017		C_{Post}
Q_a=	18.5687 cfs		Eqn 4.1 GDOT
V_{prell}=	2135.6763 ft^3		Eqn 2.2.13a Blue book
T_d=	13.7942 min		Eqn 2.2.12 Blue book
I_d=	6.1770 in/hr		Eqn 4.7 GDOT
P_{td}=	1.4201 in		
V_{max}=	5910.2381 ft^3		Eqn 2.2.13b Blue book

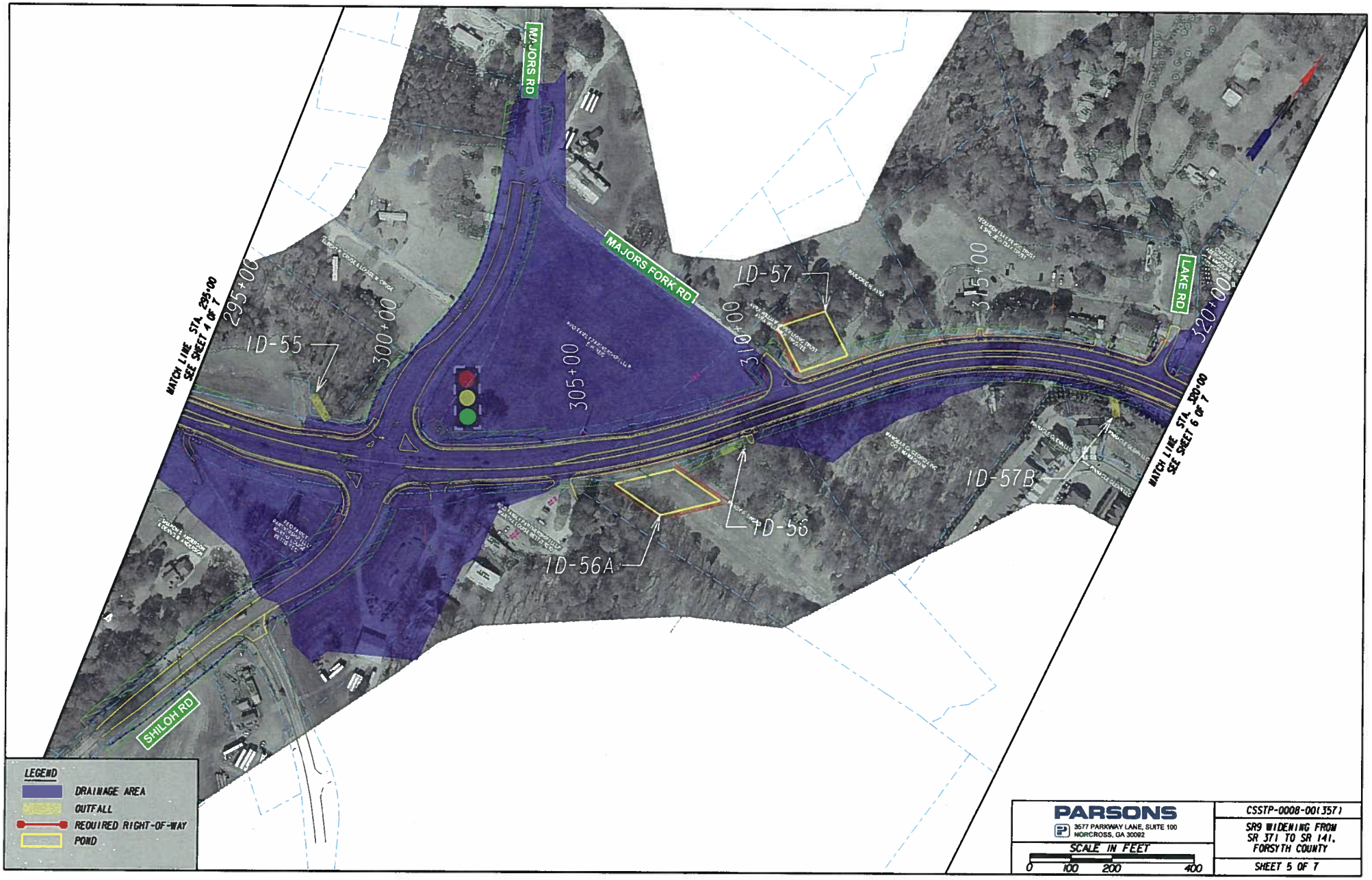
H:\647465 GDOT Full Design Svcs\TO 01 w Otis\01 CONCEPT\00 Rdwy\01 Concept Design\Drainage\Storage Volume Modified Rational Method.xlsm

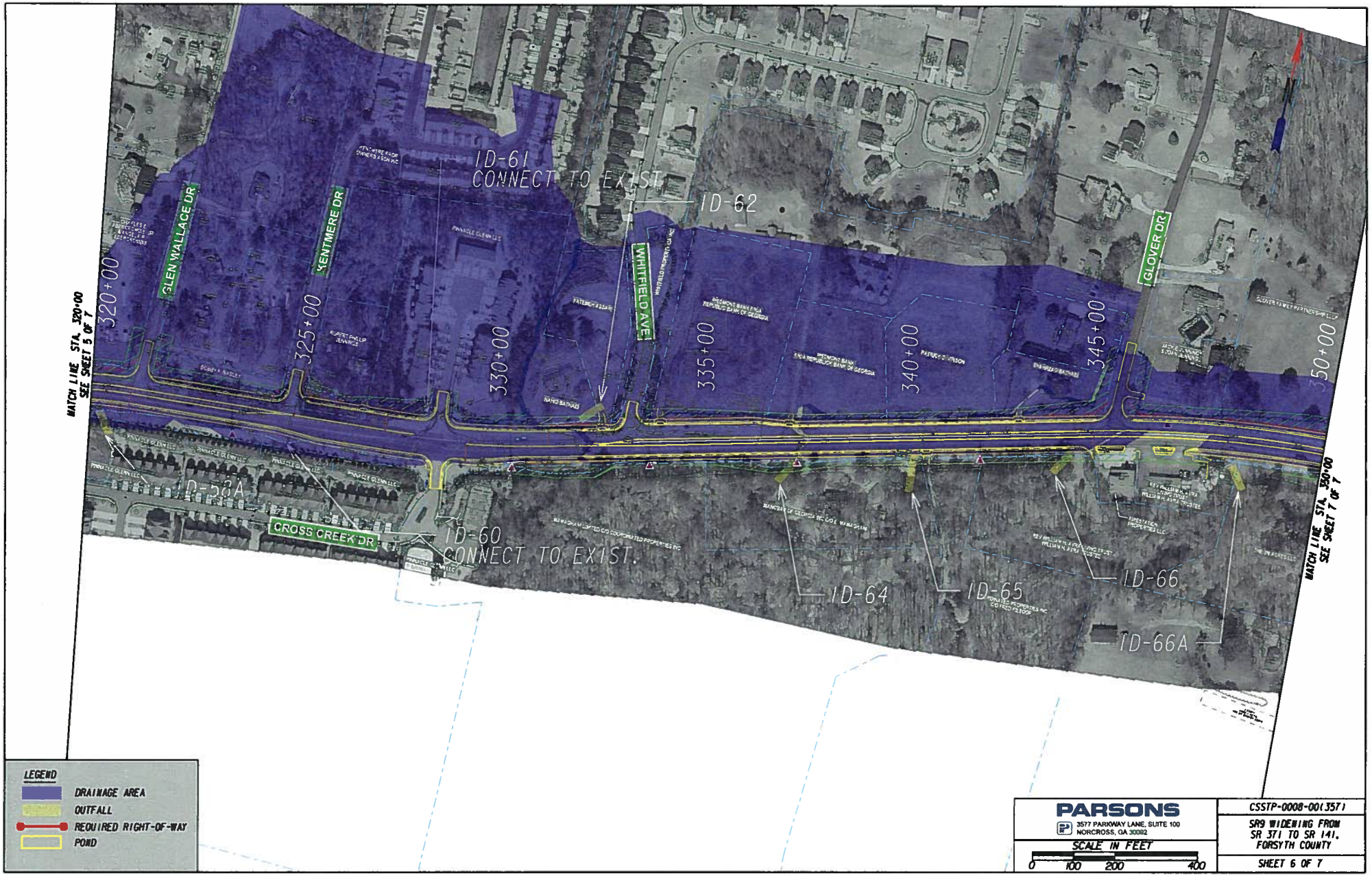

BETTIS RD
OAKMONT BEND DR
WESTBROOKE CROSSING
MIDWAY ELEMENTARY SCHOOL
ID-30
ID-32
ID-33
ID-34
ID-35
ID-36
ID-37A
CONNECT TO EXIST.
180+00
185+00
190+00
195+00
200+00
205+00
210+00
MATCH LINE STA. 210+00
SEE SHEET 2 OF 7
BEGIN PROJECT No. CSSTP-0008-00(357)
END PROJECT No. CSSTP-0007-00(844)
MP 3.20
LEGEND
DRAINAGE AREA
OUTFALL
REQUIRED RIGHT-OF-WAY
POND
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM
SR 371 TO SR 141,
FORSYTH COUNTY
SHEET 1 OF 7


MATCH LINE STA. 210+00
SEE SHEET 1 OF 7
MATCH LINE STA. 241+00
SEE SHEET 3 OF 7
210+00
215+00
220+00
225+00
230+00
235+00
240+00
ID-37
ID-38A
ID-39A
ID-41
ID-39
ID-38
END BRIDGE
BEGIN BRIDGE
BIG CREEK
BIG CREEK GREENWAY
F C FOWLER PARK COMPLEX
FOWLER RD
LEGEND
DRAINAGE AREA
OUTFALL
REQUIRED RIGHT-OF-WAY
POND
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM
SR 371 TO SR 141,
FORSYTH COUNTY
SHEET 2 OF 7


CASTLEBERRY RD
CAROLENE WAY
MATCH LINE STA. 241+00
SEE SHEET 2 OF 7
MATCH LINE STA. 267+00
SEE SHEET 4 OF 7
245+00
250+00
255+00
260+00
265+00
ID-43
SEE NOTE 1
ID-44
SEE NOTE 1
ID-45A
SEE NOTE 1
ID-46
SEE NOTE 1
ID-47A
SEE NOTE 1
ID-47
ID-48
FOWLER HOUSE- NATIONAL REGISTER
LISTED HISTORIC PROPERTY
NOTE 1: THE OUTFALLS 43, 44, 45A, 46, AND 47A
MAY BE TREATED WITH ONE STRUCTURAL BMP.
LEGEND
DRAINAGE AREA
OUTFALL
REQUIRED RIGHT-OF-WAY
POND
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM
SR 371 TO SR 141,
FORSYTH COUNTY
SHEET 3 OF 7


MATCH LINE STA. 267+00
SEE SHEET 3 OF 7
270+00
275+00
280+00
285+00
290+00
295+00
ID-50
ID-51
ID-51A
ID-53
ID-54
MARS HILL RD
MATCH LINE STA. 299+00
SEE SHEET 5 OF 7
LEGEND
DRAINAGE AREA
OUTFALL
REQUIRED RIGHT-OF-WAY
POND
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM
SR 371 TO SR 141,
FORSYTH COUNTY
SHEET 4 OF 7


MAJORS RD
MAJORS FORK RD
LAKE RD
SHILOH RD
MATCH LINE STA. 295+00
SEE SHEET 4 OF 7
MATCH LINE STA. 320+00
SEE SHEET 6 OF 7
295+00
300+00
305+00
310+00
315+00
320+00
ID-55
ID-56
ID-56A
ID-57
ID-57B
LEGEND
DRAINAGE AREA
OUTFALL
REQUIRED RIGHT-OF-WAY
POND
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM
SR 371 TO SR 141,
FORSYTH COUNTY
SHEET 5 OF 7



LEGEND

- DRAINAGE AREA
- OUTFALL
- REQUIRED RIGHT-OF-WAY
- POND

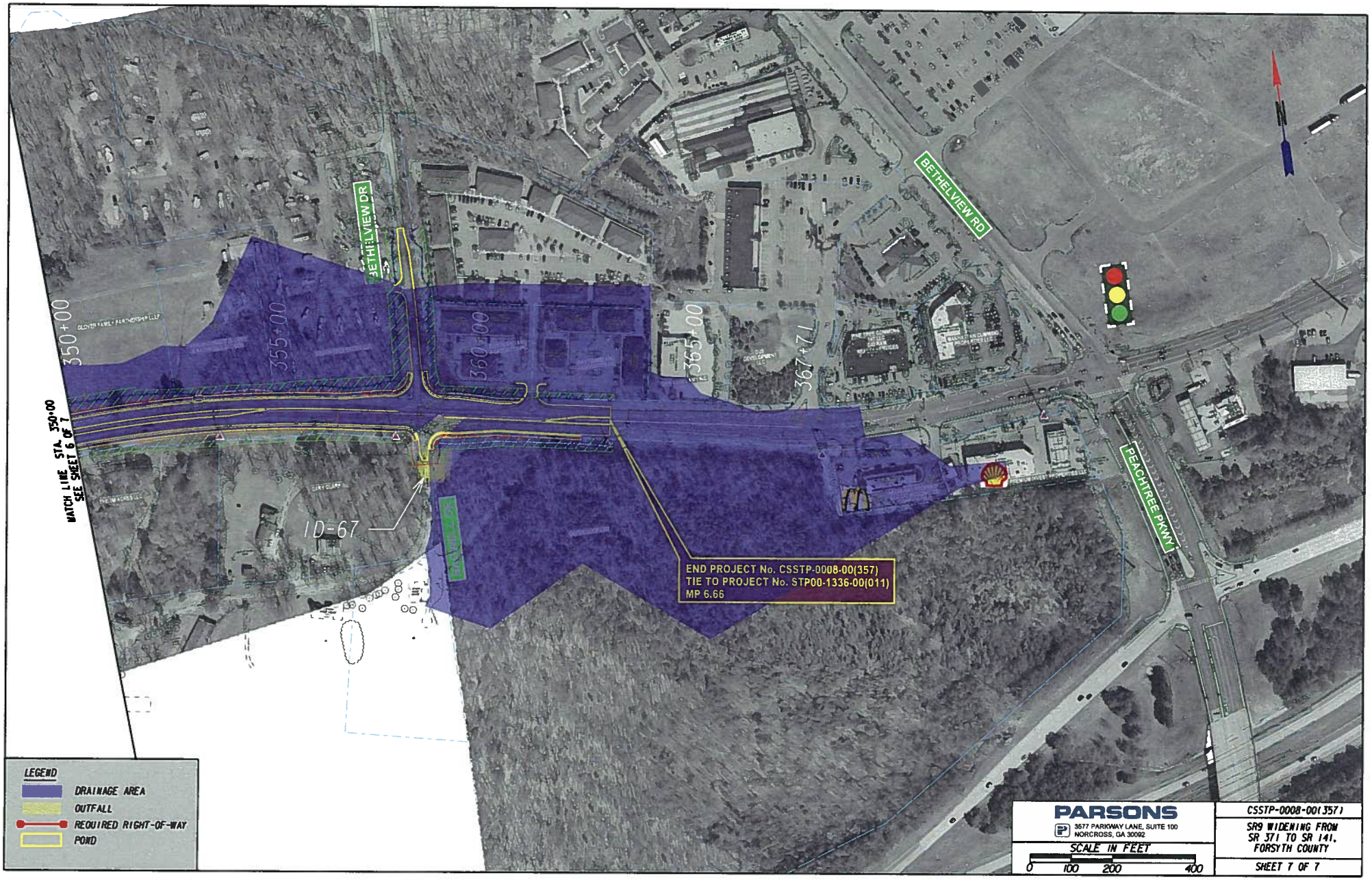
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092

SCALE IN FEET
0 100 200 400

CSSTP-0008-00(357)

SR9 WIDENING FROM SR 371 TO SR 141, FORSYTH COUNTY

SHEET 6 OF 7


BETHELVIEW DR
BETHELVIEW RD
PEACHTREE PKWY
350+00
355+00
360+00
365+00
367+71
MATCH LINE STA. 350+00
SEE SHEET 6 OF 7
ID-67
END PROJECT No. CSSTP-0008-00(357)
TIE TO PROJECT No. STP00-1336-00(011)
MP 6.66
N
LEGEND
DRAINAGE AREA
OUTFALL
REQUIRED RIGHT-OF-WAY
POND
PARSONS
3577 PARKWAY LANE, SUITE 100
NORCROSS, GA 30092
SCALE IN FEET
0 100 200 400
CSSTP-0008-00(357)
SR9 WIDENING FROM
SR 371 TO SR 141,
FORSYTH COUNTY
SHEET 7 OF 7

ATTACHMENT 9

Preliminary Pavement Type Selection Report

From: Jubran, Abdallah (AJ)
Sent: Thursday, September 18, 2014 2:19 PM
To: Clark, Otis
Cc: Utsalo, Eugene
Subject: RE: SR 9 Concept

Otis,

After field work was completed, existing pavement can be milled and overlaid. No PTS analysis is warranted, new construction to match in kind.

A J Jubran, P.E.
State Pavement Engineer
Geotechnical, Environmental and Pavement Bureau
Office of Materials & Testing, Division of Construction
404-608-4771

From: Clark, Otis
Sent: Friday, August 29, 2014 9:33 AM
To: Jubran, Abdallah (AJ)
Cc: Williams, Emilee; 'Bhattacharya, Saurabh'; Hasty, Charles A. (Chuck)
Subject: RE: SR 9 Concept

AJ,
Please provide status of Preliminary type and existing pavement evaluation which was requested back in Jan.

Thank you,

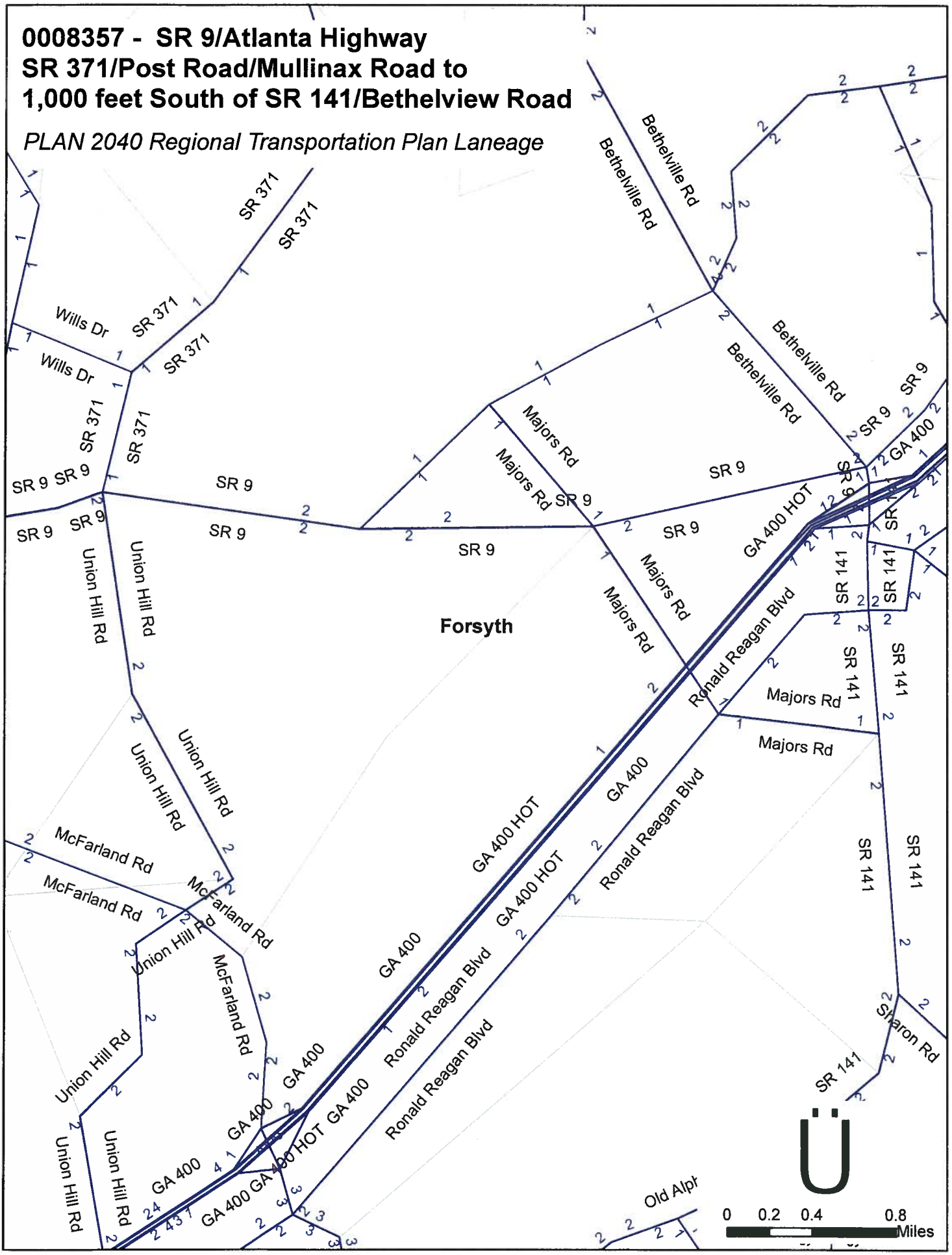
Otis Clark
Project Manager, GDOT
Office of Program Delivery
25th floor, Georgia One Center
600 West Peachtree Street
Atlanta, GA 30308
Office: (404) 631-1577
Cell: (404) 276-0657
Fax: (404) 631-1588
Email: oclark@dot.ga.gov

ATTACHMENT 10

Confirming Plan's Network Schematics Showing Thru Lanes

0008357 - SR 9/Atlanta Highway
SR 371/Post Road/Mullinax Road to
1,000 feet South of SR 141/Bethelview Road

PLAN 2040 Regional Transportation Plan Laneage



ATTACHMENT 11

Minutes of Concept Meetings

PARSONS

3577 Parkway Lane • Building 5, Suite 100 • Norcross, Georgia 30092 • (770) 446-4900 • Fax: (770) 446-4910

Meeting Summary

PURPOSE: **Concept Team Meeting**

PROJECT: **CSSTP-0007-00(843), PI 0007843, Forsyth County**
SR 9/ Atlanta Highway from Fulton/Forsyth County Line to CR 458

CSSTP-0007-00(844), PI 0007844, Forsyth County
SR 9/Atlanta Highway from CR 458 to SR 371

CSSTP-0008-00(357), PI 0008357, Forsyth County
SR 9/Atlanta Highway from SR 371 to SR 141

DATE: **July 11, 2014**

PLACE: **GDOT District One Main Office**
2505 Athens Hwy SE
Gainesville, GA 30507

RECORDED BY: **Emilee Williams, Parsons**

DISCUSSIONS:

A Concept Team Meeting was held on July 11, 2014 at the Georgia Department of Transportation (GDOT) District One main office to review the subject projects and to facilitate discussion of the concept design among county representatives and consultant representatives. A list of meeting attendees and additional comments provided after the conclusion of the meeting are attached to these meeting minutes.

The purpose of the meeting was to:
- Present project background and concept design for each project
- Obtain feedback, identify any issues and discuss possible solutions

GDOT Project Manager, Otis Clark, conducted the meeting, and provided a brief description of the projects including functional classification, traffic projections, existing typical section and design criteria. Saurabh Bhattacharya presented the proposed concept designs as well as alternates considered and reasons for their rejection. Additionally, attendees presented their comments to Otis Clark and Parsons Team.

Notes below summarize discussions and decisions from the meeting.

General Comments

1. Otis Clark, GDOT Project Manager, announced that the Project Justification Reports were currently under review and that some comments had been prepared, but that the review was not yet complete.

2. Jennifer Napier from Kimley-Horn discussed the environmental analysis and environmental concerns for the projects. She explained that due to the logical termini these projects are part of a larger SR 9 corridor environmental assessment that includes other individual GDOT projects. She also indicated that an environmental screening was done for ecology and history in 2013 that identified existing and potential eligible resources. She stated that after the concepts are complete and approved, these potential resources will be either confirmed or denied during the special study field surveys.

3. The project schedule has not yet been approved. Otis Clark notified the attendees that the pending dates were 2017 for right-of-way plan completion and 2019 for construction to begin.

4. Otis Clark announced that a public information meeting will be held sometime in the future around mid-August.

5. The relocation of transmission poles throughout the corridor was discussed as it relates to construction scheduling and timing. It was estimated that relocation of utilities could add 1.5 years to the timeline resulting in a total projected time for construction of 2.5 to 3+ years.

    a. It was recommended that utility transmission poles be relocated before construction on the roadway is scheduled to begin. The estimated total number of poles that currently need to be relocated is five.

    b. Neil Kantner stated that steel poles will take longer to relocate than concrete poles and that this should be a consideration moving forward.

6. Discussion of the relocated transmission poles continued as other factors in advancing utilities were brought up.

    a. Advancing utilities would mean advancing right-of-way acquisition as well as advancing the completion of the environmental document. Additionally, funding would need to be secured before relocation could occur.

7. Neil Kantner recommended a utility coordination meeting once Quality Level B SUE plans are available in order to assess relocation impact. This meeting would take place sometime in the spring or summer of 2015.

8. Neil Kantner brought up the utility clause for permanent easements, which was used on a previous project. He is the contact for details on this subject, and he recommends it be used on these projects.

9. MS4 Compliance and preliminary pond locations were discussed. District one personnel recommended investigating other post-construction BMP methods outside of detention ponds due to their long-term issues such as maintenance and appearance.

    a. In-line pipes were one recommendation as well as filtration and proprietary structures, with Susantha Chandraratna of Parsons noting that proprietary structures are not favored by GDOT and sand filters are not viable due to maintenance issues.

10. It was recommended that water and sewer plans be included in the project.

CSSTP-0007-00(843), PI 0007843

11. Tim Ashton with Georgia Transmission Corporation stated that the proposed widening of SR 9 will impact not only Georgia Power Transmission and Georgia Power Distribution, but will also impact Georgia Transmission Corporation poles.

12. Neil Kantner, District One Utilities Engineer, notified those in attendance that additional transmission poles are being added along SR 9, and that he would be the contact for details on these additions for consideration in future design work.

    a. He also spoke with Saurabh Bhattacharya, Parsons Project Manager, regarding an anticipated time frame for QL-B SUE plans, which was determined to be feasibly completed by mid-2015.

CSSTP-0007-00(844), PI 0007844

13. Those from District One stated that thru traffic at the Francis Rd/Grassland Pkwy intersection is light, which was reflected in the traffic data presented by Sunita Nadella. This intersection has a 68° skew at the intersection with SR 9. There is significant commercial development at all quadrants. Due to the low thru traffic, the intersection skew would be acceptable to the District and Forsyth County.

    a. The drainage at this intersection was also brought up since there is a PVC pipe that is draining water from an existing detention facility. Parsons discussed their intention of adding a manhole at this corner to facilitate drainage without impacting existing detention facility.

14. The Parsons team was notified of projects under construction or about to be let within the corridor. One such project to be completed in 2015 is on Mullinax Road, which will be

widened to a 4-lane divided roadway with a 20' median. This is a Forsyth County project with design completed by Gresham Smith Partners.

CSSTP-0008-00(357), PI 0008357

15. The subject of reducing the speed limit along SR 9 in PI #0008357 from 55 mph to 45 mph was introduced by Saurabh Bhattacharya. This proposed speed reduction recommendation is due to the 40 mph horizontal curve after the Shiloh Road/Majors Road intersection, increased pedestrian/bike activity associated with the Big Creek greenway, a new signal at Castleberry Road intersection and a potential new signal at Fowler Road intersection. Those in attendance were in agreement with this decision. An Engineering Traffic Investigation (ETI) process is necessary to alter the speed zone ordinance.

16. Bret Anderson with District One right-of-way recommended the speed limit change in PI# 0008357 from 55 mph to 45 mph since the lower design speed would require less right-of-way acquisition.

17. Concern was expressed for the existing Big Creek Greenway. Saurabh mentioned that existing trail is proposed to be reconstructed where impacted by the SR 9 widening project.

    a. Tim Allen with Forsyth County also requested that the width of the trail be the same as the existing width, which was reflected in the concept design by Parsons.

18. Additional concern was raised regarding the flooding of Big Creek and the resulting closing of the Big Creek greenway trail. Those affiliated with District One and Forsyth County contested that this is an issue within the project that they would like addressed. The existing 10x10 5-barrel culvert is currently proposed to be extended, and there were some requests that instead a bridge be built over Big Creek.

    a. The Parsons team explained that the drainage basin was analyzed and that it does not exceed the threshold of twenty square miles that is needed to warrant a bridge. Susan Beck of GDOT previously recommended the extension of the culvert instead of building a bridge.

    b. The culvert inspection report is currently pending and once completed, will add more information to be considered.

    c. It was also suggested by Tim Allen that the greenway continue underneath the requested bridge over Big Creek in order to reduce pedestrian crossing at the signal citing this as possible justification for the bridge. If this is the case, then the grade at this location will need to be raised. The hydraulic study will help

determine the best course of action on this topic. It is noted that Tim Allen stated that if the bridge is built, then the county will make the connection of the pathway and complete the trail.

19. There is currently a large amount of cut proposed for Castleberry Road, which would present some staging issues. The existing vertical curves on Castleberry do not meet the requirements for a 35 mph speed limit.

    a. Although the extent to which this cut would need to continue along Castleberry Road was investigated by Parsons, the road was described as being steep throughout its footprint, and it was added that cutting the existing grade much would result in "chasing grade" along Castleberry Road.

    b. It was therefore recommended that instead the speed limit be changed in order to accommodate the existing vertical grades. Again, an ordinance is required to change the speed limit. With 25 mph being the threshold for how low the speed limit can be, Parsons is to examine the grade and see what the speed should be on this road and advise.

20. Castleberry Road north of Bethelview Drive is to be widened to 4 lanes. This project is scheduled for let in 2015. Coordination may be necessary moving forward.

21. Tim Allen of Forsyth County informed the attendees that the county owns the historic Fowler House and that the property has recently changed; the barn has been removed while the house remains.

22. Those in attendance with District One spoke about a new development, "Traditions," being approved off of SR 9 after Castleberry Road. A signal may have been proposed for the entrance to the development.

    a. Details are needed on this development and whether a signalized entrance is planned and if the permit is approved.

    b. Moreover, a median break is proposed at the intersection of Mars Hill Road, but this median break may need to be moved to the new signal at the development if it is indeed constructed.

23. Mars Hill Road was recommended to be a "right in, right out" intersection; left turn maneuvers from Mars Hill on to SR 9 and from SR 9 on to Mars Hill were advised to be restricted by Tim Allen.

24. There was some concern expressed regarding the traffic and waiting time at the south side of the Shiloh/Majors intersection. Turn lanes have been proposed, but traffic needs to be evaluated considering the new development.

a. This road is used as a shortcut, and the traffic was predicted to worsen since there will also be an entrance to the new development "Traditions" off of Majors Road.

b. The Shiloh/Majors intersection has also been recently signalized which those in the area believe has only exacerbated the problem.

c. Parsons will review this intersection for proposed improvements.

25. The AT&T cabinets at Shiloh Road and SR 9 were brought up by District One utilities as they expressed concern about avoiding any conflicts with these.

26. Grades at Bethelview Drive do not meet the requirements for its current design speed, and cuts are currently proposed along the roadway profile. This situation is one similar to Castleberry Road, and the same approach was recommended (See Comment #19).

27. District One recommended adding a right turn lane on SR 9 at the Bethelview Drive intersection. Bethelview Drive serves as an entrance to an RV park. Parsons said they would consider this in the design moving forward.

28. Staging was brought up as it was stated that project limits may change due to staging, particularly at the end of the project. The limits need to be re-evaluated for staging, and the recently constructed raised median from PI# 0007999 may be removed to facilitate staging.

29. Douglas Preece, District One Utilities Engineer, notified designers of a Georgia Transmission Corporation proposed substation near the SR 9 intersection with Majors Road. The location of this development will need to be considered by Parsons; land has already been acquired and grading is set to begin shortly.

Action Items

General Comments

1. GDOT to complete reviewing Project Justification Reports and finalize project schedules.

2. Kimley-Horn to finalize environmental resources pending the approval of the concept reports.

3. GDOT to schedule public information meeting.

4. Neil Kantner is to contact Parsons and provide the utility clause for permanent easements that was used on a previous project.

5. Parsons to arrange a utility coordination meeting once QL-B SUE plans are nearly complete.

6. Parsons to coordinate with utilities for advancement of transmission pole relocations.

7. Parsons to consider post construction BMPs in addition to detention ponds by preference of the county if possible while considering GDOT opinions of proprietary structures and maintenance issues associated with sand filters.

CSSTP-0007-00(843), PI 0007843

8. Parsons to ensure that Georgia Transmission Corporation, Georgia Power Transmission, and Georgia Power Distribution are on the impacted utilities list.

9. Parsons to coordinate with Mullinax Road widening project.

CSSTP-0007-00(844), PI 0007844

10. Parsons to evaluate design at the Francis intersection with the consideration that thru traffic from the industrial development is light.

CSSTP-0008-00(357), PI 0008357

11. Parsons to ensure the proposed width of the Big Creek Greenway where impacted is consistent with the existing width.

12. Parsons to prepare hydraulic study and culvert inspection report and determine whether a culvert is still sufficient at Big Creek.

13. Parsons will examine grades on Castleberry and Bethelview roads and determine what the speed limit should be in order to reduce the cut.

14. Parsons to coordinate with Castleberry Road widening project.

15. Parsons to consider AT&T cabinet location at Shiloh/Majors intersection when evaluating design in order to avoid relocation.

16. Further investigation of "Traditions" development is needed by Parsons including checking for a DRI of the proposed signal on SR 9 at the entrances to the neighborhood to aid in making decisions regarding median breaks, signal installation and required improvements at Shiloh/Majors intersection.

17. Parsons to reevaluate Mars Hill intersection and allowable maneuvers.

18. Parsons to consider westbound right turn lane on SR 9 at Bethelview Drive intersection.

19. Parsons to review staging in order to update the limits of the project.

From: Clark, Otis [mailto:oclark@dot.ga.gov]
Sent: Friday, July 11, 2014 5:04 PM
To: Olson, David W
Cc: Govus, Michael; Giles, Shane; Bhattacharya, Saurabh
Subject: RE: Concept Team Meeting Comments, PI# 0007843, 0007844, 0008357; SR 9 in Forsyth County from Fulton County Line to SR 141

David,

Thanks for your comments and recommendations. These will be addressed and included in the reports.

Thank you,

Otis Clark
Project Manager, GDOT
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From: Olson, David W
Sent: Friday, July 11, 2014 4:12 PM
To: Clark, Otis
Cc: Govus, Michael; Giles, Shane
Subject: Concept Team Meeting Comments, PI# 0007843, 0007844, 0008357; SR 9 in Forsyth County from Fulton County Line to SR 141

Otis, the following are my comments:

1. The 16 foot median width will make it difficult to implement effective channelization on both sides of a left turn lane adjacent to a directionally-restricted median opening, to prevent vehicles from making unauthorized movements.
2. Although the design vehicle is a WB-40, all turning movements, especially where there are channelization islands, should be checked to ensure a WB-67 can pass with a tight fit or counter-steer.
3. In "CONTEXT SENSITIVE SOLUTIONS" section and on plan layout sheets, change "Barrier Walls" to "Retaining Walls."
4. Typical Section 2 of PI# 0007843, 5 foot concrete separator is shown to edge of travel lane, while in other areas (i.e. Typical Section 1), there is a 1.5 foot setback from the edge of lane to the vertical portion of the curb, via the gutter area. This presents the driver with a solid object suddenly next to their lane, which is especially a concern with the 11 foot lanes proposes. I recommend a 4 foot separator with a one foot setback.

David W. Olson, PE
District Traffic Engineer

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Meeting Attendees:

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SR 9 Widening from Fulton/Forsyth County Line to SR 141
Forsyth County
P.I. No. 0007843, 0007844, 0008357
Concept Team Meeting
July 11, 2014

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ATTACHMENT 12

PIOH Synopsis – September 23, 2014

Williams, Emilee

From: Bhattacharya, Saurabh
Sent: Wednesday, September 24, 2014 3:44 PM
To: Williams, Emilee
Subject: FW: PI# 0007843, 0007844, 0008357, Forsyth County -- Public Information Open House

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From: Treadway, Cindy [mailto:ctreadway@dot.ga.gov]
Sent: Wednesday, September 24, 2014 3:43 PM
To: Clark, Otis; McMurry, Russell; Bowman, Glenn; Patel, Hiral; Duff, Eric; Pope, Teri; Cook, Brent
Cc: Bhattacharya, Saurabh; 'Jennifer Napier (jennifer.napier@kimley-horn.com)'
Subject: FW: PI# 0007843, 0007844, 0008357, Forsyth County -- Public Information Open House

Hi everyone,

Below please find below a brief synopsis of last night's Open House. Please let me know if you have questions or concerns.

Brief Project Description	SR 9/Atlanta Highway from Fulton/Forsyth County Line to SR 141						
Date of Open House	September 23, 2014			*End of Comment Period*		October 3, 2014	
Number in Attendance	162						
Officials in Attendance (list name and title)	Todd Levent, Forsyth County District 3 Commissioner Van Lewsaden, Vickery Creek Middle School						
Comment Breakdown (for comments provided at the Open House)							
For	36	*Conditional*	15	*Uncommitted*	2	*Against*	5
Major concerns:	Access concerns due to raised median separation, location of median openings, request for additional signals, and requests to expedite construction.						
Prepared by (include firm's name if applicable):	Saurabh Bhattacharya, PE – Parsons Transportation Group Inc.						

Thanks,

Cindy Treadway
NEPA Analyst-GDOT
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Georgia DOT partners with Georgia Commute Options to promote commute alternatives in metro Atlanta. Get more by

driving less. Save money, reduce stress and have time to work, rest or relax while someone else drives. Find out more at 1-877-9GA-OPTIONS (1-877-942-6784) or visit us at http://www.dot.ga.gov; follow us on http://www.facebook.com/GeorgiaCommuteOptions, or http://www.facebook.com/GeorgiaDOT and http://twitter.com/gadeptoftrans