Attachment 1:

Detailed Cost Estimates:

a. Project Cost Estimate Summary including Engineering and Inspection
b. Construction
c. Right-of-Way.
d. Utilities.
e. Completed Fuel/Price adjustment form.

Print Form

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE PROJECT No. STP00011401084 , FULTON **OFFICE** PROGRAM DELIVERY

SR 9/North Main Street from Academy Street to Windward Parkway **DATE** October 15, 2010

P.I. No. 721780

FROM Bobby K. Hilliard, P.E. State Program Delivery Engineer

TO Ronald E. Wishon, Project Review Engineer

SUBJECT REVISIONS TO PROGRAMMED COSTS

MNGT LET DATE N/A

PROJECT MANAGER Peter Emmanuel

MNGT R/W DATE N/A

PROGRAMMED COST (TPro W/OUT INFLATION)		**LAST ESTIMATE UPDATE**	
CONSTRUCTION	$ 8,664,000.00	DATE	01/03/2007
RIGHT OF WAY	$ 5,622,000.00	DATE	02/21/2006
UTILITIES	$ 0.00	DATE	N/A

REVISED COST ESTIMATES

CONSTRUCTION*	$ 10,355,922.08
RIGHT OF WAY	$ 24,727,900.00
UTILITIES**	$ 0.00

* Costs contain 5 % Engineering and Inspection and % Construction Contingencies.

** Costs contain % contingency.

REASON FOR COST INCREASE

Detailed Concept Development.
Addition of adjustments for fuel and asphalt cement.

Revised: February 9, 2009

CONTINGENCY SUMMARY

Construction Cost Estimate:	$ 9,108,793.48	(Base Estimate)
Engineering and Inspection:	$ 455,439.67	(Base Estimate x 5 %)
Construction Contingency:	$	(Base Estimate x %)
		(The Construction Contingency is based on the Project Improvement Type in TPro.)
Total Fuel Adjustment	$ 265,553.81	(From attached worksheet)
Total Liquid AC Adjustment	$ 526,135.12	(From attached worksheet)
Construction Total:	**$** 10,355,922.08	
Utility Cost Estimate:	$	
Utility Contingency:	$	%
Utility Total:	**$**	

REIMBURSABLE UTILITY COST

Utility Owner	Reimbursable Cost

Attachments

c: Genetha Rice-Singleton, State Program Control Administrator

Estimate Report for file "SR 9 PI# 721780"

Section CONCRETE WORK

Item Number	Quantity	Units	Unit Price	Item Description	Cost
441-0104	9450	SY	34.43	CONC SIDEWALK, 4 IN	325363.5
441-0600	11	CY	950.93	CONC HEADWALLS	10460.23
441-0748	3019	SY	55.62	CONCRETE MEDIAN, 6 IN	167916.78
441-6216	41750	LF	16.27	CONC CURB & GUTTER, 8 IN X 24 IN, TP 2	679272.5
500-3201	1437	CY	515.26	CLASS B CONCRETE, RETAINING WALL	740428.62
500-3900	162	CY	763.82	CLASS B CONCRETE, INCL REINF STEEL	123738.84
500-9999	162	CY	196.18	CLASS B CONC, BASE OR PVMT WIDENING	31781.16
				Section Sub Total:	**$2,078,961.63**

Section LANDSCAPING AND EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
161-1000	1	LUMP	375000.0	EROSION CONTROL - PI 721790	375000.0
163-0232	2	AC	679.69	TEMPORARY GRASSING	1359.38
163-0240	108	TN	161.07	MULCH	17395.55
163-0300	3	EA	1655.76	CONSTRUCTION EXIT	4967.28
163-0501	400	EA	764.08	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 1	305632.0
163-0503	8	EA	529.93	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	4239.44
163-0520	3	LF	17.42	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	52.26
163-0521	2	EA	230.65	CONSTRUCT AND REMOVE TEMPORARY DITCH CHECKS	461.3
163-0530	2194	LF	4.2	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	9214.80
163-0531	1	EA	8671.96	CONSTRUCT AND REMOVE SEDIMENT BASIN, TP 1, STA NO -	8671.96
165-0010	3037	LF	0.78	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	2368.86
165-0020	1519	LF	1.43	MAINTENANCE OF TEMPORARY SILT FENCE, TP B	2172.17
165-0030	6075	LF	1.64	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	9963.0
165-0040	3	EA	66.2	MAINTENANCE OF EROSION CONTROL CHECKDAMS/DITCH CHECKS	198.60
165-0060	2	EA	1389.83	MAINTENANCE OF TEMPORARY SEDIMENT BASIN, STA NO -	2779.66
165-0070	648	LF	1.86	MAINTENANCE OF BALED STRAW EROSION CHECK	1205.28
165-0085	5	EA	170.84	MAINTENANCE OF SILT CONTROL GATE, TP 1	854.2
165-0087	8	EA	169.84	MAINTENANCE OF SILT CONTROL GATE, TP 3	1358.72
165-0101	2	EA	607.78	MAINTENANCE OF CONSTRUCTION EXIT	1215.56
167-1000	1	EA	1278.47	WATER QUALITY MONITORING AND SAMPLING	1278.47
167-1500	13	MO	944.75	WATER QUALITY INSPECTIONS	12281.75
171-0010	6075	LF	1.5	TEMPORARY SILT FENCE, TYPE A	9112.5
171-0020	3037	LF	3.5	TEMPORARY SILT FENCE, TYPE B	10629.5
171-0030	12150	LF	3.73	TEMPORARY SILT FENCE, TYPE C	45319.5
700-6910	4	AC	920.13	PERMANENT GRASSING	3680.52
700-7000	62	TN	48.01	AGRICULTURAL LIME	2976.62
700-7010	51	GL	17.34	LIQUID LIME	884.34
700-8000	4	TN	282.45	FERTILIZER MIXED GRADE	1129.8
700-8100	1026	LB	2.26	FERTILIZER NITROGEN CONTENT	2318.75
				Section Sub Total:	**$838,721.79**

Section GRADING AND DRAINAGE

Item Number	Quantity	Units	Unit Price	Item Description	Cost
550-1180	10368	LF	45.96	STORM DRAIN PIPE, 18 IN, H 1-10	476513.28
550-1240	3456	LF	54.17	STORM DRAIN PIPE, 24 IN, H 1-10	187211.52
550-1300	1728	LF	70.5	STORM DRAIN PIPE, 30 IN, H 1-10	121824.0
550-1360	864	LF	86.79	STORM DRAIN PIPE, 36 IN, H 1-10	74986.56
550-2180	270	LF	32.87	SIDE DRAIN PIPE, 18 IN, H 1-10	8874.9
550-2240	216	LF	37.9	SIDE DRAIN PIPE, 24 IN, H 1-10	8186.4

550-3318	6	EA	610.49	SAFETY END SECTION 18 IN, STORM DRAIN, 4:1 SLOPE	3662.94
550-3324	2	EA	1012.38	SAFETY END SECTION 24 IN, STORM DRAIN, 4:1 SLOPE	2024.76
550-3330	1	EA	1869.78	SAFETY END SECTION 30 IN, STORM DRAIN, 4:1 SLOPE	1869.78
550-4118	2	EA	275.65	FLARED END SECTION 18 IN, SIDE DRAIN	551.3
550-4124	1	EA	313.56	FLARED END SECTION 24 IN, SIDE DRAIN	313.56
603-2181	97	SY	45.21	STN DUMPED RIP RAP, TP 3, 18 IN	4385.37
603-2182	24	SY	61.02	STN DUMPED RIP RAP, TP 3, 24 IN	1464.48
603-7000	121	SY	4.71	PLASTIC FILTER FABRIC	569.91
668-1100	67	EA	2634.38	CATCH BASIN, GP 1	176503.46
668-1110	27	LF	289.78	CATCH BASIN, GP 1, ADDL DEPTH	7824.05
668-2100	27	EA	3987.53	DROP INLET, GP 1	107663.31
668-2110	5	LF	353.03	DROP INLET, GP 1, ADDL DEPTH	1765.14
668-4300	6	EA	2550.5	STORM SEWER MANHOLE, TP 1	15303.0
				Section Sub Total:	**$1,201,497.74**

Section BASE PAVING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
310-1101	15105	TN	19.98	GR AGGR BASE CRS, INCL MATL	301797.9
318-3000	1080	TN	22.73	AGGR SURF CRS	24548.4
402-3113	6499	TN	74.31	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	482940.69
402-3121	8876	TN	63.99	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	567975.24
402-3190	2959	TN	63.21	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM MATL & H LIME	187038.39
413-1000	5957	GL	2.0	BITUM TACK COAT	11914.0
432-5010	378	SY	1.42	MILL ASPH CONC PVMT, VARIABLE DEPTH	536.76
				Section Sub Total:	**$1,576,751.38**

Section SIGNING AND STRIPING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1020	54	SF	15.19	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	820.26
636-1029	16	SF	15.83	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	253.28
636-1033	216	SF	19.68	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	4250.88
636-1041	54	SF	46.74	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 9	2523.96
636-2070	81	LF	8.27	GALV STEEL POSTS, TP 7	669.87
636-2080	11	LF	10.87	GALV STEEL POSTS, TP 8	119.57
653-0120	43	EA	73.54	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	3162.22
653-0160	5	EA	84.04	THERMOPLASTIC PVMT MARKING, ARROW, TP 6	420.20
653-0170	8	EA	84.44	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	675.52
653-1501	61214	LF	0.68	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	41625.52
653-1502	6480	LF	0.62	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	4017.6
653-1704	1620	LF	4.53	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	7338.6
653-3501	27432	GLF	0.46	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	12618.72
653-3502	1080	GLF	0.22	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, YELLOW	237.6
653-6004	216	SY	2.85	THERMOPLASTIC TRAF STRIPING, WHITE	615.6
653-6006	54	SY	3.19	THERMOPLASTIC TRAF STRIPING, YELLOW	172.26
654-1001	162	EA	3.36	RAISED PVMT MARKERS TP 1	544.31
				Section Sub Total:	**$80,065.98**

Section MISCELLANEOUS ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	550000.0	TRAFFIC CONTROL -	550000.0
153-1300	1	EA	76829.7	FIELD ENGINEERS OFFICE TP 3	76829.7
210-0100	1	LS	2000000.0	GRADING COMPLETE -	2000000.0
634-1200	108	EA	99.53	RIGHT OF WAY MARKERS	10749.24
641-1200	470	LF	16.69	GUARDRAIL, TP W	7844.3
641-5001	3	EA	644.45	GUARDRAIL ANCHORAGE, TP 1	1933.35
641-5012	3	EA	1812.79	GUARDRAIL ANCHORAGE, TP 12	5438.37
647-1000	8	LS	85000.0	TRAFFIC SIGNAL INSTALLATION NO -	680000.0
				Section Sub Total:	**$3,332,794.96**

Total Estimated Cost: $9,108,793.48

Preliminary Right of Way Cost Estimate

Phil Copeland
Right of Way Administrator
By: LaShone Alexander

Date: October 14, 2010
Project: STP-114-1(84) Fulton
Existing/Required R/W: Varies/Varies
Project Termini : SR 9 from Academy Street to Winward Parkway
Project Description: Safety and Operational Improvements

P.I. Number: 721780
No. Parcels: 120

Land:	Res. R/W:0.078 acres @ $350,000/acre		$ 27,300
	Res. Easement R/W: 0.033 acres @ $ 350,000/acre @50%		$ 5,775
	Comm. R/W: 6.19 acres @ $1,425,000/acre		$ 8,820,750
	Comm. Easement :0.318 acres @ $1,425,000/acre @50%		$ 226,575
			$ 9,080,400
Improvements : signs, parking, landscaping			
	misc. site improvements		690,500
Relocation:	Residential (0)	$	
	Commercial (0)		
Damage :	Proximity	$ 50,000	
	Cost to Cure	$ 150,000	
			$ 200,000
		Net Cost	$ 9,970,900

Net Cost		**$ 9,970,900**
Scheduling Contingency	**55 %**	**5,483,995**
Adm/Court Cost	**60**	**9,272,937**
		$ 24,727,832

Total Cost $24,727,900

Note: The Market Appreciation (40%) is not included in the updated Preliminary Cost Estimate.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE

OFFICE District Seven Utilities
DATE October 7, 2010

FROM Jonathan Walker, District Utilities Engineer

TO Peter Emmanuel, Office of Program Delivery

SUBJECT **Preliminary Utility Cost Estimate**
STP00-0114-01(085), STP00-0114-01(084)
S.R. 9/S. Main St. Fm Upper Hembree to
Windward Parkway, Fulton County
PI # 721780, 721790

As per your request, a field inspection was conducted on the above referenced project. The following companies have facilities that occupy the public right-of-way and should be relocated at **no cost** to the Department of Transportation:

Atlanta Gas Light Company
Comcast
AT&T (formerly BellSouth)
Georgia Power Distribution
Georgia Power Transmission
Georgia Transmission Corporation
Verizon Business
Fulton County Public Works
City of Alpharetta
Charter Communications
Sawnee EMC
City of Atlanta Watershed Management
Zayo (formerly AGL Networks)
Time Warner Telecom
Fiberlight

There were no utilities observed that could potentially have prior rights. Therefore, there are no reimbursable utilities at this time. Please note that this estimate was prepared without the certification of right-of-way and could change when more detailed information is made available.

If you have any questions, please contact Mr. Clyde Cunningham at (770) 986-1117.

Sincerely,

Bryant Poole
District Engineer

For: Jonathan Walker
District Utilities Engineer

BP:JW:CAC

c: Jeff Baker, P.E. (10th Floor, O.G.C.)
File

Date 9/24/2010

P.I. Number 721780 County Fulton

Project Number STP00011401084

Special Provision, Section 109-Measurement and Payment

FUEL PRICE ADJUSTMENT (*ENGLISH 125% MAX)*

ENTER FPL DIESEL	2.881
ENTER FPM DIESEL	6.482

ENTER FPL UNLEADED	2.532
ENTER FPM UNLEADED	5.697

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

INCREASE ADJUSTMENT
125.00%

INCREASE ADJUSTMENT
125.00%

ROADWAY ITEMS	QUANTITY	DIESEL FACTOR	GALLONS DIESEL	UNLEADED FACTOR	GALLONS UNLEADED	REMARKS
Excavations paid as specified by Sections 205 **(CUBIC YARD)**	18900.000	0.29	5481.00	0.15	2835.00	
Excavations paid as specified by Sections 206 **(CUBIC YARD)**		0.29		0.15		
GAB paid as specified by the ton under Section 310 **(TON)**	15105.000	0.29	4380.45	0.24	3625.20	
Hot Mix Asphalt paid as specified by the ton under Sections 400 **(TON)**	18335.000	2.90	53171.50	0.71	13017.85	
Hot Mix Asphalt paid as specified by the ton under Sections 402 **(TON)**		2.90		0.71		
PCC Pavement paid as specified by the square yard under Section 430 **(SY)**		0.25		0.20		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS
Bridge Excavation (CY) Section 211				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Concrete Handrail (LF) Section 500				8.00		1.50		
Concrete Barrier (LF) Section 500				8.00		1.50		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS

Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		
Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
Stru Reinf Plan Quantity(LB) Section 511				8.00		1.50		
Stru Reinf Plan Quantity(LB) Section 511				8.00		1.50		
Bar Reinf Steel (LB) Section 511				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Pile Encasement,___(LF) Section 547				8.00		1.50		
Pile Encasement,___(LF) Section 547				8.00		1.50		

SUM QF DIESEL=	**63032.95**	**SUM QF UNLEADED=**	**19478.05**

DIESEL PRICE ADJUSTMENT($)	**$208,837.62**
UNLEADED PRICE ADJUSTMENT($)	**$56,716.19**

ASPHALT CEMENT PRICE ADJUSTMENT
(BITUMINOUS TACK COAT 125% MAX)

APPLICABLE TO CONTRACTS/PROJECTS CONTAINING THE 413 SPECIFICATION, SECTION 413.5.01 ADJUSTMENTS
ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

ENTER APL 453 **ENTER APM** 1019.25

125.00%	INCREASE ADJUSTMENT

L.I.N.	TYPE	TACK (GALLONS)	TACK (TONS)	REMARKS
413-1000	PG 58-22	5957	25.5859	

TMT = 25.5859

PRICE ADJUSTMENT($)	$13,908.50

400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX

ENTER APL 453 **ENTER APM** 1019.25

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

125.00%	INCREASE ADJUSTMENT

L.I.N. / Spec Number	MIX TYPE	HMA	JMF AC%	AC	REMARKS
402-3113	12.5 mm PEM	6499	5.00	324.95	
402-3190	19 mm SMA	2959	5.00	147.95	
402-3121	25 mm SP	8876	5.00	443.80	
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			TMT =	916.70	

PRICE ADJUSTMENT($)	$498,318.12

ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)

APPLICABLE TO CONTRACTS CONTAINING THE 413 SPEC. SECTION 413.5.01 ADJUSTMENTS ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

ENTER APL 453

ENTER APM 1019.25

125.00%	INCREASE ADJUSTMENT

Use this side for Asphalt Emulsion Only

L.I.N.	TYPE	ASPHALT EMULSION (GALLONS)

TMT =

REMARKS:

Use this side for Asphalt Cement Only

L.I.N.	TYPE	TACK (GALLONS)
413-1000	PG 58-22	5957

TMT = 25.5859

REMARKS:

MONTHLY PRICE ADJUSTMENT($)	$13,908.50

ADJUSTMENT SUMMARY

FUEL PRICE ADJUSTMENT *(ENGLISH 125% MAX)*

DIESEL PRICE ADJUSTMENT($)	$208,837.62
UNLEADED PRICE ADJUSTMENT($)	$56,716.19
ASPHALT CEMENT PRICE ADJUSTMENT (BITUMINOUS TACK COAT 125% MAX)	$13,908.50
400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX	$498,318.12
ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)	$13,908.50

REMARKS:

TOTAL ADJUSTMENTS	$791,688.93

DWM 10/08

Print Form

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE PROJECT No. STP00011401085 , FULTON **OFFICE** PROGRAM DELIVERY

SR 9/ South Main Street from Upper Hembree Road to Academy Street

DATE October 15, 2010

P.I. No. 721790

FROM Bobby K. Hilliard, P.E., State Program Delivery Engineer

TO Ronald E. Wishon, Project Review Engineer

SUBJECT REVISIONS TO PROGRAMMED COSTS

MNGT LET DATE N/A

PROJECT MANAGER Peter Emmanuel

MNGT R/W DATE N/A

PROGRAMMED COST (TPro W/OUT INFLATION)		**LAST ESTIMATE UPDATE**	
CONSTRUCTION	$ 7,300,000.00	DATE	01/03/2007
RIGHT OF WAY	$ 3,342,000.00	DATE	11/25/2003
UTILITIES	$ 0.00	DATE	N/A

REVISED COST ESTIMATES

CONSTRUCTION*	$ 9,016,183.98
RIGHT OF WAY	$ 26,902,800.00
UTILITIES**	$ 0.00

* Costs contain 5 % Engineering and Inspection and % Construction Contingencies.

** Costs contain % contingency.

REASON FOR COST INCREASE

Detailed Concept Development.
Addition of adjustments for fuel and asphalt cement.

Revised: February 9, 2009

CONTINGENCY SUMMARY

Construction Cost Estimate:	$ 7,945,365.89	(Base Estimate)
Engineering and Inspection:	$ 397,268.29	(Base Estimate x 5 %)
Construction Contingency:	$	(Base Estimate x %)
		(The Construction Contingency is based on the Project Improvement Type in TPro.)
Total Fuel Adjustment	$ 225,354.18	(From attached worksheet)
Total Liquid AC Adjustment	$ 448,195.62	(From attached worksheet)
Construction Total:	**$** 9,016,183.98	
Utility Cost Estimate:	$	
Utility Contingency:	$	%
Utility Total:	**$**	

REIMBURSABLE UTILITY COST

Utility Owner	Reimbursable Cost

Attachments

c: Genetha Rice-Singleton, State Program Control Administrator

Estimate Report for file "SR 9 PI# 721790"

Section CONCRETE WORK

Item Number	Quantity	Units	Unit Price	Item Description	Cost
441-0104	8050	SY	34.43	CONC SIDEWALK, 4 IN	277161.5
441-0600	9	CY	950.93	CONC HEADWALLS	8558.36
441-0748	2572	SY	55.62	CONCRETE MEDIAN, 6 IN	143054.63
441-6216	35564	LF	16.27	CONC CURB & GUTTER, 8 IN X 24 IN, TP 2	578626.28
500-3201	1224	CY	515.26	CLASS B CONCRETE, RETAINING WALL	630678.24
500-3900	138	CY	763.82	CLASS B CONCRETE, INCL REINF STEEL	105407.16
500-9999	138	CY	196.18	CLASS B CONC, BASE OR PVMT WIDENING	27072.84
				Section Sub Total:	**$1,770,559.03**

Section LANDSCAPING AND EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
161-1000	1	LUMP	375000.0	EROSION CONTROL - PI 721790	375000.0
163-0232	1	AC	679.69	TEMPORARY GRASSING	679.69
163-0240	92	TN	161.07	MULCH	14818.43
163-0300	2	EA	1655.76	CONSTRUCTION EXIT	3311.52
163-0501	3	EA	764.08	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 1	2292.24
163-0503	6	EA	529.93	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	3179.58
163-0520	3	LF	17.42	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	52.26
163-0521	2	EA	230.65	CONSTRUCT AND REMOVE TEMPORARY DITCH CHECKS	461.3
163-0530	1869	LF	4.2	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	7849.8
163-0531	1	EA	8671.96	CONSTRUCT AND REMOVE SEDIMENT BASIN, TP 1, STA NO -	8671.96
165-0010	2588	LF	0.78	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	2018.64
165-0020	1294	LF	1.43	MAINTENANCE OF TEMPORARY SILT FENCE, TP B	1850.41
165-0030	5175	LF	1.64	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	8487.0
165-0040	3	EA	66.2	MAINTENANCE OF EROSION CONTROL CHECKDAMS/DITCH CHECKS	198.60
165-0060	2	EA	1389.83	MAINTENANCE OF TEMPORARY SEDIMENT BASIN, STA NO -	2779.66
165-0070	552	LF	1.86	MAINTENANCE OF BALED STRAW EROSION CHECK	1026.72
165-0085	5	EA	170.84	MAINTENANCE OF SILT CONTROL GATE, TP 1	854.2
165-0087	7	EA	169.84	MAINTENANCE OF SILT CONTROL GATE, TP 3	1188.88
165-0101	2	EA	607.78	MAINTENANCE OF CONSTRUCTION EXIT	1215.56
167-1000	1	EA	1278.47	WATER QUALITY MONITORING AND SAMPLING	1278.47
167-1500	11	MO	944.75	WATER QUALITY INSPECTIONS	10392.25
171-0010	5175	LF	1.5	TEMPORARY SILT FENCE, TYPE A	7762.5
171-0020	2588	LF	3.5	TEMPORARY SILT FENCE, TYPE B	9058.0
171-0030	10350	LF	3.73	TEMPORARY SILT FENCE, TYPE C	38605.5
700-6910	3	AC	920.13	PERMANENT GRASSING	2760.39
700-7000	52	TN	48.01	AGRICULTURAL LIME	2496.52
700-7010	44	GL	17.34	LIQUID LIME	762.96
700-8000	4	TN	282.45	FERTILIZER MIXED GRADE	1129.8
700-8100	874	LB	2.26	FERTILIZER NITROGEN CONTENT	1975.23
				Section Sub Total:	**$512,158.10**

Section GRADING AND DRAINAGE

Item Number	Quantity	Units	Unit Price	Item Description	Cost
550-1180	8832	LF	45.96	STORM DRAIN PIPE, 18 IN, H 1-10	405918.72
550-1240	2944	LF	54.17	STORM DRAIN PIPE, 24 IN, H 1-10	159476.48
550-1300	1472	LF	70.5	STORM DRAIN PIPE, 30 IN, H 1-10	103776.0
550-1360	736	LF	86.79	STORM DRAIN PIPE, 36 IN, H 1-10	63877.44
550-2180	230	LF	32.87	SIDE DRAIN PIPE, 18 IN, H 1-10	7560.09
550-2240	184	LF	37.9	SIDE DRAIN PIPE, 24 IN, H 1-10	6973.59

550-3318	6	EA	610.49	SAFETY END SECTION 18 IN, STORM DRAIN, 4:1 SLOPE	3662.94
550-3324	2	EA	1012.38	SAFETY END SECTION 24 IN, STORM DRAIN, 4:1 SLOPE	2024.76
550-3330	1	EA	1869.78	SAFETY END SECTION 30 IN, STORM DRAIN, 4:1 SLOPE	1869.78
550-4118	2	EA	275.65	FLARED END SECTION 18 IN, SIDE DRAIN	551.3
550-4124	1	EA	313.56	FLARED END SECTION 24 IN, SIDE DRAIN	313.56
603-2181	83	SY	45.21	STN DUMPED RIP RAP, TP 3, 18 IN	3752.43
603-2182	21	SY	61.02	STN DUMPED RIP RAP, TP 3, 24 IN	1281.42
603-7000	104	SY	4.71	PLASTIC FILTER FABRIC	489.84
668-1100	58	EA	2634.38	CATCH BASIN, GP 1	152794.04
668-1110	23	LF	289.78	CATCH BASIN, GP 1, ADDL DEPTH	6664.94
668-2100	23	EA	3987.53	DROP INLET, GP 1	91713.19
668-2110	5	LF	353.03	DROP INLET, GP 1, ADDL DEPTH	1765.14
668-4300	6	EA	2550.5	STORM SEWER MANHOLE, TP 1	15303.0
				Section Sub Total:	**$1,029,768.69**

Section BASE PAVING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
310-1101	12868	TN	19.98	GR AGGR BASE CRS, INCL MATL	257102.64
318-3000	920	TN	22.73	AGGR SURF CRS	20911.60
402-3113	5537	TN	74.31	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	411454.47
402-3121	7561	TN	63.99	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	483828.39
402-3190	2520	TN	63.21	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM MATL & H LIME	159289.2
413-1000	5075	GL	2.0	BITUM TACK COAT	10150.0
432-5010	322	SY	1.42	MILL ASPH CONC PVMT, VARIABLE DEPTH	457.23
				Section Sub Total:	**$1,343,193.54**

Section SIGNING AND STRIPING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1020	46	SF	15.19	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	698.74
636-1029	14	SF	15.83	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	221.62
636-1033	184	SF	19.68	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	3621.12
636-1041	46	SF	46.74	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 9	2150.04
636-2070	69	LF	8.27	GALV STEEL POSTS, TP 7	570.63
636-2080	9	LF	10.87	GALV STEEL POSTS, TP 8	97.83
653-0120	37	EA	73.54	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	2720.98
653-0160	5	EA	84.04	THERMOPLASTIC PVMT MARKING, ARROW, TP 6	420.20
653-0170	6	EA	84.44	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	506.64
653-1501	29146	LF	0.68	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	19819.28
653-1502	5520	LF	0.62	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	3422.4
653-1704	1380	LF	4.53	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	6251.40
653-3501	23368	GLF	0.46	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	10749.28
653-3502	920	GLF	0.22	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, YELLOW	202.4
653-6004	184	SY	2.85	THERMOPLASTIC TRAF STRIPING, WHITE	524.4
653-6006	46	SY	3.19	THERMOPLASTIC TRAF STRIPING, YELLOW	146.74
654-1001	138	EA	3.36	RAISED PVMT MARKERS TP 1	463.68
654-1003	230	EA	3.92	RAISED PVMT MARKERS TP 3	901.6
				Section Sub Total:	**$53,488.98**

Section MISCELLANEOUS ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	550000.0	TRAFFIC CONTROL -	550000.0
153-1300	1	EA	76829.7	FIELD ENGINEERS OFFICE TP 3	76829.7
210-0100	1	LS	2000000.0	GRADING COMPLETE -	2000000.0
634-1200	92	EA	99.53	RIGHT OF WAY MARKERS	9156.76
641-1200	165	LF	16.69	GUARDRAIL, TP W	2753.85
641-5001	1	EA	644.45	GUARDRAIL ANCHORAGE, TP 1	644.45
641-5012	1	EA	1812.79	GUARDRAIL ANCHORAGE, TP 12	1812.79
647-1000	7	LS	85000.0	TRAFFIC SIGNAL INSTALLATION NO -	595000.0
				Section Sub Total:	**$3,236,197.55**

Total Estimated Cost: $7,945,365.89

Preliminary Right of Way Cost Estimate

Phil Copeland
Right of Way Administrator
By: LaShone Alexander

Date: October 14, 2010
Project: STP-114-1(85) Fulton
Existing/Required R/W: Varies/Varies
Project Termini : SR 9 from Upper Hembree Road to Academy Street
Project Description: Safety and Operational Improvements

P.I. Number: 721790
No. Parcels: 85

Land:	Res. R/W:0.093 acres @ $350,000/acre		$ 32,550
	Res. Easement R/W: 0.25 acres @ $ 350,000/acre @50%		$ 43,750
	Comm. R/W: 3.817 acres @ $1,425,000/acre		$ 5,439,225
	Comm. Easement :3.87 acres @ $1,425,000/acre @50%		$ 2,757,375
			$ 8,272,900
Improvements : signs, parking, businesses, residence, landscaping misc. site improvements			2,225,000
Relocation:	Residential (1)	$ 40,000	
	Commercial (6)	$ 25,000	$ 190,000
Damage :	Proximity	$ 35,000	
	Cost to Cure	$ 125,000	
			$ 160,000
	Net Cost		$10,847,900

Net Cost		$ 10,847,900
Scheduling Contingency	55 %	5,966,345
Adm/Court Cost	60	10,088,547
		$ 26,902,792

Total Cost $ 26,902,800

Note: The Market Appreciation (40%) is not included in the updated Preliminary Cost Estimate.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE

OFFICE District Seven Utilities
DATE October 7, 2010

FROM Jonathan Walker, District Utilities Engineer

TO Peter Emmanuel, Office of Program Delivery

SUBJECT **Preliminary Utility Cost Estimate**
STP00-0114-01(085), STP00-0114-01(084)
S.R. 9/S. Main St. Fm Upper Hembree to
Windward Parkway, Fulton County
PI # 721780, 721790

As per your request, a field inspection was conducted on the above referenced project. The following companies have facilities that occupy the public right-of-way and should be relocated at **no cost** to the Department of Transportation:

Atlanta Gas Light Company
Comcast
AT&T (formerly BellSouth)
Georgia Power Distribution
Georgia Power Transmission
Georgia Transmission Corporation
Verizon Business
Fulton County Public Works
City of Alpharetta
Charter Communications
Sawnee EMC
City of Atlanta Watershed Management
Zayo (formerly AGL Networks)
Time Warner Telecom
Fiberlight

There were no utilities observed that could potentially have prior rights. Therefore, there are no reimbursable utilities at this time. Please note that this estimate was prepared without the certification of right-of-way and could change when more detailed information is made available.

If you have any questions, please contact Mr. Clyde Cunningham at (770) 986-1117.

Sincerely,

Bryant Poole
District Engineer

For: Jonathan Walker
District Utilities Engineer

BP:JW:CAC

c: Jeff Baker, P.E. (10th Floor, O.G.C.)
File

Date 9/24/2010

P.I. Number 721790 County Fulton

Project Number STP00011401085

Special Provision, Section 109-Measurement and Payment

FUEL PRICE ADJUSTMENT (*ENGLISH 125% MAX)*

ENTER FPL DIESEL	2.881
ENTER FPM DIESEL	6.482

ENTER FPL UNLEADED	2.532
ENTER FPM UNLEADED	5.697

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

INCREASE ADJUSTMENT
125.00%

INCREASE ADJUSTMENT
125.00%

ROADWAY ITEMS	QUANTITY	DIESEL FACTOR	GALLONS DIESEL	UNLEADED FACTOR	GALLONS UNLEADED	REMARKS
Excavations paid as specified by Sections 205 **(CUBIC YARD)**	16100.000	0.29	4669.00	0.15	2415.00	
Excavations paid as specified by Sections 206 **(CUBIC YARD)**		0.29		0.15		
GAB paid as specified by the ton under Section 310 **(TON)**	12355.000	0.29	3582.95	0.24	2965.20	
Hot Mix Asphalt paid as specified by the ton under Sections 400 **(TON)**	15618.000	2.90	45292.20	0.71	11088.78	
Hot Mix Asphalt paid as specified by the ton under Sections 402 **(TON)**		2.90		0.71		
PCC Pavement paid as specified by the square yard under Section 430 **(SY)**		0.25		0.20		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS
Bridge Excavation (CY) Section 211				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Class __Concrete (CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Superstru Con Class__(CY) Section 500				8.00		1.50		
Concrete Handrail (LF) Section 500				8.00		1.50		
Concrete Barrier (LF) Section 500				8.00		1.50		

BRIDGE ITEMS	Quantity	Unit Price	QF/1000	Diesel Factor	Gallons Diesel	Unleaded Factor	Gallons Unleaded	REMARKS

Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		
Stru Steel Plan Quantity (LB) Section 501				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
PSC Beams_____ (LF) Section 507				8.00		1.50		
Stru Reinf Plan Quantity(LB) Section 511				8.00		1.50		
Stru Reinf Plan Quantity(LB) Section 511				8.00		1.50		
Bar Reinf Steel (LB) Section 511				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Piling___inch (LF) Section 520				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Drilled Caisson,___ (LF) Section 524				8.00		1.50		
Pile Encasement,___(LF) Section 547				8.00		1.50		
Pile Encasement,___(LF) Section 547				8.00		1.50		

SUM QF DIESEL=	**53544.15**	**SUM QF UNLEADED=**	**16468.98**

DIESEL PRICE ADJUSTMENT($)	**$177,399.80**
UNLEADED PRICE ADJUSTMENT($)	**$47,954.38**

ASPHALT CEMENT PRICE ADJUSTMENT
(BITUMINOUS TACK COAT 125% MAX)

APPLICABLE TO CONTRACTS/PROJECTS CONTAINING THE 413 SPECIFICATION, SECTION 413.5.01 ADJUSTMENTS
ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

ENTER APL 453 **ENTER APM** 1019.25

125.00%	INCREASE ADJUSTMENT

L.I.N.	TYPE	TACK (GALLONS)	TACK (TONS)	REMARKS
413-1000	PG 58-22	5075	21.7976	

TMT = 21.7976

PRICE ADJUSTMENT($)	$11,849.19

400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX

ENTER APL 453 **ENTER APM** 1019.25

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

125.00%	INCREASE ADJUSTMENT

L.I.N. / Spec Number	MIX TYPE	HMA	JMF AC%	AC	REMARKS
402-3113	12.5 mm PEM	5537	5.00	276.85	
402-3190	19 mm SMA	2520	5.00	126.00	
402-3121	25 mm SP	7561	5.00	378.05	
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			5.00		
			TMT =	780.90	

PRICE ADJUSTMENT($)	$424,497.24

ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)

APPLICABLE TO CONTRACTS CONTAINING THE 413 SPEC. SECTION 413.5.01 ADJUSTMENTS ASPHALT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT

http://www.dot.ga.gov/doingbusiness/Materials/Pages/asphaltcementindex.aspx

ENTER APL 453

ENTER APM 1019.25

125.00%	INCREASE ADJUSTMENT

Use this side for Asphalt Emulsion Only

L.I.N.	TYPE	ASPHALT EMULSION (GALLONS)

TMT =

REMARKS:

Use this side for Asphalt Cement Only

L.I.N.	TYPE	TACK (GALLONS)
413-1000	PG 58-22	5075

TMT = 21.7976

REMARKS:

MONTHLY PRICE ADJUSTMENT($)	$11,849.19

ADJUSTMENT SUMMARY

FUEL PRICE ADJUSTMENT *(ENGLISH 125% MAX)*

DIESEL PRICE ADJUSTMENT($)	$177,399.80
UNLEADED PRICE ADJUSTMENT($)	$47,954.38
ASPHALT CEMENT PRICE ADJUSTMENT (BITUMINOUS TACK COAT 125% MAX)	$11,849.19
400 / 402 ASPHALT CEMENT PRICE ADJUSTMENT 125% MAX	$424,497.24
ASPHALT CEMENT PRICE ADJUSTMENT FOR BITUMINOUS TACK COAT(Surface Treatment 125% MAX)	$11,849.19

REMARKS:

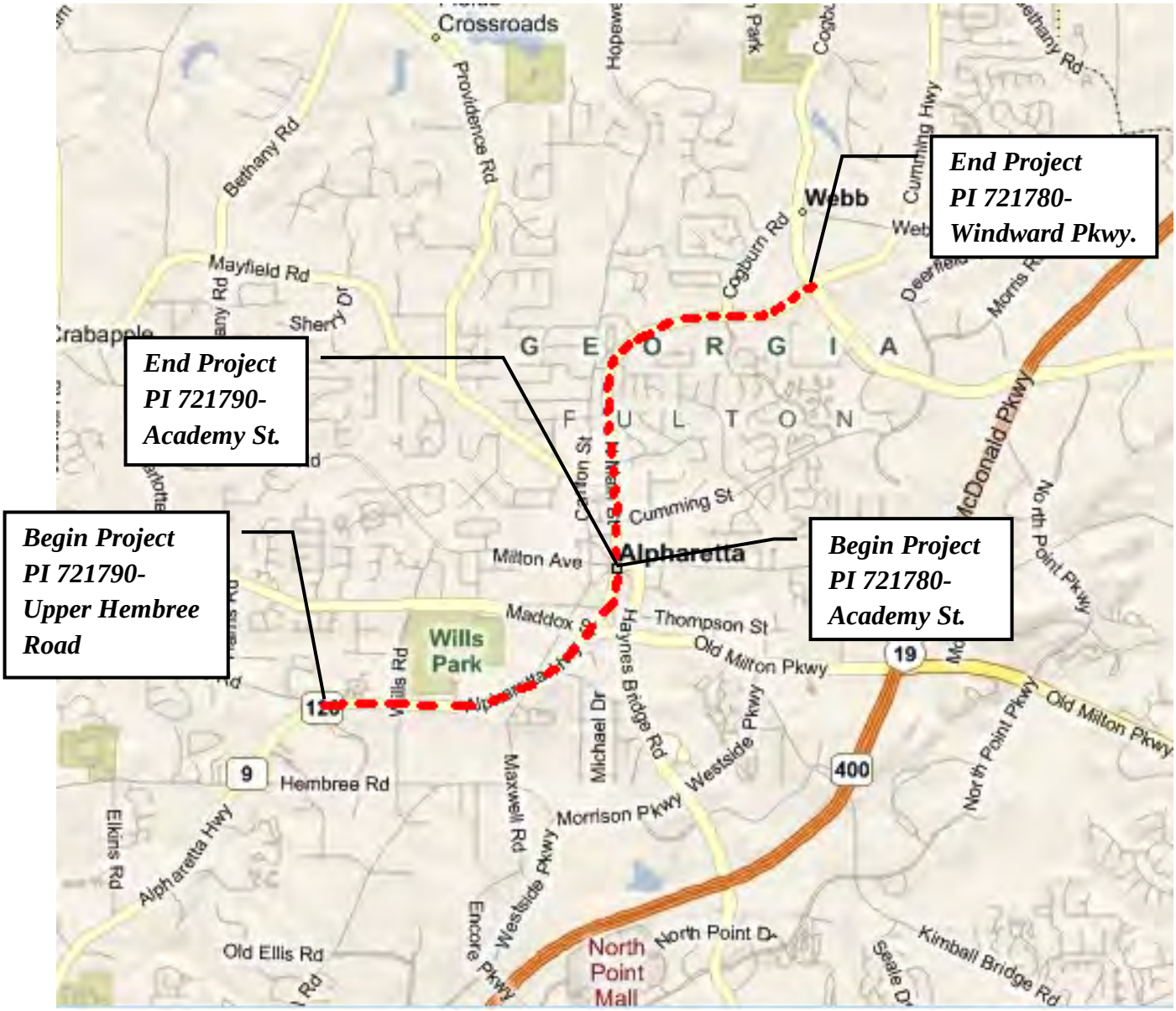
TOTAL ADJUSTMENTS	$673,549.80

DWM 10/08

Attachment 2:

Sketch Location Map

LOCATION SKETCH (not to scale)



Project Numbers: STP00-0114-01(084), PI 721780- and STP00-0114-01(085), PI 721790-

Attachment 3:

Typical Sections

CONCEPT PLAN – MAY 2010

FULTON COUNTY
WIDENING AND RECONSTRUCTION

S.R 9 /S. MAIN ST. @ UPPER HEMBREE RD
TO S.R. 9 /N. MAIN ST.@ WINDWARD PKWY

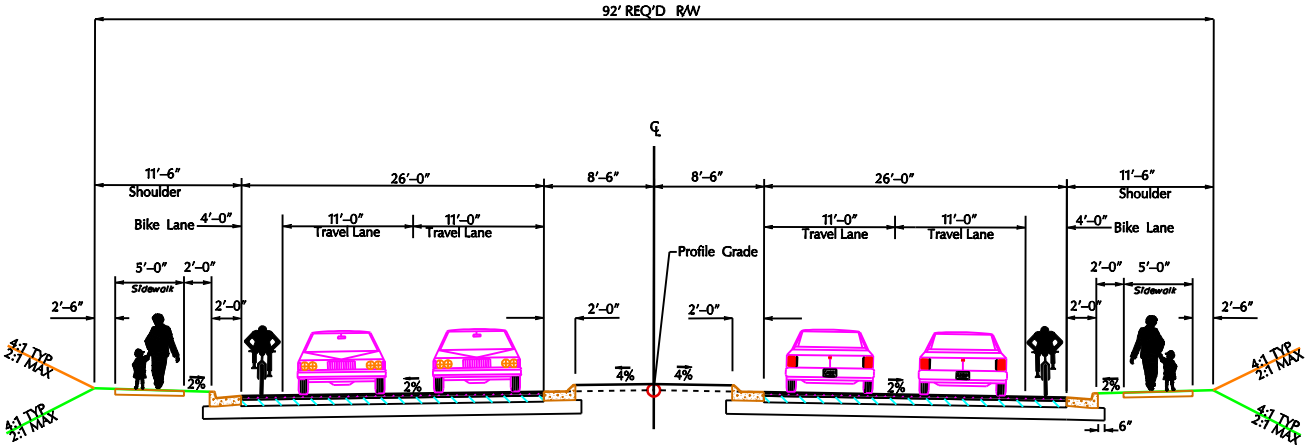
PROJECT No.: STP–114–1(84) & (85)

PEMAS011401084 & PEMAS011401085

P.I. No.: 721780 & 721790

GDOT Keeping Georgia on the Move

POND
Architects-Engineers-Planners
3500 Parkway Lane
Suite 600
Norcross, Ga. 30092
Phone 678-336-7740
Fax 678-336-7744
Web www.pondco.com



TYPICAL SECTION

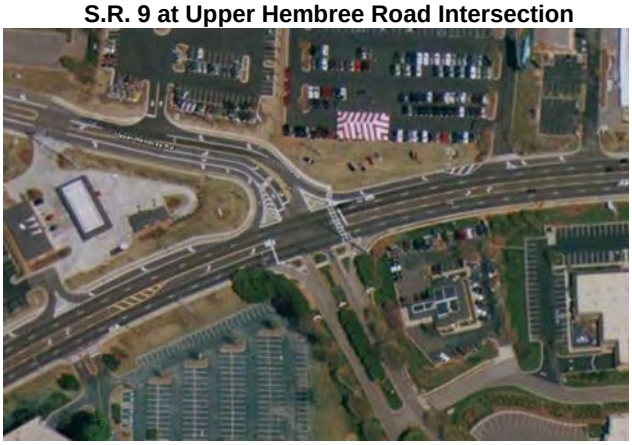
...\07058TY01.dgn 6/16/2010 5:07:35 PM

Attachment 4:

Traffic Engineering Technical Memorandum

Traffic Engineering Technical Memorandum

S.R. 9 at Upper Hembree Road Intersection



S.R. 9 at Windward Parkway Intersection

S.R. 9
From Upper Hembree Road to Windward Parkway
Safety and Operational Improvements
Federal ID Nos. STP-114-1(84) and STP-114-1(85)

Fulton County, GA

Prepared By:
Long Engineering
1780 Corporate Drive
Norcross, GA 30093
www.longeng.com

Prepared For:
Pond and Company
3500 Parkway Lane, Suite 600
Norcross, GA 30092
www.pondco.com

November 2, 2009

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1.0 STUDY OBJECTIVE AND BACKGROUND INFORMATION

This technical memorandum reviews the current and projected safety and operational characteristics of the S.R. 9 study corridor from Upper Hembree Road to Windward Parkway. ***Table 1.1*** summarizes the background information along the study corridor for the Southern Section (from Upper Hembree Road to Academy Street) and the Northern Section from Academy Street to Windward Parkway. General location maps of both sections are shown in ***Figure 1.1*** and ***Figure 1.2***, respectively.

Table 1.1 – S.R. 9 Corridor Background Information

Description	S.R. 9 Southern Section	S.R. 9 Northern Section
Federal ID Number	STP-114-1(85)	STP-114-1(84)
Estimated Project Length	1.69 miles	1.95 miles
No. of Existing Traffic Signal Intersections	5[1]	5
Posted Speed Limit	45 MPH *(From Upper Hembree Rd/Northmeadow Pkwy to Roswell Street/Maxwell Road)*	35 MPH *(From Milton Avenue/Academy Street to Cumming Street)*
	35 MPH *(From Roswell Street/Maxwell Road to Milton Avenue/Academy Street)*	45 MPH *(From Cumming Street to Windward Parkway)*

[1]Includes Milton Avenue/Academy Street Traffic Signal Intersection

Figure 1.1 – S.R. 9 General Location Map (Southern Section)

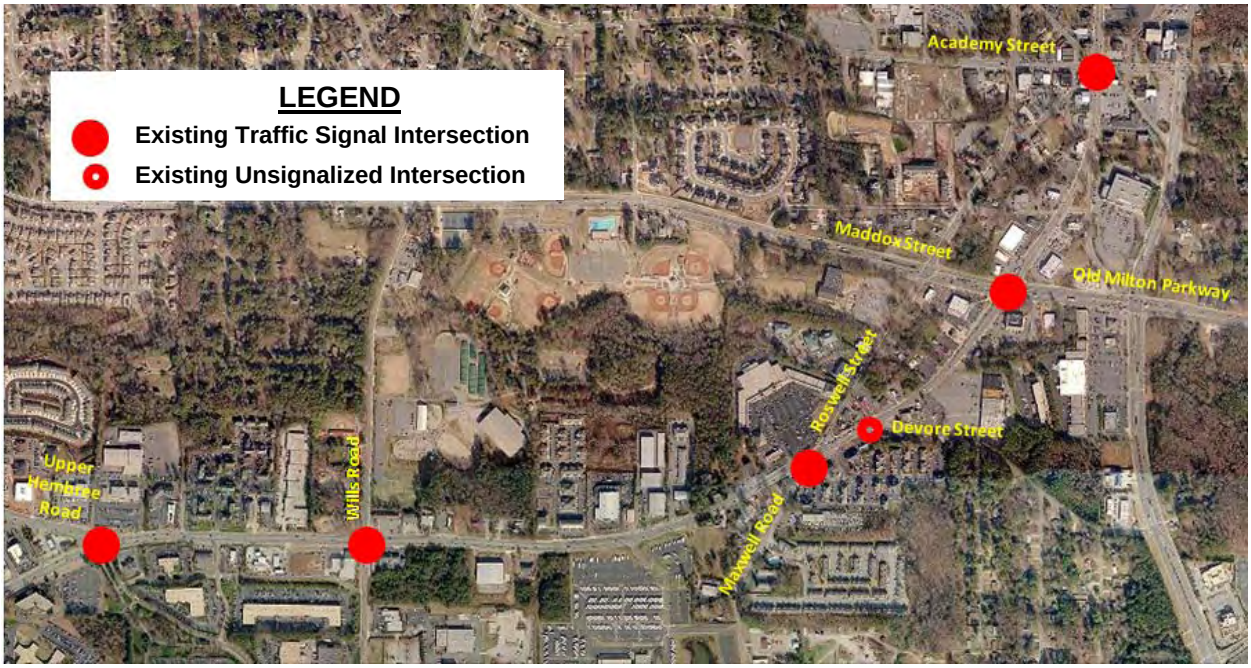
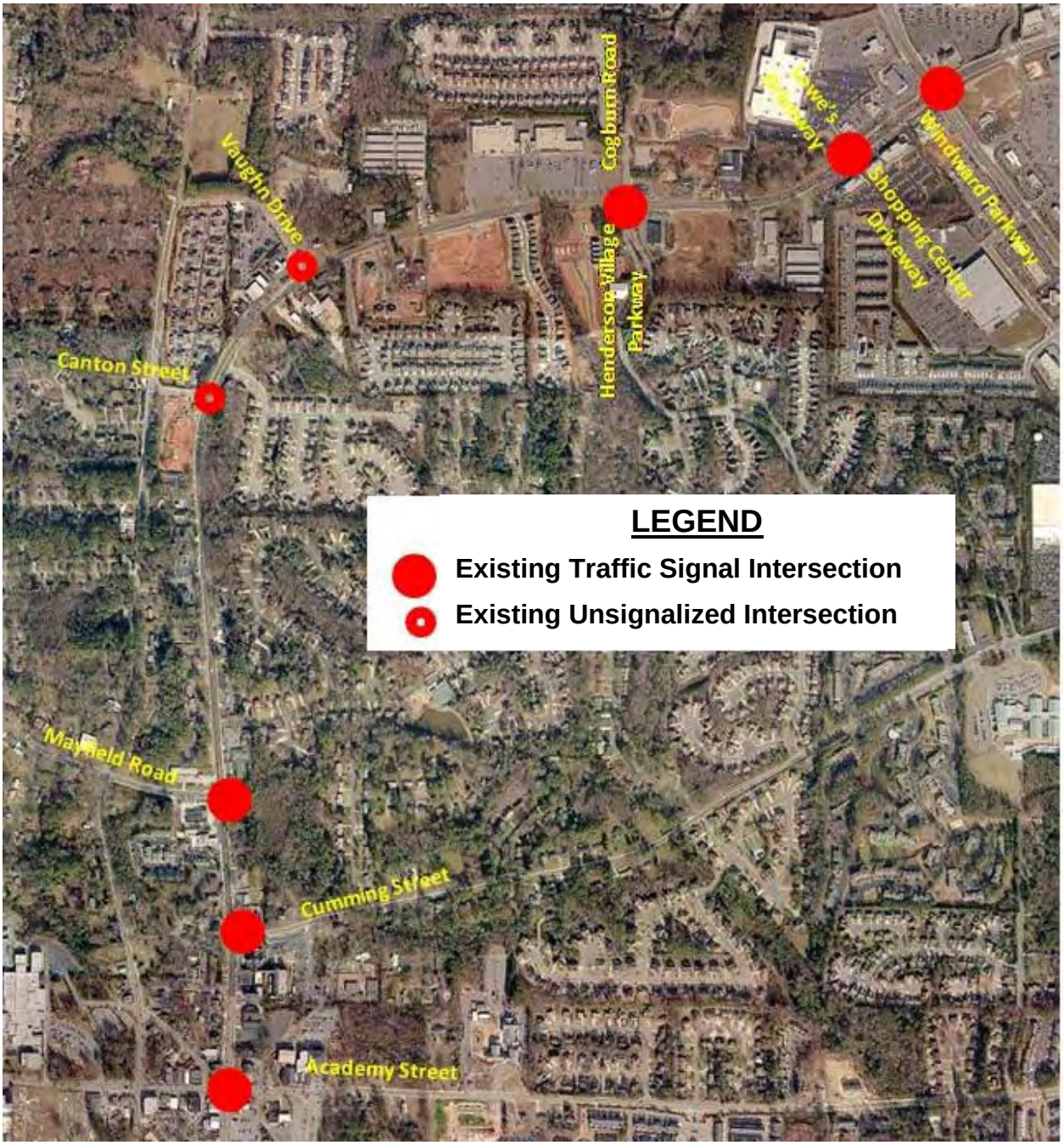


Figure 1.2 – S.R. 9 General Location Map (Northern Section)



2.0 METHODOLOGY

The traffic analysis included collecting existing traffic counts, reviewing historical traffic volume data, forecasting traffic volumes projections, performing capacity analyses, and analyzing crash data. Existing traffic counts were collected along the S.R. 9 study corridor in 2008. Historical traffic volume data were gathered from both the Georgia Department of Transportation (GDOT) Office of Environment/Location and from GDOT's web site. Traffic volume projections were determined after a thorough review of the historical traffic volume data and from conversations with the Atlanta Regional Commission (ARC) and the City of Alpharetta. ***Section 3.0*** provides more detail on the traffic volumes used in this report.

The capacity analysis followed procedures from the *Highway Capacity Manual (HCM 2000)* and the software *Synchro* was utilized to evaluate the system network to obtain the capacity analysis results. At all of the study intersections, the operating level-of-service (LOS) was determined for the AM and PM peak periods and for existing and future traffic conditions. The LOS for both signalized and unsignalized intersections is measured as the average delay per vehicle. The following traffic conditions were analyzed for both the AM and PM peak periods:

- 2008 Existing Traffic Conditions (No-Build)
- 2012 Existing Traffic Conditions (No-Build)
- 2012 Proposed Traffic Conditions (Build)
- 2032 Existing Traffic Conditions (No-Build)
- 2032 Proposed Traffic Conditions (Build)

If a new median in the proposed traffic conditions eliminated access at an intersection, then the turning traffic movements at that intersection were re-routed to the next intersection where the turning movements are able to turn around back to their destination intersection. ***Section 4.0*** provides the capacity analysis results.

3.0 TRAFFIC VOLUMES AND PROJECTIONS

3.1 Traffic Counts

Existing traffic counts were collected along the S.R. 9 study corridor between January 2008 and March 2008. The data collection phase consisted of both intersection turning movement traffic counts and mechanical tube counts. Overall, a total of 24 intersection turning movement traffic count locations and nine mechanical tube count locations which are provided in ***Appendix A*** and listed in ***Tables 3.1*** and ***Table 3.2***, respectively.

Table 3.1 – S.R. 9 Intersection Turning Movement Count Locations

Section	No.	Location	Control Type
Southern Section	1	SR 9 at Upper Hembree Road/Northmeadow Parkway	Signal
	2	SR 9 at Haney Drive	Unsignalized
	3	SR 9 at Cambridge Square	Unsignalized
	4	SR 9 at Wills Road	Signal
	5	SR 9 at Northfall Lane	Unsignalized
	6	SR 9 at Brady Place	Unsignalized
	7	SR 9 at Roswell Street/Maxwell Road	Signal
	8	SR 9 at Devore Road	Unsignalized
	9	SR 9 at Janis Lane	Unsignalized
	10	SR 9 at Old Milton Parkway	Signal
	11	SR 9 at Marietta Street	Unsignalized
	12	SR 9 at Norcross Street	Unsignalized
	13	SR 9 at Milton Avenue/Academy Street	Signal
Northern Section	14	SR 9 at Church Street	Unsignalized
	15	SR 9 at Cumming Street	Signal
	16	SR 9 at Mayfield Road	Signal
	17	SR 9 at Pine Grove Drive	Unsignalized
	18	SR 9 at Canton Street	Unsignalized
	19	SR 9 at Winthrope Park Drive	Unsignalized
	20	SR 9 at Vaughn Drive	Unsignalized
	21	SR 9 at Winthrope Chase Drive	Unsignalized
	22	SR 9 at Cogburn Road/Henderson Village Parkway	Signal
	23	SR 9 at Lowe's Driveway/Shopping Center Entrance	Signal
	24	SR 9 at Windward Parkway	Signal

Table 3.2 – S.R. 9 Mechanical Tube Count Locations

Section	No.	Location
Southern Section	1	SR 9 North of Upper Hembree Road/Northmeadow Parkway
	2	SR 9 East of Wills Road
	3	SR 9 South of Milton Avenue/Academy Street
	4	Milton Avenue West of SR 9
	5	Academy Street East of SR 9
Northern Section	6	SR 9 North of Milton Avenue/Academy Street
	7	SR 9 North of Mayfield Road
	8	SR 9 East of Cogburn Road/Henderson Village Parkway
	9	Windward Parkway North of SR 9

3.2 Historical Traffic Volume Data

Historical traffic volume data were gathered from the Georgia Department of Transportation (GDOT) Office of Environment/Location, the GDOT Office of Transportation Data, the GDOT Traffic Count Database System, and the GDOT/Fulton County Traffic Count Report.

Five permanent traffic count stations located on S.R. 9 within the study limits. The following lists these five permanent count stations and their location within the study area:

- Traffic Count Station T0140: Located between the intersections of Upper Hembree Road/Northmeadow Parkway and Wills Road
- Traffic Count Station T0142: Located between the intersections of Devore Road and Old Milton Parkway
- Traffic Count Station T0144: Located between the intersections of Marietta Street and Milton Avenue/Academy Street
- Traffic Count Station T0146: Located between the intersections of Cumming Street and Canton Street
- Traffic Count Station T0148: Located between the intersections of Cogburn Road/Henderson Village Parkway and Windward Parkway

Table 3.3 lists these permanent count stations and their historical Average Annual Daily Traffic (AADT) volumes between 1992 and 2006 and ***Table 3.4*** list their historical average growth rates from each year.

Table 3.3 – S.R. 9 Historical Average Annual Daily Traffic Volumes

Year	S.R. 9 Permanent Traffic Count Stations				
	T0140	T0142	T0144	T0146	T0148
2006	32,080	28,870	26,340	26,090	22,840
2005	33,320	31,960	29,680	26,760	26,440
2004	34,130	34,940	28,960	26,590	21,540
2003	33,530	34,230	28,450	28,540	21,160
2002	35,690	35,770	29,750	21,730	20,670
2001	34,510	36,160	29,080	20,290	20,250
2000	36,140	33,660	28,490	28,020	19,130
1999	29,190	28,290	29,490	18,930	17,150
1998	32,300	31,300	30,250	20,940	17,300
1997	30,910	28,740	25,610	24,380	16,030
1996	29,060	29,740	24,310	17,840	15,060
1995	27,300	27,800	20,800	15,800	14,600
1994	25,100	25,400	19,800	13,200	11,100
1993	25,200	25,800	32,600	12,500	11,200
1992	25,640	29,100	28,910	12,230	9,090

Table 3.4 – S.R. 9 Historical Average Growth Rates

From Year	S.R. 9 Permanent Traffic Count Stations					Overall Average Growth Rate
	T0140	T0142	T0144	T0146	T0148	
2006	-	-	-	-	-	-
2005	-3.72%	-9.67%	-11.25%	-2.50%	-13.62%	-8.15%
2004	-3.04%	-9.10%	-4.52%	-0.94%	2.79%	-2.96%
2003	-1.54%	-5.71%	-1.96%	-2.63%	4.42%	-1.48%
2002	-2.18%	-4.75%	-1.93%	2.71%	4.37%	-0.35%
2001	-1.56%	-3.94%	-1.33%	4.96%	4.04%	0.44%
2000	-1.67%	-2.48%	-0.75%	1.70%	4.11%	0.18%
1999	0.10%	-0.35%	-0.73%	3.44%	4.69%	1.43%
1998	0.33%	0.10%	-0.85%	3.49%	4.64%	1.54%
1997	0.65%	0.76%	0.01%	2.48%	4.78%	1.74%
1996	1.07%	0.95%	0.70%	3.18%	4.93%	2.17%
1995	1.50%	1.27%	1.60%	3.89%	4.98%	2.65%
1994	1.97%	1.70%	2.26%	4.73%	5.65%	3.26%
1993	2.22%	1.90%	1.18%	5.34%	5.99%	3.32%
1992	2.29%	1.69%	0.81%	5.74%	6.55%	3.42%
Average Growth Rate	-0.26%	-1.97%	-1.20%	2.54%	3.45%	0.51%

As shown in ***Table 3.4***, the average growth rate at the five permanent stations on within the S.R. 9 study corridor ranged from -1.97% to 3.45% with an overall average growth rate equal to 0.51%.

3.3 Traffic Volume Projections

The Atlanta Regional Commission (ARC) provided travel demand forecasts for the S.R. 9 study corridor from their long-range travel model. The ARC forecasts derived a sum total 1.2% decrease in traffic volumes from 2005 to 2010, then a sum total 6.4% increase from 2010 to 2020, then a sum total 8.4% increase from 2020 to 2030. The overall annual average growth rate for this 25-year period equaled 0.51%. This growth rate matched the overall annual average growth rate calculated from GDOT's permanent traffic count stations. Through subsequent discussions with the ARC and the City of Alpharetta, local infrastructure roadway improvements, most notably to S.R. 400, have occurred near the study area within the last 5-15 years. These improvements have been the primary reason for traffic growth rate trend to show a recent decline within the S.R. 9 project limits.

GDOT, the ARC, and City of Alpharetta do not expect a high annual growth rate over the future 20 year horizon. However a low annual growth rate ranging from 0.5% to 1.0% would be expected for the purpose of projecting traffic. Therefore, this traffic study utilized the higher, more conservative value of 1.0% annual growth rate to determine traffic volume projections.

3.4 Traffic Diagrams

Using the 1.0% annual growth rate, S.R. 9 study corridor traffic volumes were developed for the future 2012 and 2032 horizon years. The traffic volumes included both design hour volumes (DHV) and average annual daily traffic (AADT) volumes. From these projected traffic volumes, the following eight different traffic diagrams were prepared:

- 2008 AM/PM DHV Design Traffic – Existing Conditions (Drawings 10-01 to 10-04)
- 2008 AADT Design Traffic – Existing Conditions (Drawings 10-05 to 10-08)
- 2012 AM/PM DHV Design Traffic – Existing Conditions (Drawings 10-09 to 10-12)
- 2032 AM/PM DHV Design Traffic – Existing Conditions (Drawings 10-13 to 10-16)
- 2012/2032 AADT Design Traffic – Existing Conditions (Drawings 10-17 to 10-20)
- 2012 AM/PM DHV Design Traffic – Proposed Conditions (Drawings 10-21 to 10-24)
- 2032 AM/PM DHV Design Traffic – Proposed Conditions (Drawings 10-25 to 10-28)
- 2012/2032 AADT Design Traffic – Proposed Conditions (Drawings 10-29 to 10-32)

These traffic diagrams are provided in ***Appendix B***.

4.0 S.R. 9 CAPACITY ANALYSIS RESULTS

For each of the five traffic conditions listed in ***Section 2.0***, a capacity analysis was conducted to determine the operating level-of-service (LOS) at each intersection for both the AM and PM peak periods. The overall LOS is presented in this study for each signalized intersection and the S.R. 9 left turn along with the minor street left turn LOS are presented for each unsignalized intersection (if two approaches, then the worst LOS is shown). The following is a summary of the S.R. 9 capacity analysis results for each existing and proposed traffic condition.

4.1 Existing Traffic Conditions

The capacity analysis results for the existing traffic conditions are summarized in ***Table 4.1***. As shown, two signalized intersections within the S.R. 9 study corridor have a LOS F utilizing the 2012 traffic volumes, S.R. 9 at Old Milton Parkway during the AM peak period and S.R. 9 at Windward Parkway during the PM peak period. However, utilizing the 2032 traffic volumes, five of the signalized study intersections are LOS F during the AM and/or PM peak periods.

At the unsignalized intersections, the S.R. 9 left turn onto the minor street is LOS C or better with the exception of the S.R. 9 southbound left turn onto Pine Grove Drive during the PM peak period, which is LOS F. This LOS F occurred utilizing the 2008, 2012, and 2032 traffic volumes. The Synchro capacity analysis printouts of the existing traffic conditions are provided in ***Appendix C***.

4.2 Proposed Traffic Conditions

To improve safety and increase roadway capacity along the S.R. 9 study corridor, a number of improvements were identified at each of the study intersections. First, the entire study corridor is proposed to include four thru travel lanes (i.e. two lanes in each direction). This recommendation will provide the greatest benefit to the motorist in terms of both capacity and lane continuity.

Second, left-turn lanes and right-turn lanes are being proposed at the intersections where traffic volumes warrant their need. In some cases, multiple turn lanes are being proposed.

Third, raised islands are being proposed in the median that will improve safety by eliminating or restricting turning movements at certain intersections. For the proposed traffic conditions, ten of the 24 study intersections were subject to these right-in/right-out travel movement restrictions because of this raised median improvement. These ten intersections are listed below:

- S.R. 9 at Haney Drive
- S.R. 9 at Northfall Lane
- S.R. 9 at Brady Place
- S.R. 9 at Janis Lane
- S.R. 9 at Marietta Street
- S.R. 9 at Norcross Street
- S.R. 9 at Church Street
- S.R. 9 at Pine Grove Drive
- S.R. 9 at Winthrope Park Drive
- S.R. 9 at Winthrope Chase Drive

Fourth, a proposed improvement includes the relocation of Roswell Street from the existing skewed intersection with Maxwell Road and realign it to near 90º with S.R. 9 connecting to Devore Road. The realignment of Maxwell Road near 90º with S.R. 9 is also proposed along with signalizing both intersections.

Table 4.1 – S.R. 9 Capacity Analysis Results (Existing Traffic Conditions)

S.R. 9 Intersection at:	AM Peak Period			PM Peak Period		
	2008	2012	2032	2008	2012	2032
Upper Hembree Road/ Northmeadow Pkwy.	**C (22.1)**	**C (23.5)**	**C (30.0)**	**C (31.1)**	**D (35.4)**	**E (65.6)**
Haney Drive	B / F (13.2/94.2)	B / F (13.6/111.4)	C / F (16.8/357.3)	B / F (14.4/82.3)	C / F (15.1/106.5)	C / F (19.2/>900)
Cambridge Square	B / D (12.2/26.1)	B / D (12.6/27.3)	C / E (15.6/41.5)	B / B (13.3/15.0)	B / B (13.8/14.6)	C / C (19.8/22.3)
Wills Road	**D (35.4)**	**D (37.3)**	**E (68.8)**	**C (31.3)**	**C (34.6)**	**E (65.3)**
Northfall Lane	C / F (15.3/100.1)	C / F (16.0/119.3)	C / F (21.3/397.5)	B / F (13.3/316.1)	B / F (13.8/433.8)	C / F (17.4/>900)
Brady Place	A / F (0.0/85.3)	A / F (0.0/100.3)	A / F (0.1/358.4)	A / F (0.0/144.6)	A / F (0.0/177.1)	A / F (0.0/780.8)
Roswell Street/Maxwell Road	**C (20.6)**	**C (23.4)**	**D (51.2)**	**C (28.5)**	**C (28.8)**	**E (59.7)**
Devore Road	A / B (0.9/13.1)	A / B (1.0/12.7)	A / B (2.3/11.7)	A / C (0.9/25.1)	A / C (1.0/23.3)	A / C (4.6/24.1)
Janis Lane	B / F (11.8/63.0)	B / F (12.1/72.2)	B / F (14.3/168.9)	C / E (15.9/41.0)	C / E (16.7/47.3)	C / F (22.1/94.6)
Old Milton Parkway	**E (76.3)**	**F (91.4)**	**F (163.8)**	**D (40.9)**	**D (43.1)**	**E (79.2)**
Marietta Street	A / F (0.5/77.1)	A / F (0.6/94.1)	A / F (1.2/596.5)	A / F (0.6/89.1)	A / F (0.7/116.8)	A / F (1.4/>900)
Norcross Street	B / B (10.5/11.3)	B / B (10.3/11.5)	B / B (12.5/12.7)	B / C (12.5/16.4)	B / C (12.9/17.3)	C / C (16.0/24.7)
Milton Ave./Academy St	**D (52.0)**	**E (56.8)**	**F (101.3)**	**D (51.2)**	**E (58.5)**	**F (118.3)**
Church Street	A / B (0.1/13.4)	A / B (0.1/13.3)	A / C (0.3/16.7)	A / B (0.6/14.2)	A / B (0.8/14.6)	A / C (1.7/19.3)
Cumming Street	**C (26.5)**	**D (38.1)**	**F (139.8)**	**B (22.2)**	**C (18.4)**	**E (78.6)**
Mayfield Road	**C (20.9)**	**C (22.6)**	**D (41.9)**	**C (22.6)**	**C (25.9)**	**E (63.1)**
Pine Grove Drive	B / F (10.6/139.9)	B / F (10.9/202.6)	B / F (13.3/>900)	F / F (92.3/>900)	F / F (145.0/>900)	F / F (>900/>900)
Canton Street	B / F (11.9/145.4)	B / F (12.2/212.4)	B / F (14.6/896.7)	B / F (13.8/437.7)	B / F (14.5/605.5)	C / F (21.4/>900)
Winthrope Park Drive	A / E (0.1/39.4)	A / E (0.1/44.8)	A / F (0.1/110.8)	A / F (1.9/75.3)	A / F (2.2/88.0)	A / F (5.0/329.4)
Vaughn Drive	A / F (0.6/165.7)	A / F (0.7/222.2)	A / F (1.7/>900)	A / F (3.8/271.0)	A / F (5.1/377.5)	A / F (9.4/>900)
Winthrope Chase Drive	A / F (0.4/93.8)	A / F (0.5/121.2)	A / F (2.3/558.1)	A / F (1.6/99.0)	A / F (2.1/121.8)	C / F (15.6/574.1)
Cogburn Road/Henderson Village Parkway	**B (16.1)**	**B (18.7)**	**D (49.0)**	**C (25.1)**	**C (27.1)**	**E (79.3)**
Lowe's Driveway/Shopping Center Entrance	**B (11.1)**	**B (12.0)**	**B (10.4)**	**D (45.3)**	**D (36.4)**	**F (149.7)**
Windward Parkway	**D (37.4)**	**D (39.1)**	**E (60.3)**	**E (65.7)**	**F (80.8)**	**F (138.1)**

Notes:
1. The signalized intersection capacity results are shown in bold text and shade.
2. The unsignalized intersection capacity results show two values. The first value is the major street left turn approach (worst case) and the second value is the minor street approach (worst case).
3. The estimated vehicle delay (seconds per vehicle) is shown in parentheses.

The remaining intersection improvements are the addition of turn lanes or at each of 14 study intersections under the proposed traffic conditions. The proposed laneage at each of these intersections is shown in ***Figure 4.1*** and ***Figure 4.2***. The capacity analysis results for the proposed traffic conditions are summarized in ***Table 4.2***.

Table 4.2 – S.R. 9 Capacity Analysis Results (Proposed Traffic Conditions)

S.R. 9 Intersection at:	AM Peak Period		PM Peak Period	
	2012	2032	2012	2032
Upper Hembree Road/Northmeadow Parkway	**B (19.8)**	**C (24.0)**	**D (35.9)**	**E (59.7)**
Cambridge Square	B / D (12.2/26.7)	B / E (15.0/43.7)	B / C (13.0/15.4)	C / C (17.5/16.1)
Wills Road	**C (30.7)**	**D (53.8)**	**C (26.3)**	**C (33.4)**
Maxwell Road	**A (6.6)**	**B (12.2)**	**A (9.8)**	**B (16.0)**
Roswell Street (Relocated)/Devore Road	**B (14.9)**	**B (13.9)**	**B (10.1)**	**B (13.1)**
Old Milton Parkway	**D (47.8)**	**F (89.6)**	**D (43.0)**	**E (62.1)**
Milton Avenue/Academy Street	**D (45.5)**	**E (76.1)**	**C (33.4)**	**E (57.1)**
Cumming Street	**B (12.9)**	**B (15.8)**	**C (21.6)**	**D (42.3)**
Mayfield Road	**B (19.2)**	**C (25.7)**	**B (11.6)**	**B (18.6)**
Canton Street	B / F (12.5/100.8)	C / F (15.4/468.6)	B / F (15.0/884.3)	C / F (22.9/>900)
Vaughn Drive	B / F (12.0/79.3)	B / F (14.2/385.1)	B / F (12.6/120.2)	C / F (15.3/574.2)
Cogburn Road/Henderson Village Parkway	**B (14.7)**	**B (14.1)**	**B (10.0)**	**B (12.2)**
Lowe's Driveway/Shopping Center Entrance	**A (6.2)**	**A (5.4)**	**A (7.6)**	**A (9.6)**
Windward Parkway	**D (42.8)**	**D (40.9)**	**D (37.4)**	**D (43.5)**

Notes:
1. The signalized intersection capacity results are shown in bold text and shade.
2. The unsignalized intersection capacity results show two values. The first value is the major street left turn approach (worst case) and the second value is the minor street approach (worst case).
3. The estimated vehicle delay (seconds per vehicle) is shown in parentheses.

As shown in ***Table 4.2***, all of the signalized intersections within the S.R. 9 study corridor are LOS D or better utilizing the 2012 traffic volumes. However, utilizing the 2032 traffic volumes, the only signalized intersection that has a LOS F is the S.R. 9 at Old Milton Parkway intersection. To relieve the LOS F at this intersection, additional thru lane capacity would need implementation for either the S.R. 9 northbound/southbound approaches or the Old Milton Parkway westbound approach. Existing physical constraints may prevent these improvements from consideration.

At the unsignalized intersections for each analysis, the S.R. 9 left turn onto the minor street is LOS C or better. The Synchro capacity analysis printouts of the proposed traffic conditions are provided in ***Appendix C***.

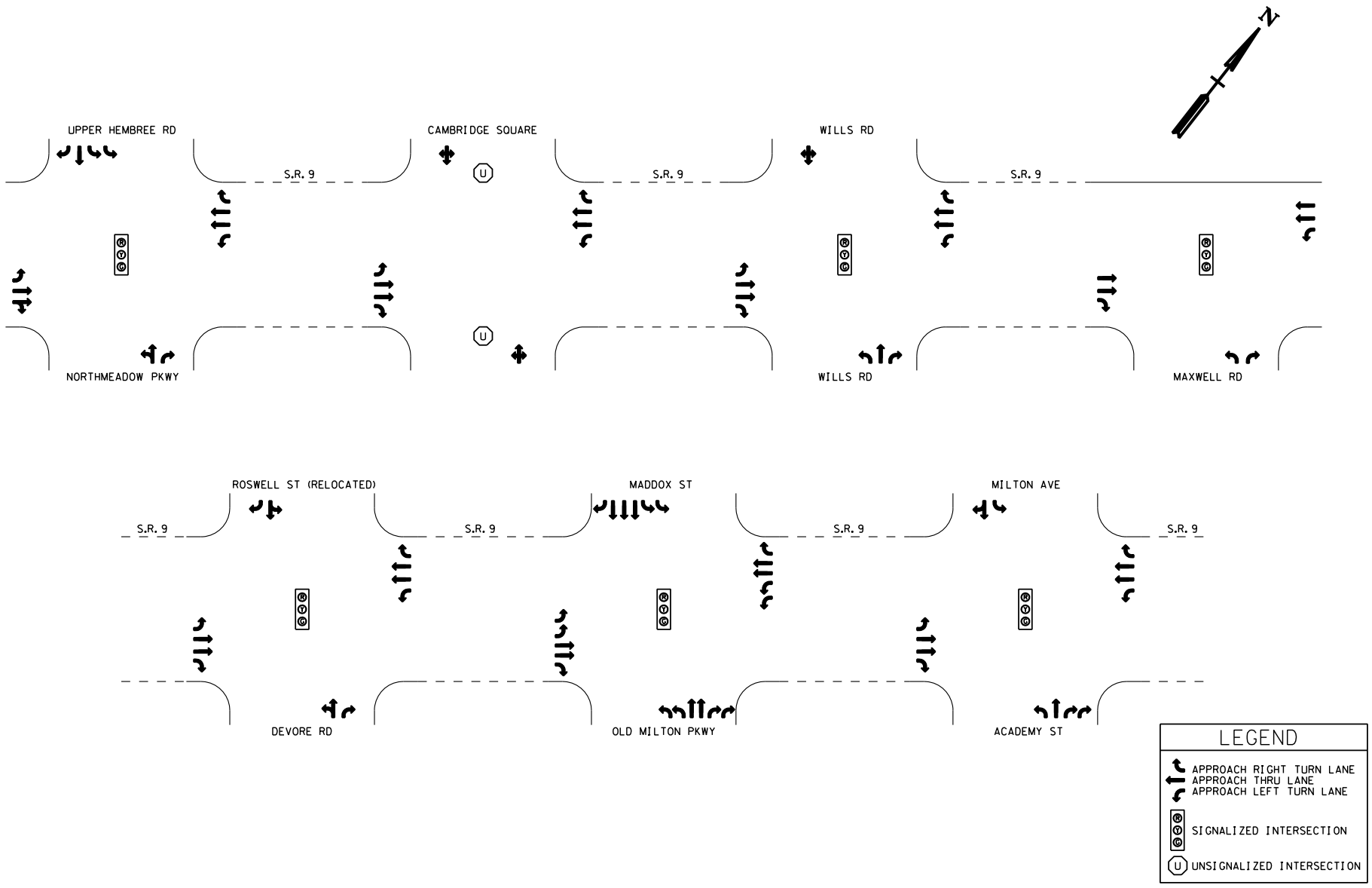


FIGURE 4.1

S.R. 9 STUDY INTERSECTION LANE CONFIGURATIONS FOR PROPOSED TRAFFIC CONDITIONS (1 OF 2)

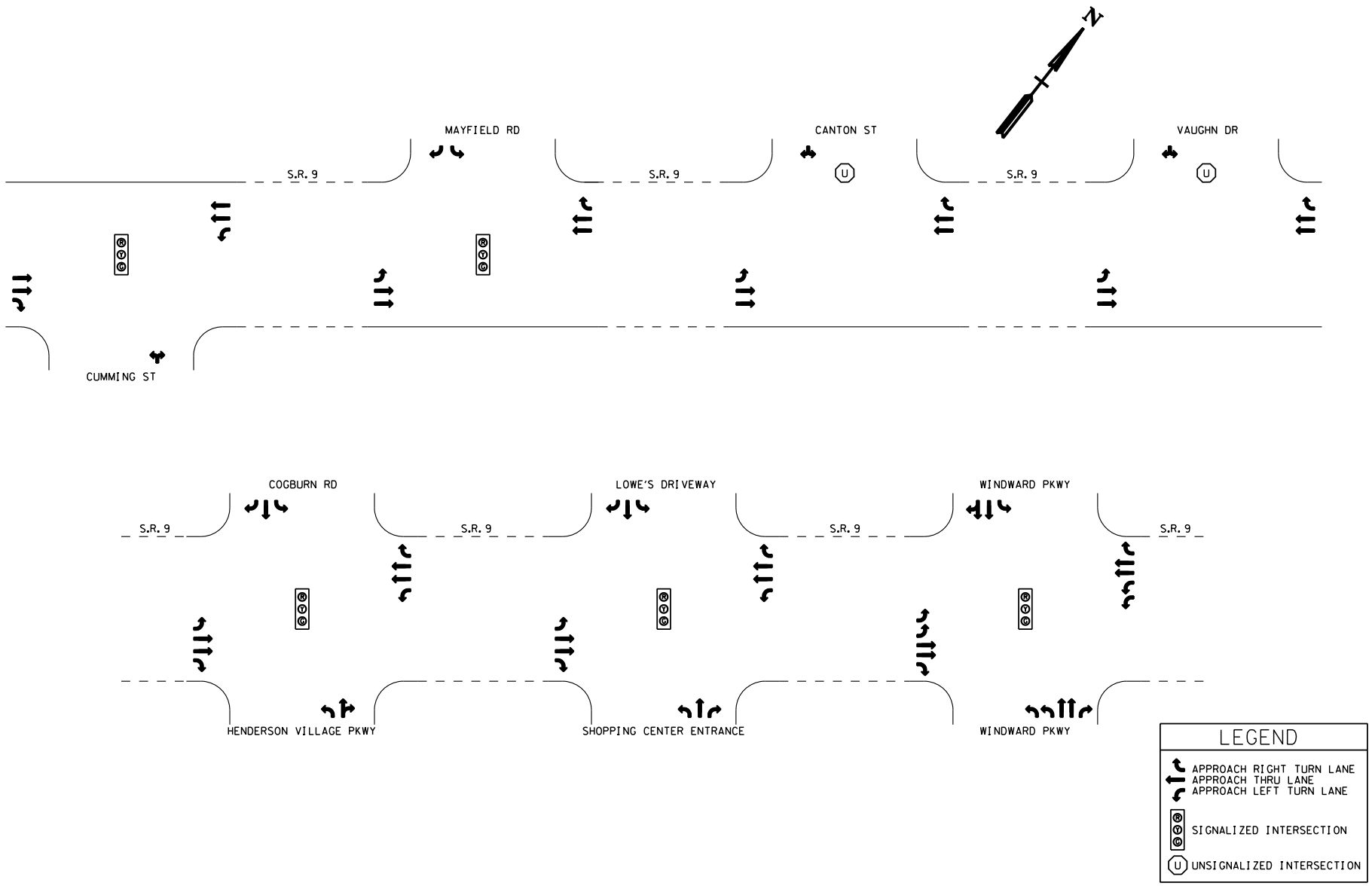


FIGURE 4.2

S.R. 9 STUDY INTERSECTION LANE CONFIGURATIONS FOR PROPOSED TRAFFIC CONDITIONS (2 OF 2)

4.3 Existing and Proposed Traffic Conditions Comparison

The 2012 and 2032 capacity analysis results comparisons between the existing and proposed traffic conditions are shown in ***Table 4.3*** and ***Table 4.4***, respectively. Using the traffic modeling software Synchro, the LOS and vehicle delay results will deteriorate as expected in later horizon years. However, slight increases were obtained from the capacity results on a few occasions primarily due to the signal network optimization efforts along the S.R. 9 study corridor mostly occurring at four-legged intersections.

As shown in ***Table 4.3***, the 2012 LOS and vehicle delay capacity results did improve at the study intersections along the S.R. 9 study corridor under the proposed traffic conditions. All of the LOS E and LOS F results obtained for the existing traffic conditions were improved to either LOS C or LOS D. For the existing conditions during the AM peak period, the total vehicle delay at the ten common signalized intersections equaled 362.9 seconds per vehicle. During the same time period for the proposed conditions, the total vehicle delay was reduced to 246.2 seconds per vehicle, or a 47% improvement. For the existing conditions during the PM peak period, the total vehicle delay at the ten common signalized intersections equaled 389.0 seconds per vehicle. During the same time period for the proposed conditions, the total vehicle delay was reduced to 236.6 seconds per vehicle, or a 64% improvement.

As shown in ***Table 4.4***, the 2032 LOS and vehicle delay capacity results did improve at the study intersections along the S.R. 9 study corridor under the proposed traffic conditions. As with the 2012 capacity results, the LOS E and LOS F results obtained in the existing traffic conditions were improved to a LOS D or better, with the exception of three intersections. These intersections are S.R. 9 at Upper Hembree Road/Northmeadow Parkway during the PM peak period, S.R. 9 at Old Milton Parkway during both peak periods, and S.R. 9 at Milton Avenue/Academy Street during both peak periods. For the existing conditions during the AM peak period, the total vehicle delay at the ten common signalized intersections equaled 716.5 seconds per vehicle. During the same time period for the proposed conditions, the total vehicle delay was reduced to 357.6 seconds per vehicle, or a 100% improvement. For the existing conditions during the PM peak period, the total vehicle delay at the ten common signalized intersections equaled 896.9 seconds per vehicle. During the same time period for the proposed conditions, the total vehicle delay was reduced to 354.5 seconds per vehicle, or a 153% improvement.

Overall, the LOS and vehicle delay capacity results show improvements for both the 2012 and 2032 horizon years. In particular, vehicle delays will be improved significantly along the S.R. 9 study corridor, especially for the 2032 horizon year.

Table 4.3 – S.R. 9 2012 Traffic Conditions Capacity Analysis Comparison

S.R. 9 Intersection at:	AM Peak Period		PM Peak Period	
	Existing	Proposed	Existing	Proposed
Upper Hembree Road/Northmeadow Parkway	**C (23.5)**	**B (19.8)**	**D (35.4)**	**D (35.9)**
Haney Drive	B / F (13.6/111.4)	-	C / F (15.1/106.5)	-
Cambridge Square	B / D (12.6/27.3)	B / D (12.2/26.7)	B / B (13.8/14.6)	B / C (13.0/15.4)
Wills Road	**D (37.3)**	**C (30.7)**	**C (34.6)**	**C (26.3)**
Northfall Lane	C / F (16.0/119.3)	-	B / F (13.8/433.8)	-
Brady Place	A / F (0.0/100.3)	-	A / F (0.0/177.1)	-
Existing: Roswell Street/Maxwell Road Proposed: Maxwell Road	**C (23.4)**	**A (6.6)**	**C (28.8)**	**A (9.8)**
Existing: Devore Road **Proposed: Roswell Street/Devore Road**	A / B (1.0/12.7)	**B (14.9)**	A / C (1.0/23.3)	**B (10.1)**
Janis Lane	B / F (12.1/72.2)	-	C / E (16.7/47.3)	-
Old Milton Parkway	**F (91.4)**	**D (47.8)**	**D (43.1)**	**D (43.0)**
Marietta Street	A / F (0.6/94.1)	-	A / F (0.7/116.8)	-
Norcross Street	B / B (10.3/11.5)	-	B / C (12.9/17.3)	-
Milton Avenue/Academy Street	**E (56.8)**	**D (45.5)**	**E (58.5)**	**C (33.4)**
Church Street	A / B (0.1/13.3)	-	A / B (0.8/14.6)	-
Cumming Street	**D (38.1)**	**B (12.9)**	**C (18.4)**	**C (21.6)**
Mayfield Road	**C (22.6)**	**B (19.2)**	**C (25.9)**	**B (11.6)**
Pine Grove Drive	B / F (10.9/202.6)	-	F / F (145.0/>900	-
Canton Street	B / F (12.2/212.4)	B / F (12.5/100.8)	B / F (14.5/605.5)	B / F (15.0/884.3)
Winthrope Park Drive	A / E (0.1/44.8)	-	A / F (2.2/88.0)	-
Vaughn Drive	A / F (0.7/222.2)	B / F (12.0/79.3)	A / F (5.1/377.5)	B / F (12.6/120.2)
Winthrope Chase Drive	A / F (0.5/121.2)	-	A / F (2.1/121.8)	-
Cogburn Road/Henderson Village Parkway	**B (18.7)**	**B (14.7)**	**C (27.1)**	**B (10.0)**
Lowe's Driveway/Shopping Center Entrance	**B (12.0)**	**A (6.2)**	**D (36.4)**	**A (7.6)**
Windward Parkway	**D (39.1)**	**D (42.8)**	**F (80.8)**	**D (37.4)**

Notes:
1. The signalized intersection capacity results are shown in bold text and shade.
2. The unsignalized intersection capacity results show two values. The first value is the major street left turn approach (worst case) and the second value is the minor street approach (worst case).
3. The estimated vehicle delay (seconds per vehicle) is shown in parentheses.

Table 4.4 – S.R. 9 2032 Traffic Conditions Capacity Analysis Comparison

S.R. 9 Intersection at:	AM Peak Period		PM Peak Period	
	Existing	Proposed	Existing	Proposed
Upper Hembree Road/Northmeadow Parkway	**C (30.0)**	**C (24.0)**	**E (65.6)**	**E (59.7)**
Haney Drive	C / F (16.8/357.3)	-	C / F (19.2/>900)	-
Cambridge Square	C / E (15.6/41.5)	B / E (15.0/43.7)	C / C (19.8/22.3)	C / C (17.5/16.1)
Wills Road	**E (68.8)**	**D (53.8)**	**E (65.3)**	**C (33.4)**
Northfall Lane	C / F (21.3/397.5)	-	C / F (17.4/>900)	-
Brady Place	A / F (0.1/358.4)	-	A / F (0.0/780.8)	-
Existing: Roswell Street/Maxwell Road **Proposed: Maxwell Road**	**D (51.2)**	**B (12.2)**	**E (59.7)**	**B (16.0)**
Existing: Devore Road **Proposed: Roswell Street/Devore Road**	A / B (2.3/11.7)	**B (13.9)**	A / C (4.6/24.1)	**B (13.1)**
Janis Lane	B / F (14.3/168.9)	-	C / F (22.1/94.6)	-
Old Milton Parkway	**F (163.8)**	**F (89.6)**	**E (79.2)**	**E (62.1)**
Marietta Street	A / F (1.2/596.5)	-	A / F (1.4/>900)	-
Norcross Street	B / B (12.5/12.7)	-	C / C (16.0/24.7)	-
Milton Avenue/Academy Street	**F (101.3)**	**E (76.1)**	**F (118.3)**	**E (57.1)**
Church Street	A / C (0.3/16.7)	-	A / C (1.7/19.3)	-
Cumming Street	**F (139.8)**	**B (15.8)**	**E (78.6)**	**D (42.3)**
Mayfield Road	**D (41.9)**	**C (25.7)**	**E (63.1)**	**B (18.6)**
Pine Grove Drive	B / F (13.3/>900)	-	F / F (>900/>900)	-
Canton Street	B / F (14.6/896.7)	C / F (15.4/468.6)	C / F (21.4/>900)	C / F (22.9/>900)
Winthrope Park Drive	A / F (0.1/110.8)	-	A / F (5.0/329.4)	-
Vaughn Drive	A / F (1.7/>900)	B / F (14.2/385.1)	A / F (9.4/>900)	C / F (15.3/574.2)
Winthrope Chase Drive	A / F (2.3/558.1)	-	C / F (15.6/574.1)	-
Cogburn Road/Henderson Village Parkway	**D (49.0)**	**B (14.1)**	**E (79.3)**	**B (12.2)**
Lowe's Driveway/Shopping Center Entrance	**B (10.4)**	**A (5.4)**	**F (149.7)**	**A (9.6)**
Windward Parkway	**E (60.3)**	**D (40.9)**	**F (138.1)**	**D (43.5)**

Notes:
1. The signalized intersection capacity results are shown in bold text and shade.
2. The unsignalized intersection capacity results show two values. The first value is the major street left turn approach (worst case) and the second value is the minor street approach (worst case).
3. The estimated vehicle delay (seconds per vehicle) is shown in parentheses.

5.0 CRASH DATA ANALYSIS RESULTS

The crash data used in this analysis was provided by the Georgia Department of Transportation (GDOT) and included 1,090 crash reports from January 2005 to December 2007. The following items were extracted from the crash data:

- Type
- Severity
- Light Condition
- Road Surface
- Day of Week
- Time of Day
- Crash Rate

A summary of these items by year is summarized in ***Table 5.1*** and plots of these item's overall totals are shown graphically from ***Figure 5.1*** to ***Figure 5.6***.

The primary two accident types along the S.R. 9 corridor are Read End and Angle which accounted for 84% of the total accidents. The high number of these types of accidents would be expected because of the numerous intersections that exist along the study corridor. In regards to severity, a total of 250 crashes (23%) involved injuries and none involved a fatality. The overall S.R. 9 corridor crash rate totaled 9.57 crashes per million vehicle miles (MVM) which ranged from a low of 8.85 per MVM in 2007 to a high of 10.17 per MVM in 2006.

The majority of the crashes occurred during daylight conditions (84%) and on dry pavement surface conditions (88%). A total of 85% of the crashes occurred on a weekday, ranging from a low of 16% occurring on a Monday to a high of 17% occurring on a Wednesday. A total of 91% of the crashes occurred between 6:00 AM and 9:00 PM with the highest period for crashes occurring between 12:00 Noon and 6:00 PM (49%). These crash factors (i.e. Daylight, Dry Pavement, Weekday, and Afternoon) would be typically experienced along a study corridor consisting of daily commuter working traffic.

A breakdown of the S.R. 9 corridor by study intersection and spot location collision diagrams are contained in ***Appendix D***. Based on this corridor segment breakdown, the highest concentrated segment of overall S.R. 9 crashes occurred between the intersections of Maddox Street/Old Milton Parkway and Milton Avenue/Academy Street (28%). These two intersections are 0.34 miles apart, thus producing an overall study segment crash rate of 28.12 per MVM, which is almost three times the overall study corridor crash rate of 9.57 per MVM.

The proposed traffic conditions consist of the improvements identified in this study such as raised islands in the median that eliminate or restrict turning movements at certain intersections. As a result of these improvements, the overall corridor crash rate is expected to be reduced because of the high number of existing rear end and angle crashes.

Table 5.1 - S.R. 9 Crash History Summary (2005 to 2007)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA

DESCRIPTION	YEAR			TOTAL	PCT. OF TOTAL
	2005	2006	2007		
TYPE					
Rear End	211	212	188	611	56.1%
Angle	94	115	94	303	27.8%
Sideswipe - Same Direction	38	40	24	102	9.4%
Sideswipe - Opposite Direction	5	5	12	22	2.0%
Head On	10	8	8	26	2.4%
Not a Collision with a Motor Vehicle	10	6	10	26	2.4%
SEVERITY					
Property Damage Only Crashes	282	320	238	840	77.1%
Injury Crashes (No Fatalities)	86	66	98	250	22.9%
Fatality Crashes	0	0	0	0	0.0%
Total Number of Injuries	120	87	138	345	
Total Number of Fatalities	0	0	0	0	
LIGHT CONDITIONS					
Daylight	307	330	281	918	84.2%
Dawn / Dusk	11	10	17	38	3.5%
Dark - Lighted	41	37	33	111	10.2%
Dark - Not Lighted	9	9	5	23	2.1%
ROAD SURFACE					
Dry	308	332	315	955	87.6%
Wet	60	54	21	135	12.4%
DAY OF WEEK					
Sunday	19	15	14	48	4.4%
Monday	69	58	51	178	16.3%
Tuesday	61	62	58	181	16.6%
Wednesday	64	64	64	192	17.6%
Thursday	57	68	64	189	17.3%
Friday	66	72	49	187	17.2%
Saturday	32	47	36	115	10.6%
TIME OF DAY					
12:00 Midnight to 3:00 AM	22	5	5	32	2.9%
3:00 AM to 6:00 AM	21	1	1	23	2.1%
6:00 AM to 9:00 AM	58	54	40	152	13.9%
9:00 AM to 12:00 Noon	59	61	48	168	15.4%
12:00 Noon to 3:00 PM	81	95	92	268	24.6%
3:00 PM to 6:00 PM	70	101	96	267	24.5%
6:00 PM to 9:00 PM	36	57	39	132	12.1%
9:00 PM to 12:00 Midnight	21	12	15	48	4.4%
OVERALL CRASH SUMMARY					
Total Number of Crashes	368	386	336	1,090	
Percentage of Total	33.8%	35.4%	30.8%	100.0%	
S.R. 9 Corridor Crash Rate (per million vehicle miles)	9.696	10.171	8.853	9.574	

Figure 5.1 - S.R. 9 Crash History by Type (2005 to 2007)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA

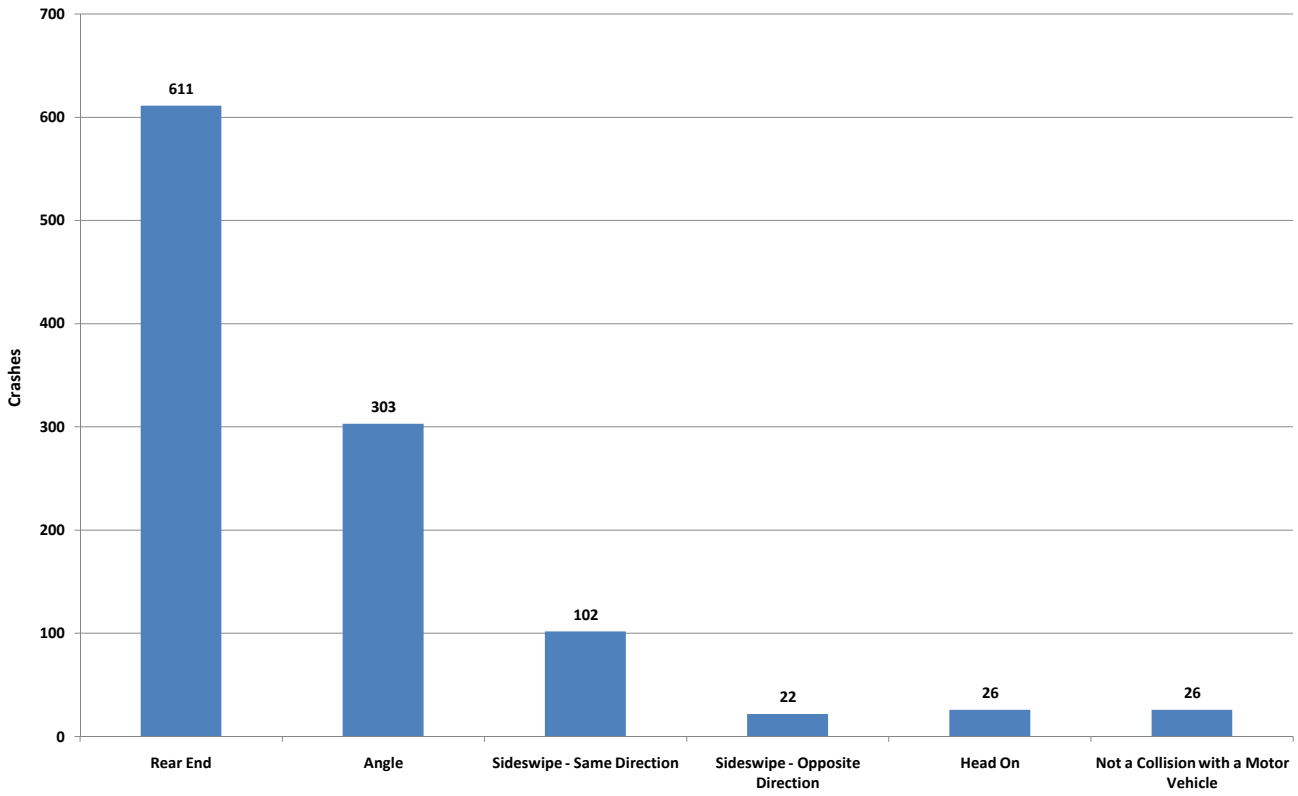
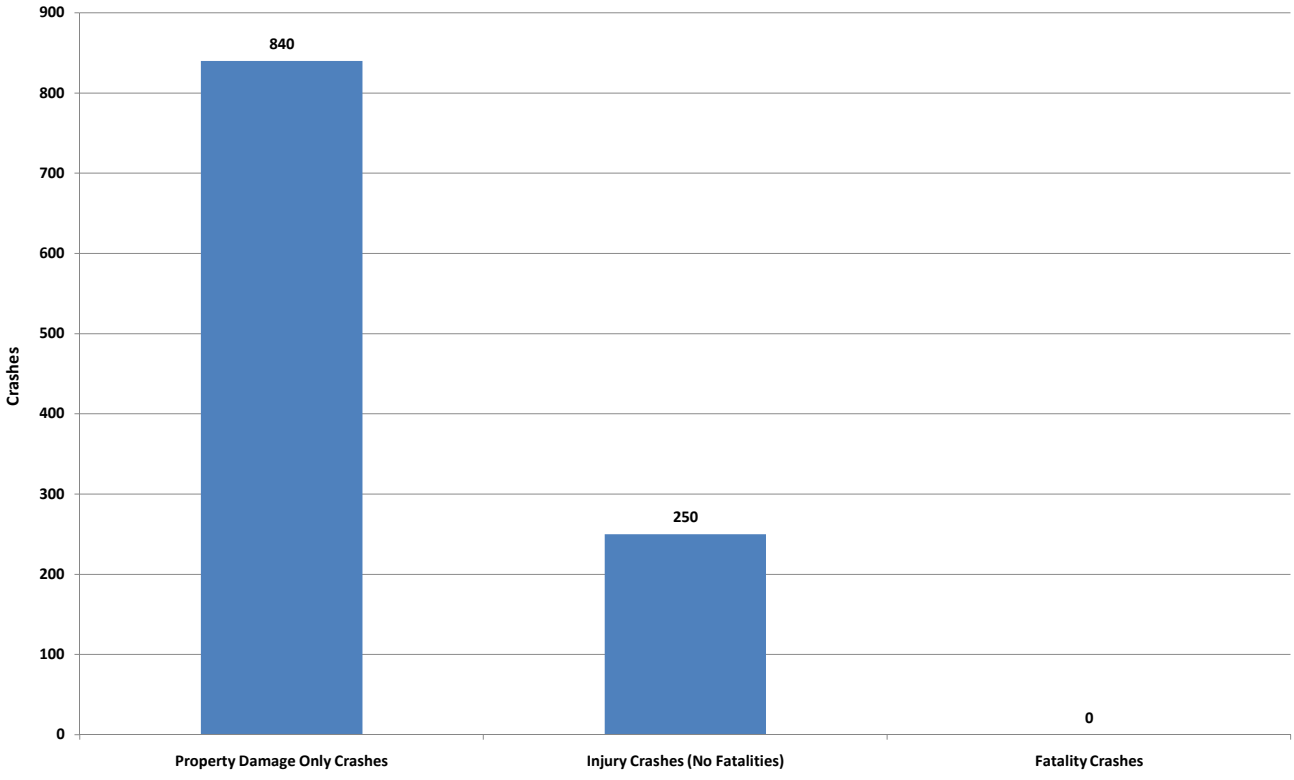


Figure 5.2 - S.R. 9 Crash History by Severity (2005 to 2007)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA



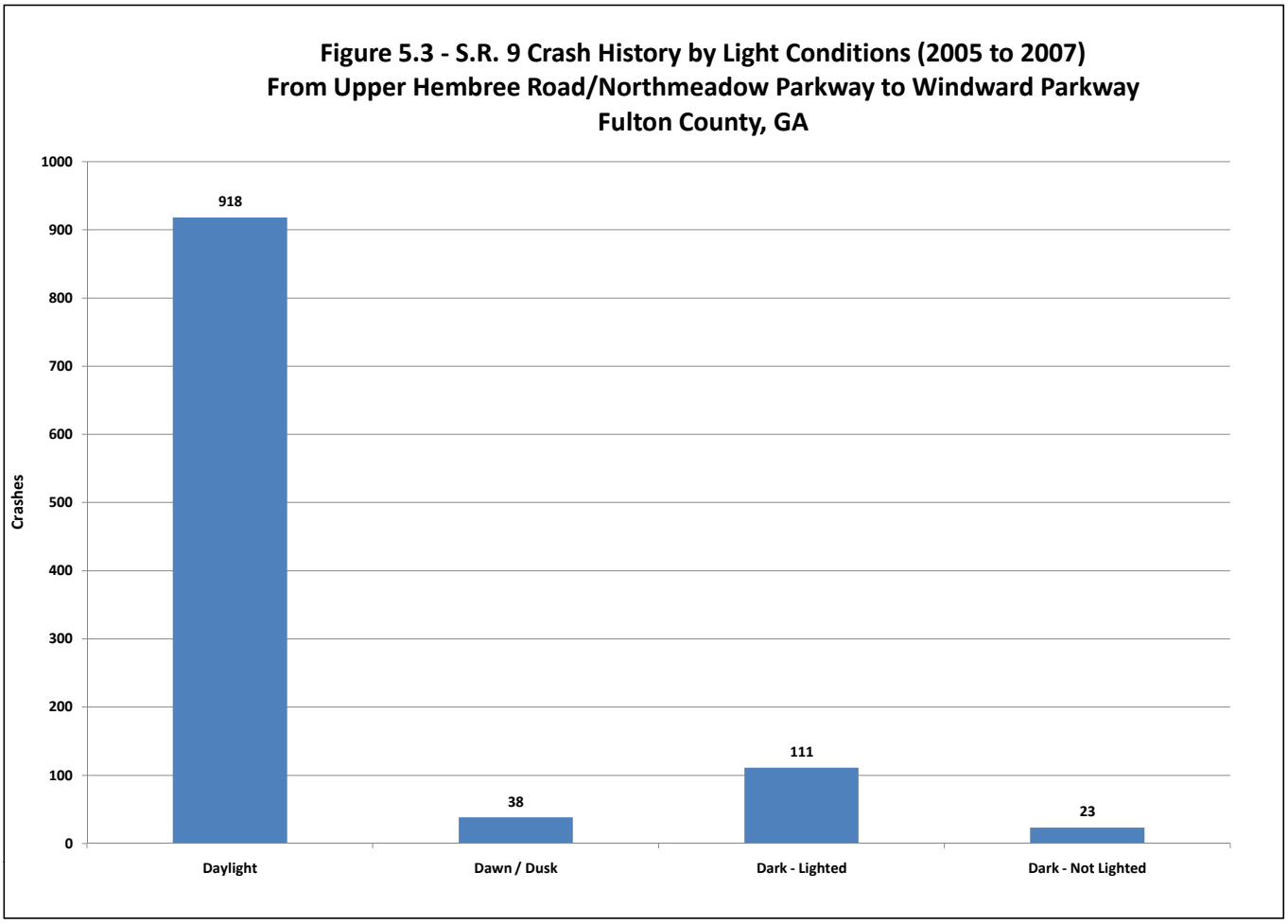


Figure 5.3 - S.R. 9 Crash History by Light Conditions (2005 to 2007)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA
Crashes
1000
900
800
700
600
500
400
300
200
100
0
918
38
111
23
Daylight
Dawn / Dusk
Dark - Lighted
Dark - Not Lighted

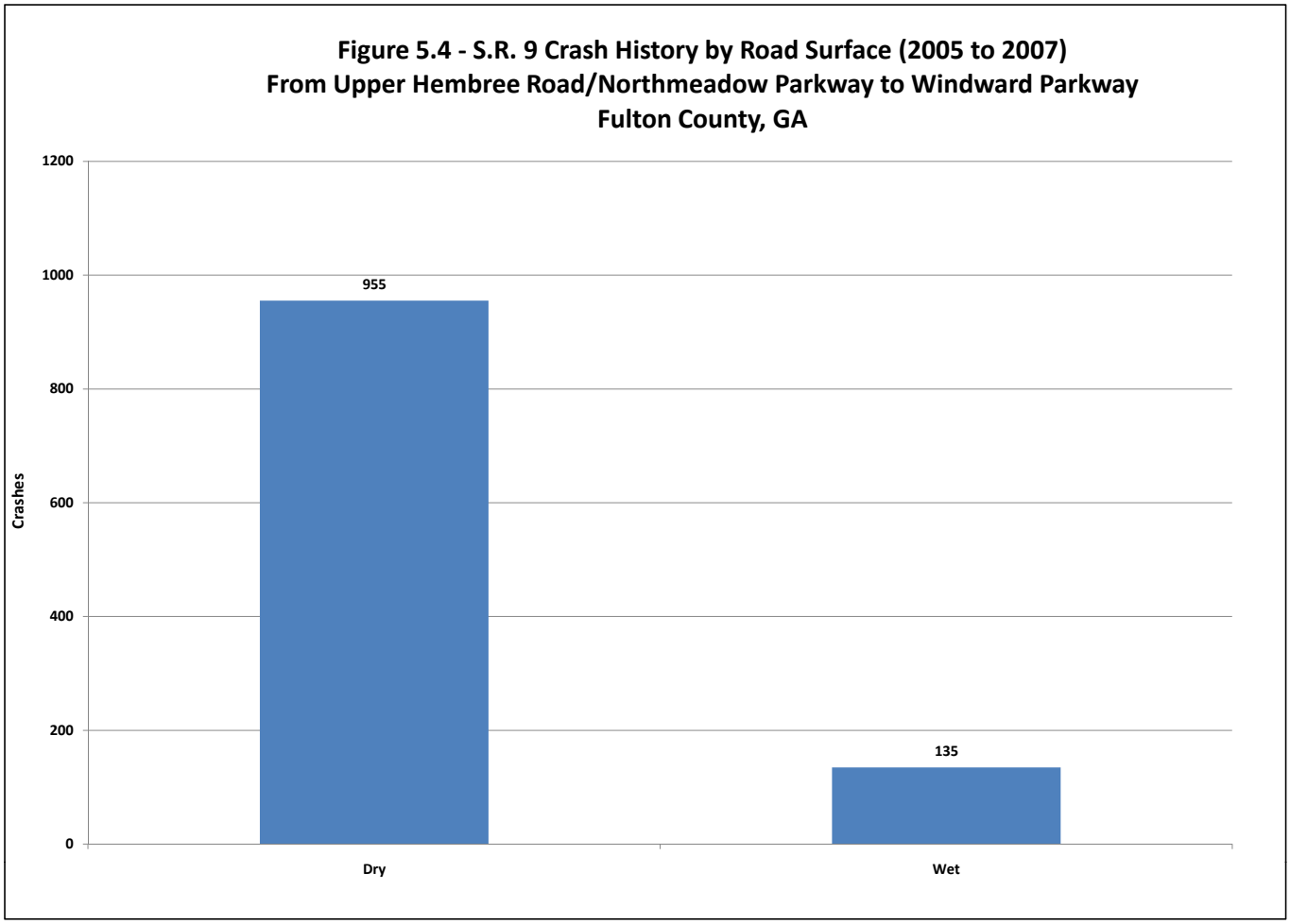


Figure 5.4 - S.R. 9 Crash History by Road Surface (2005 to 2007)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA
Crashes
1200
1000
800
600
400
200
0
955
135
Dry
Wet

Figure 5.5 - S.R. 9 Crash History by Day of Week (2005 to 2007)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA

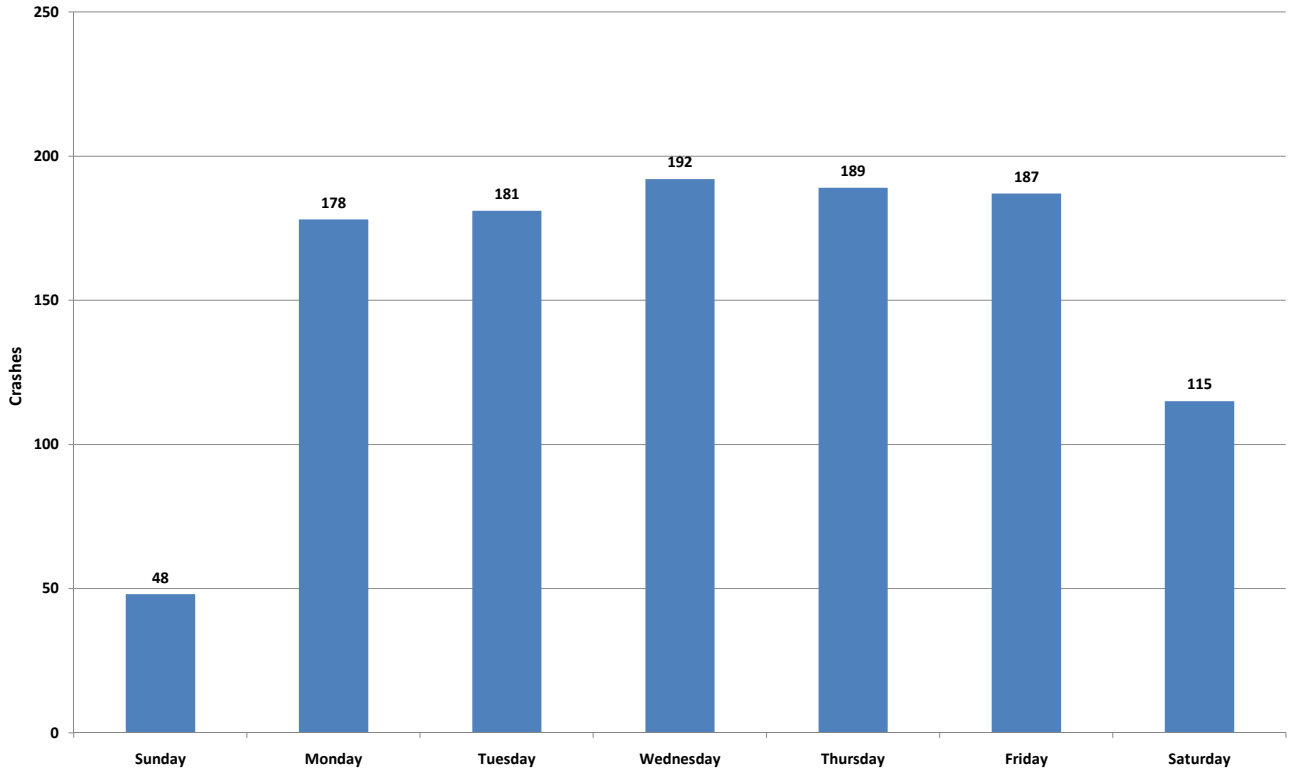
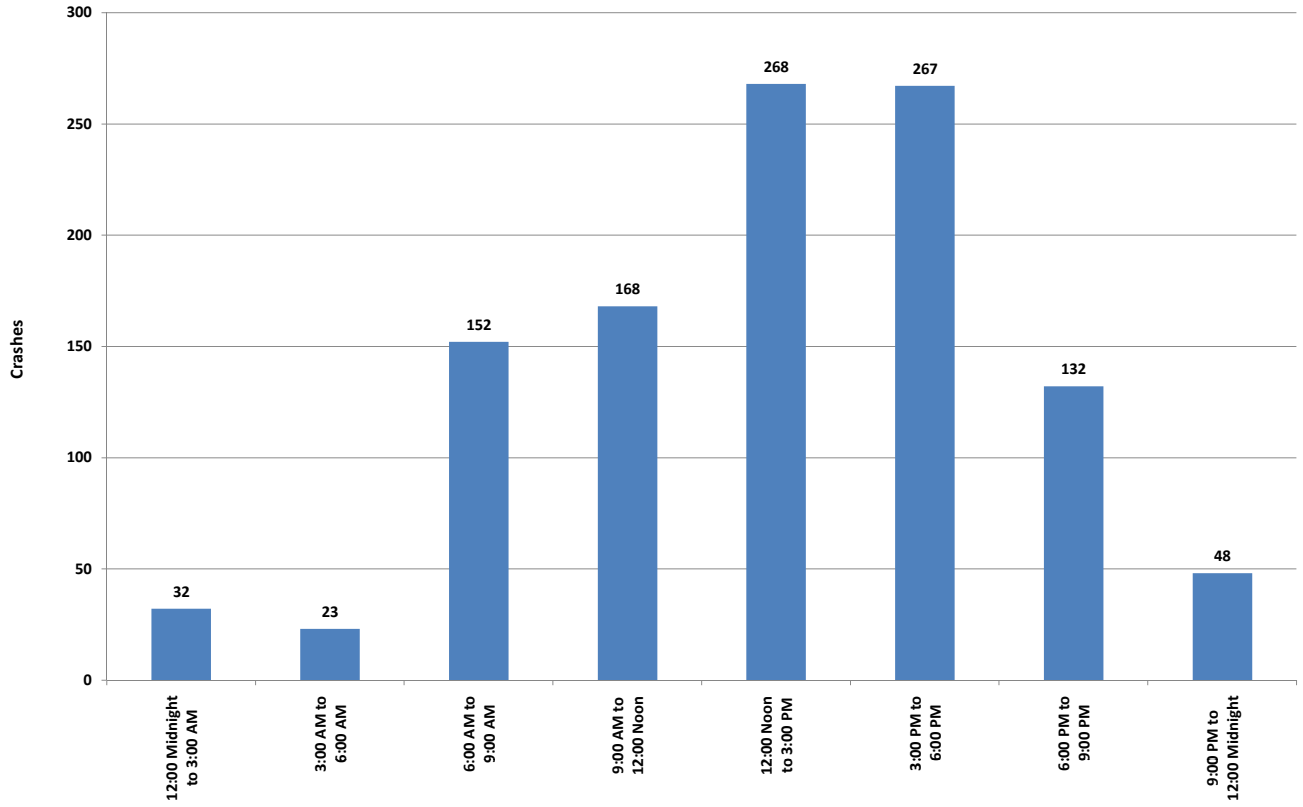


Figure 5.6 - S.R. 9 Crash History by Time of Day (2005 to 2007)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA



6.0 RECOMMENDATIONS

This study was conducted to evaluate the existing and proposed operation of S.R. 9 from Upper Hembree Road/Northmeadow Parkway to Windward Parkway. The total length of the study corridor was 3.64 miles. The analysis consisted of evaluating and comparing the existing traffic conditions and the proposed traffic conditions for the base year 2008 and two future horizon years (2012 and 2032). The proposed traffic conditions are described in ***Section 4.2*** and the proposed laneage at each of the study intersections is shown in ***Figure 4.1*** and ***Figure 4.2***.

Without any operational improvements implemented within the S.R. 9 corridor, the analyses revealed that one signalized study intersection will be deficient by 2012 and five other signalized study intersections will be deficient by 2032. The proposed corridor improvements will improve the overall safety and operation of the study corridor with the exception of one signalized intersection (S.R. 9 at Maddox Street/Old Milton Parkway). The overall LOS at this intersection was LOS F and the most important way to relieve the LOS F at this intersection is to add thru lane capacity for either the S.R. 9 northbound/southbound approaches or the Old Milton Parkway westbound approach. However, existing physical constraints may prevent these improvements from consideration.

This study recommends implementing the proposed corridor improvements as described in ***Section 4.2***.

APPENDIX A

S.R. 9

Traffic Counts

Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08501-01
Site Code : 00850101
Start Date : 1/17/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Upper Hembree Rd Eastbound					North Meadow Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	15	150	2	0	167	6	168	25	0	199	61	46	17	0	124	0	4	1	0	5	495
07:15 AM	11	207	3	0	221	7	231	33	1	272	79	28	30	0	137	1	4	1	0	6	636
07:30 AM	13	214	2	0	229	8	248	38	3	297	80	42	20	0	142	0	11	2	0	13	681
07:45 AM	31	240	5	0	276	4	236	43	0	283	100	55	17	0	172	1	6	5	0	12	743
Total	70	811	12	0	893	25	883	139	4	1051	320	171	84	0	575	2	25	9	0	36	2555
08:00 AM	35	247	7	0	289	8	280	36	0	324	89	56	32	0	177	7	9	7	0	23	813
08:15 AM	16	274	4	0	294	13	275	50	1	339	93	35	21	0	149	3	14	1	0	18	800
08:30 AM	17	200	5	0	222	10	210	36	1	257	70	39	18	0	127	4	4	1	0	9	615
08:45 AM	48	247	8	0	303	5	237	30	1	273	49	24	30	0	103	9	15	2	0	26	705
Total	116	968	24	0	1108	36	1002	152	3	1193	301	154	101	0	556	23	42	11	0	76	2933
Break																					
11:00 AM	24	151	3	0	178	2	151	34	0	187	42	11	15	0	68	4	10	4	0	18	451
11:15 AM	25	152	1	0	178	8	143	38	4	193	43	10	18	0	71	10	9	1	0	20	462
11:30 AM	28	157	4	0	189	4	171	42	0	217	46	14	16	0	76	12	13	3	0	28	510
11:45 AM	28	172	2	0	202	5	177	44	0	226	63	18	28	0	109	5	12	3	0	20	557
Total	105	632	10	0	747	19	642	158	4	823	194	53	77	0	324	31	44	11	0	86	1980
12:00 PM	29	191	7	0	227	4	190	28	0	222	52	24	21	0	97	10	19	1	0	30	576
12:15 PM	20	207	2	0	229	8	233	39	1	281	67	12	23	0	102	17	20	11	0	48	660
12:30 PM	37	204	7	0	248	4	227	45	0	276	50	19	23	0	92	9	24	5	0	38	654
12:45 PM	29	213	5	0	247	6	211	41	0	258	54	23	28	0	105	11	31	5	0	47	657
Total	115	815	21	0	951	22	861	153	1	1037	223	78	95	0	396	47	94	22	0	163	2547
Break																					
04:00 PM	39	198	1	0	238	13	187	37	1	238	46	5	26	1	78	8	27	8	0	43	597
04:15 PM	39	198	0	0	237	7	206	40	0	253	44	44	20	0	108	8	21	5	0	34	632
04:30 PM	22	203	0	0	225	0	211	50	0	261	50	38	6	0	94	9	37	9	0	55	635
04:45 PM	40	260	17	0	317	0	251	54	0	305	59	25	14	0	98	10	42	7	0	59	779
Total	140	859	18	0	1017	20	855	181	1	1057	199	112	66	1	378	35	127	29	0	191	2643
05:00 PM	44	322	6	0	372	2	292	68	1	363	59	19	28	0	106	7	80	16	0	103	944
05:15 PM	48	258	3	0	309	2	283	87	0	372	46	24	29	0	99	18	52	4	0	74	854
05:30 PM	35	247	0	0	282	1	260	65	0	326	53	34	21	0	108	12	52	5	0	69	785
05:45 PM	40	227	0	0	267	0	223	69	1	293	37	16	29	0	82	12	37	4	0	53	695
Total	167	1054	9	0	1230	5	1058	289	2	1354	195	93	107	0	395	49	221	29	0	299	3278
Grand Total	713	5139	94	0	5946	127	5301	1072	15	6515	1432	661	530	1	2624	187	553	111	0	851	15936
Apprch %	12	86.4	1.6	0		1.9	81.4	16.5	0.2		54.6	25.2	20.2	0		22	65	13	0		
Total %	4.5	32.2	0.6	0	37.3	0.8	33.3	6.7	0.1	40.9	9	4.1	3.3	0	16.5	1.2	3.5	0.7	0	5.3	
Cars	689	4953	92	0	5734	125	5204	1056	14	6399	1398	658	517	1	2574	183	549	111	0	843	15550
% Cars	96.6	96.4	97.9	0	96.4	98.4	98.2	98.5	93.3	98.2	97.6	99.5	97.5	100	98.1	97.9	99.3	100	0	99.1	97.6
Trucks & Buses	24	186	2	0	212	2	97	16	1	116	34	3	13	0	50	4	4	0	0	8	386
% Trucks & Buses	3.4	3.6	2.1	0	3.6	1.6	1.8	1.5	6.7	1.8	2.4	0.5	2.5	0	1.9	2.1	0.7	0	0	0.9	2.4

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

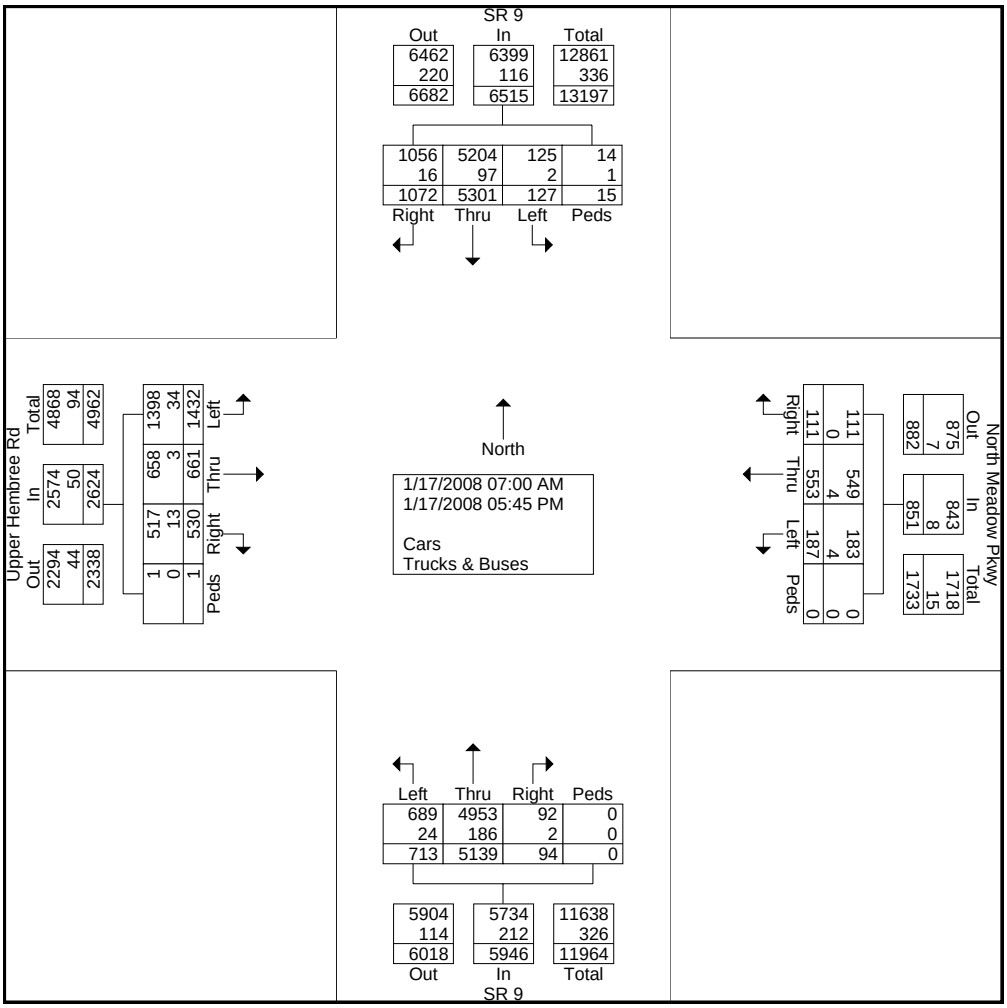
Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08501-01
Site Code : 00850101
Start Date : 1/17/2008
Page No : 2



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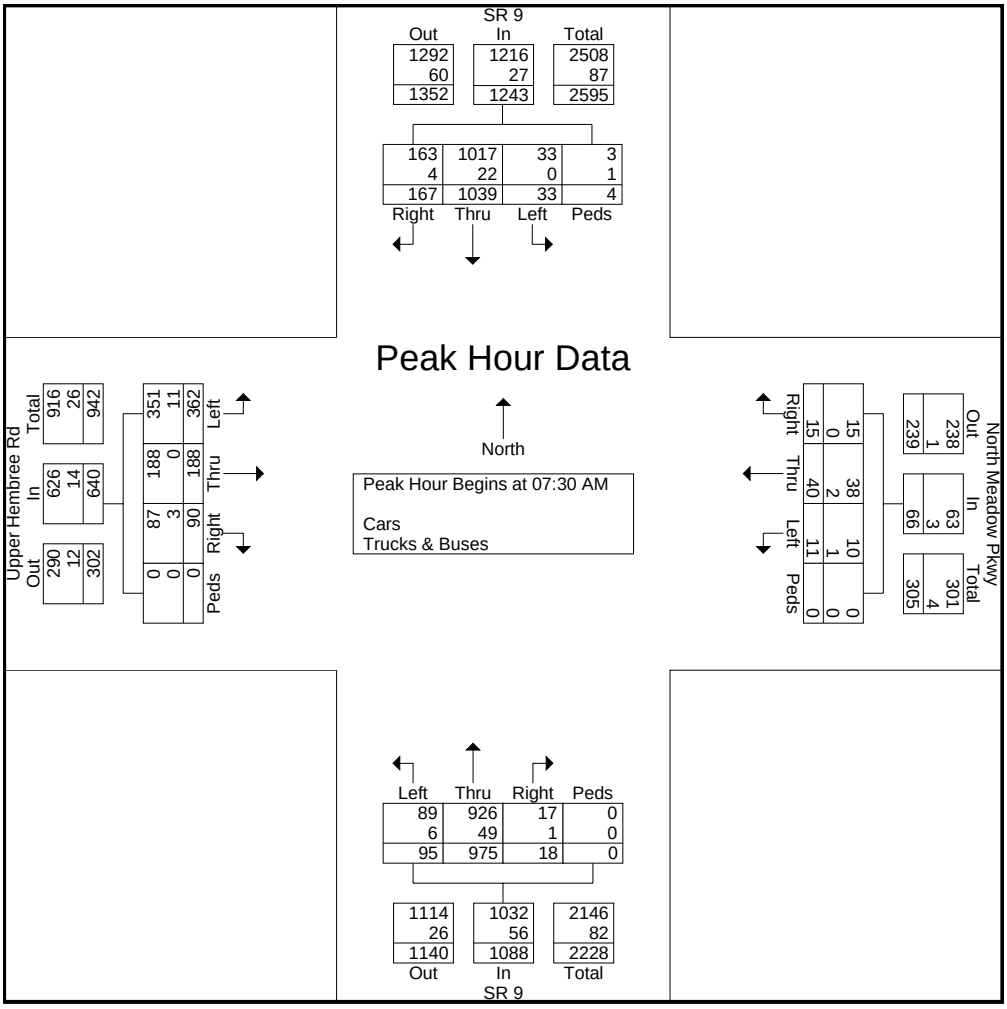
Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08501-01
Site Code : 00850101
Start Date : 1/17/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Upper Hembree Rd Eastbound					North Meadow Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	13	214	2	0	229	8	248	38	3	297	80	42	20	0	142	0	11	2	0	13	681
07:45 AM	31	240	5	0	276	4	236	43	0	283	100	55	17	0	172	1	6	5	0	12	743
08:00 AM	35	247	7	0	289	8	280	36	0	324	89	56	32	0	177	7	9	7	0	23	813
08:15 AM	16	274	4	0	294	13	275	50	1	339	93	35	21	0	149	3	14	1	0	18	800
Total Volume	95	975	18	0	1088	33	1039	167	4	1243	362	188	90	0	640	11	40	15	0	66	3037
% App. Total	8.7	89.6	1.7	0		2.7	83.6	13.4	0.3		56.6	29.4	14.1	0		16.7	60.6	22.7	0		
PHF	.679	.890	.643	.000	.925	.635	.928	.835	.333	.917	.905	.839	.703	.000	.904	.393	.714	.536	.000	.717	.934
Cars	89	926	17	0	1032	33	1017														
% Cars	93.7	95.0	94.4	0	94.9	100	97.9	97.6	75.0	97.8	97.0	100	96.7	0	97.8	90.9	95.0	100	0	95.5	96.7
Trucks & Buses	6	49	1	0	56	0	22	4	1	27	11	0	3	0	14	1	2	0	0	3	100
% Trucks & Buses	6.3	5.0	5.6	0	5.1	0	2.1	2.4	25.0	2.2	3.0	0	3.3	0	2.2	9.1	5.0	0	0	4.5	3.3



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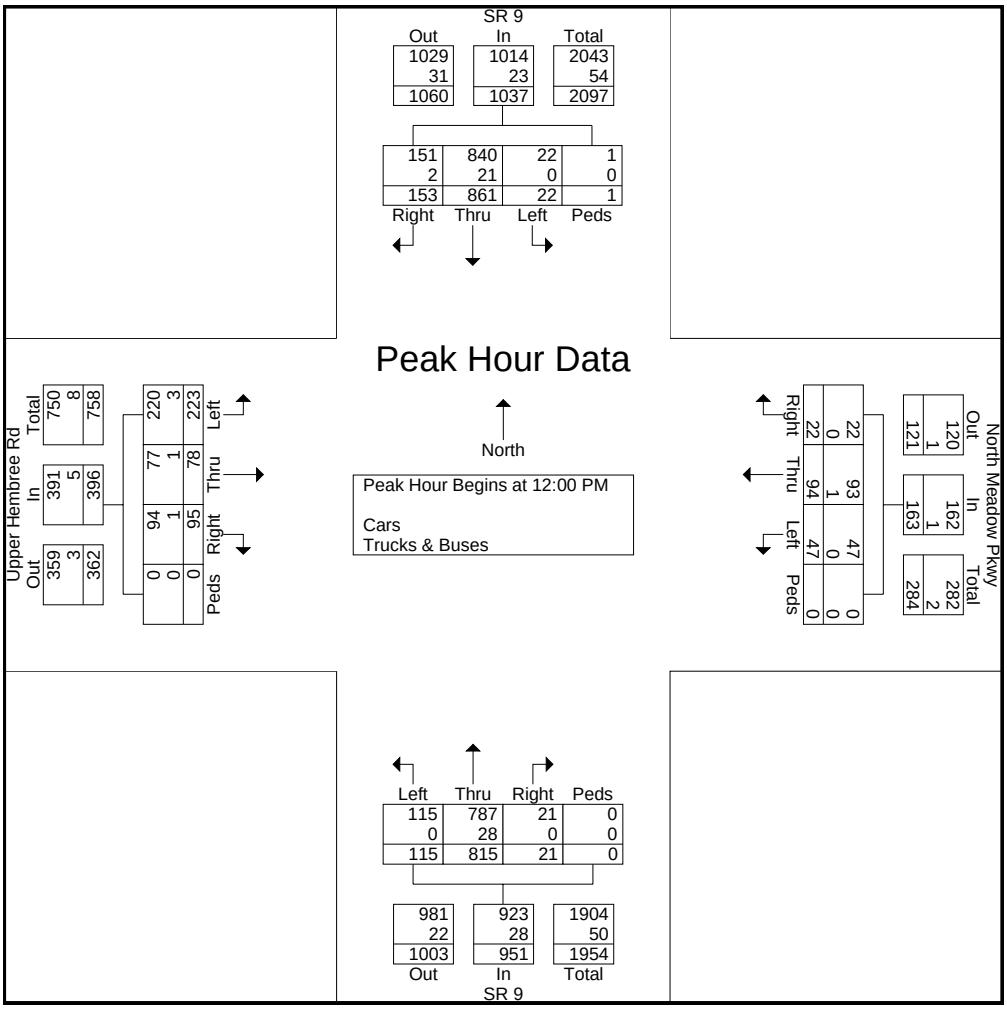
Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08501-01
Site Code : 00850101
Start Date : 1/17/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Upper Hembree Rd Eastbound					North Meadow Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	29	191	7	0	227	4	190	28	0	222	52	24	21	0	97	10	19	1	0	30	576
12:15 PM	20	207	2	0	229	8	233	39	1	281	67	12	23	0	102	17	20	11	0	48	660
12:30 PM	37	204	7	0	248	4	227	45	0	276	50	19	23	0	92	9	24	5	0	38	654
12:45 PM	29	213	5	0	247	6	211	41	0	258	54	23	28	0	105	11	31	5	0	47	657
Total Volume	115	815	21	0	951	22	861	153	1	1037	223	78	95	0	396	47	94	22	0	163	2547
% App. Total	12.1	85.7	2.2	0		2.1	83	14.8	0.1		56.3	19.7	24	0		28.8	57.7	13.5	0		
PHF	.777	.957	.750	.000	.959	.688	.924	.850	.250	.923	.832	.813	.848	.000	.943	.691	.758	.500	.000	.849	.965
Cars	115	787	21	0	923	22	840	151	1	1014	220	77	94	0	391	47	93	22	0	162	2490
% Cars	100	96.6	100	0	97.1	100	97.6	98.7	100	97.8	98.7	98.7	98.9	0	98.7	100	98.9	100	0	99.4	97.8
Trucks & Buses																					
% Trucks & Buses	0	3.4	0	0	2.9	0	2.4	1.3	0	2.2	1.3	1.3	1.1	0	1.3	0	1.1	0	0	0.6	2.2



Traffic Data Collection, Inc.

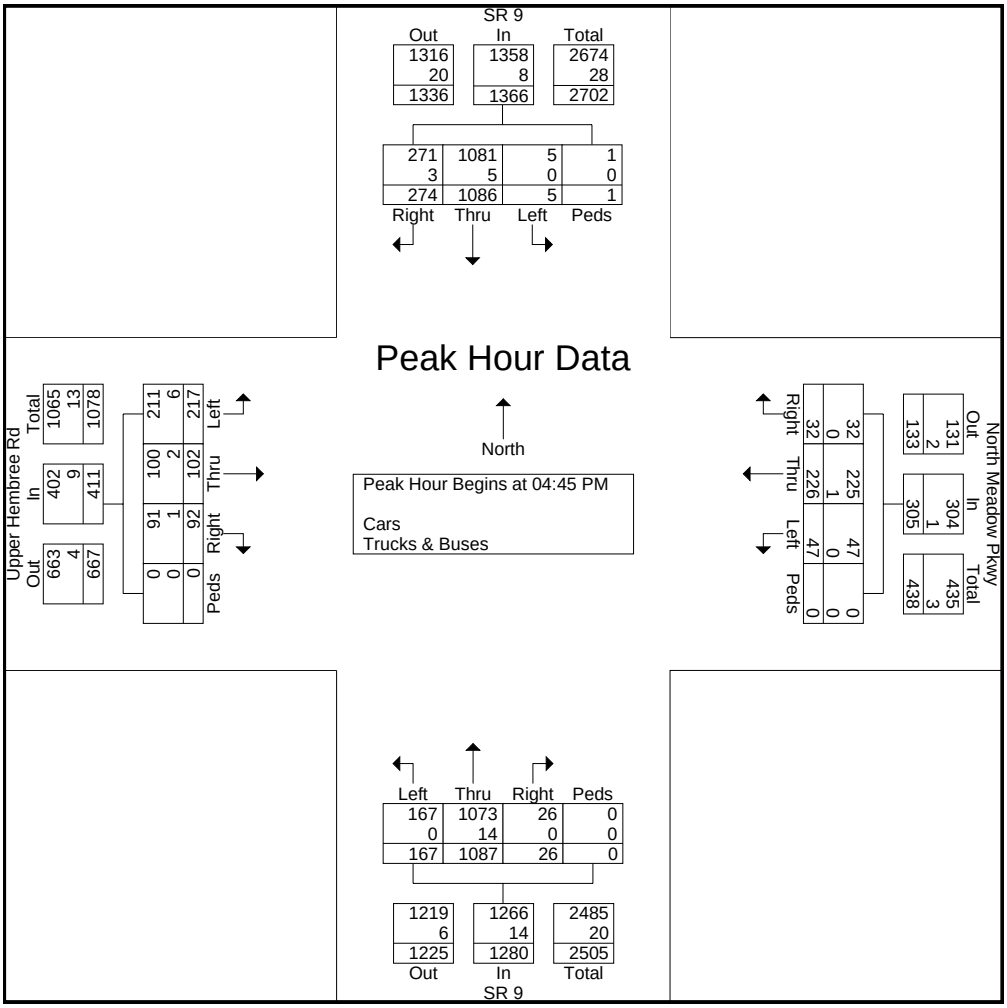
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08501-01
Site Code : 00850101
Start Date : 1/17/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Upper Hembree Rd Eastbound					North Meadow Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	40	260	17	0	317	0	251	54	0	305	59	25	14	0	98	10	42	7	0	59	779
05:00 PM	44	322	6	0	372	2	292	68	1	363	59	19	28	0	106	7	80	16	0	103	944
05:15 PM	48	258	3	0	309	2	283	87	0	372	46	24	29	0	99	18	52	4	0	74	854
05:30 PM	35	247	0	0	282	1	260	65	0	326	53	34	21	0	108	12	52	5	0	69	785
Total Volume	167	1087	26	0	1280	5	1086	274	1	1366	217	102	92	0	411	47	226	32	0	305	3362
% App. Total	13	84.9	2	0		0.4	79.5	20.1	0.1		52.8	24.8	22.4	0		15.4	74.1	10.5	0		
PHF	.870	.844	.382	.000	.860	.625	.930	.787	.250	.918	.919	.750	.793	.000	.951	.653	.706	.500	.000	.740	.890
Cars	167	1073					1081														
% Cars	100	98.7	100	0	98.9	100	99.5	98.9	100	99.4	97.2	98.0	98.9	0	97.8	100	99.6	100	0	99.7	99.0
Trucks & Buses	0	14	0	0	14	0	5	3	0	8	6	2	1	0	9	0	1	0	0	1	32
% Trucks & Buses	0	1.3	0	0	1.1	0	0.5	1.1	0	0.6	2.8	2.0	1.1	0	2.2	0	0.4	0	0	0.3	1.0



Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-02
Site Code : 00850102
Start Date : 1/22/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Haney Dr Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	232	0	0	232	0	231	1	0	232	0	0	0	0	0	0	0	0	0	0	464
07:15 AM	0	415	0	0	415	0	277	2	1	280	0	0	0	0	0	0	0	0	0	0	695
07:30 AM	0	481	0	0	481	0	373	2	0	375	1	0	0	0	1	0	0	0	0	0	857
07:45 AM	2	547	0	0	549	0	358	6	0	364	0	0	0	0	0	0	0	0	0	0	913
Total	2	1675	0	0	1677	0	1239	11	1	1251	1	0	0	0	1	0	0	0	0	0	2929
08:00 AM	1	543	0	0	544	0	333	3	0	336	0	0	0	0	0	0	0	0	0	0	880
08:15 AM	0	510	0	0	510	0	325	0	0	325	0	0	0	0	0	0	0	0	0	0	835
08:30 AM	0	467	1	0	468	0	298	2	0	300	1	0	0	0	1	0	0	0	0	0	769
08:45 AM	3	430	0	0	433	0	314	4	0	318	1	0	1	0	2	0	0	0	0	0	753
Total	4	1950	1	0	1955	0	1270	9	0	1279	2	0	1	0	3	0	0	0	0	0	3237
Break																					
11:00 AM	1	284	0	0	285	0	213	0	0	213	0	0	0	0	0	0	0	0	0	0	498
11:15 AM	1	326	0	0	327	0	222	3	0	225	0	0	0	0	0	0	0	0	0	0	552
11:30 AM	0	372	0	0	372	0	217	5	0	222	4	0	1	0	5	0	0	0	0	0	599
11:45 AM	4	329	0	0	333	0	233	1	0	234	4	0	3	0	7	0	0	0	0	0	574
Total	6	1311	0	0	1317	0	885	9	0	894	8	0	4	0	12	0	0	0	0	0	2223
12:00 PM	5	366	0	0	371	0	237	4	0	241	2	0	1	0	3	0	0	0	0	0	615
12:15 PM	0	423	0	0	423	0	263	7	0	270	2	0	1	1	4	0	0	0	0	0	697
12:30 PM	2	379	0	0	381	0	272	2	0	274	5	0	5	0	10	0	0	0	0	0	665
12:45 PM	7	393	0	0	400	0	246	4	0	250	1	0	3	0	4	0	0	0	0	0	654
Total	14	1561	0	0	1575	0	1018	17	0	1035	10	0	10	1	21	0	0	0	0	0	2631
Break																					
04:00 PM	1	332	0	0	333	0	252	1	0	253	2	0	3	0	5	0	0	0	0	0	591
04:15 PM	0	409	0	0	409	0	306	1	0	307	1	0	0	0	1	0	0	0	0	0	717
04:30 PM	1	382	0	0	383	0	302	0	0	302	0	0	2	0	2	0	0	0	0	0	687
04:45 PM	0	414	0	0	414	0	307	1	0	308	1	0	2	0	3	0	0	0	0	0	725
Total	2	1537	0	0	1539	0	1167	3	0	1170	4	0	7	0	11	0	0	0	0	0	2720
05:00 PM	1	456	0	0	457	0	323	1	0	324	2	0	0	0	2	0	0	0	0	0	783
05:15 PM	2	389	0	0	391	0	369	2	0	371	0	0	2	0	2	0	0	0	0	0	764
05:30 PM	2	375	0	0	377	0	397	3	0	400	0	0	1	1	2	0	0	0	0	0	779
05:45 PM	1	373	0	0	374	0	308	1	0	309	0	0	0	0	0	0	0	0	0	0	683
Total	6	1593	0	0	1599	0	1397	7	0	1404	2	0	3	1	6	0	0	0	0	0	3009
Grand Total	34	9627	1	0	9662	0	6976	56	1	7033	27	0	25	2	54	0	0	0	0	0	16749
Apprch %	0.4	99.6	0	0		0	99.2	0.8	0		50	0	46.3	3.7		0	0	0	0		
Total %	0.2	57.5	0	0	57.7	0	41.7	0.3	0	42	0.2	0	0.1	0	0.3	0	0	0	0	0	
Cars	33	9525	0	0	9558	0	6916	55	1	6972	27	0	25	2	54	0	0	0	0	0	16584
% Cars	97.1	98.9	0	0	98.9	0	99.1	98.2	100	99.1	100	0	100	100	100	0	0	0	0	0	99
Trucks & Buses	1	102	1	0	104	0	60	1	0	61	0	0	0	0	0	0	0	0	0	0	165
% Trucks & Buses	2.9	1.1	100	0	1.1	0	0.9	1.8	0	0.9	0	0	0	0	0	0	0	0	0	0	1

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

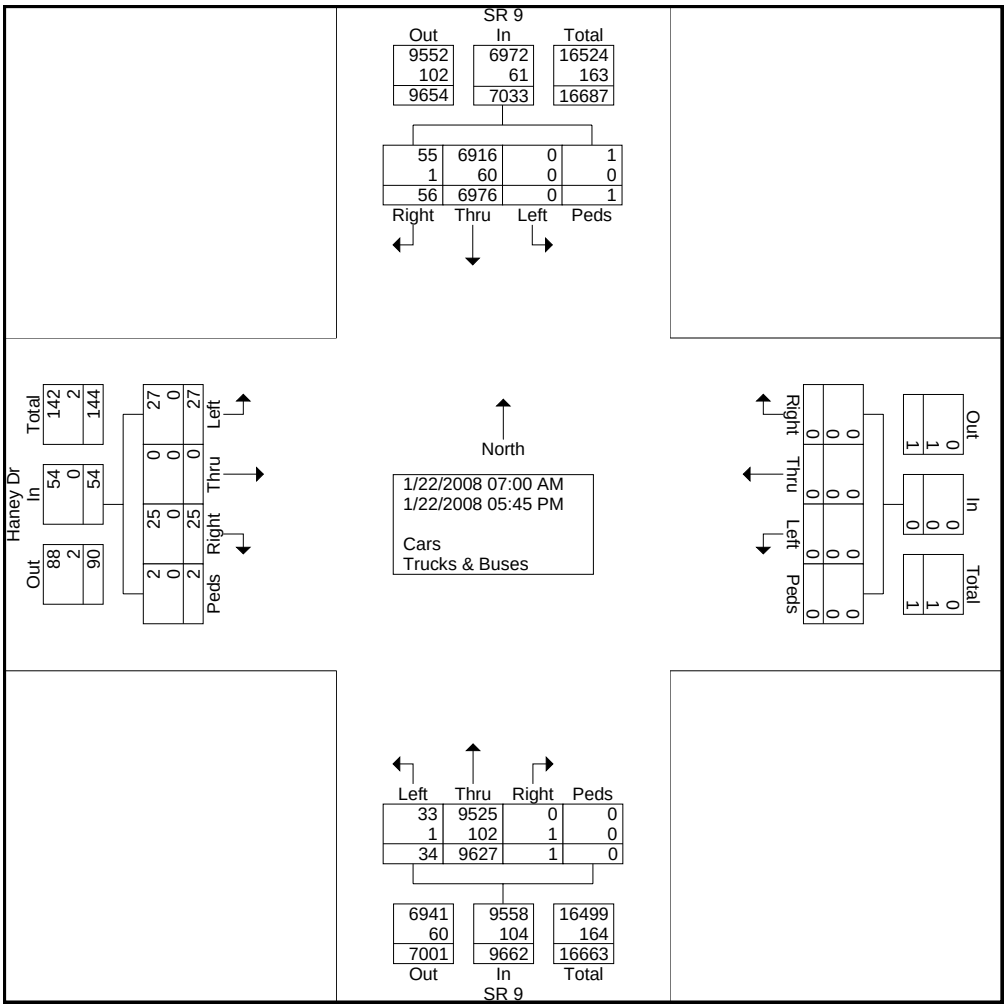
Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-02
Site Code : 00850102
Start Date : 1/22/2008
Page No : 2



Traffic Data Collection, Inc.

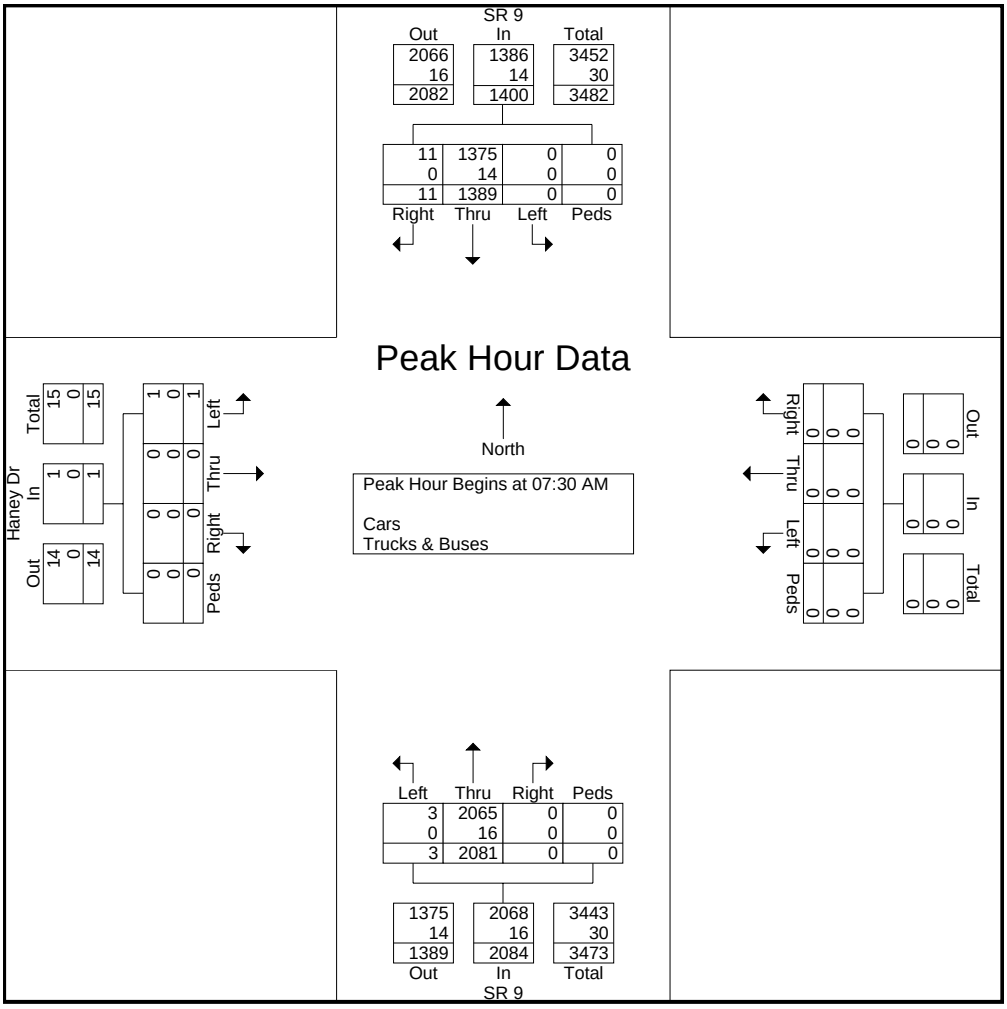
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-02
Site Code : 00850102
Start Date : 1/22/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Haney Dr Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	481	0	0	481	0	373	2	0	375	1	0	0	0	1	0	0	0	0	0	857
07:45 AM	2	547	0	0	549	0	358	6	0	364	0	0	0	0	0	0	0	0	0	0	913
08:00 AM	1	543	0	0	544	0	333	3	0	336	0	0	0	0	0	0	0	0	0	0	880
08:15 AM	0	510	0	0	510	0	325	0	0	325	0	0	0	0	0	0	0	0	0	0	835
Total Volume	3	2081	0	0	2084	0	1389	11	0	1400	1	0	0	0	1	0	0	0	0	0	3485
% App. Total	0.1	99.9	0	0		0	99.2	0.8	0		100	0	0	0		0	0	0	0		
PHF	.375	.951	.000	.000	.949	.000	.931	.458	.000	.933	.250	.000	.000	.000	.250	.000	.000	.000	.000	.000	.954
Cars	3	2065					1375														
% Cars	100	99.2	0	0	99.2	0	99.0	100	0	99.0	100	0	0	0	100	0	0	0	0	0	99.1
Trucks & Buses	0	16	0	0	16	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	30
% Trucks & Buses	0	0.8	0	0	0.8	0	1.0	0	0	1.0	0	0	0	0	0	0	0	0	0	0	0.9



Traffic Data Collection, Inc.

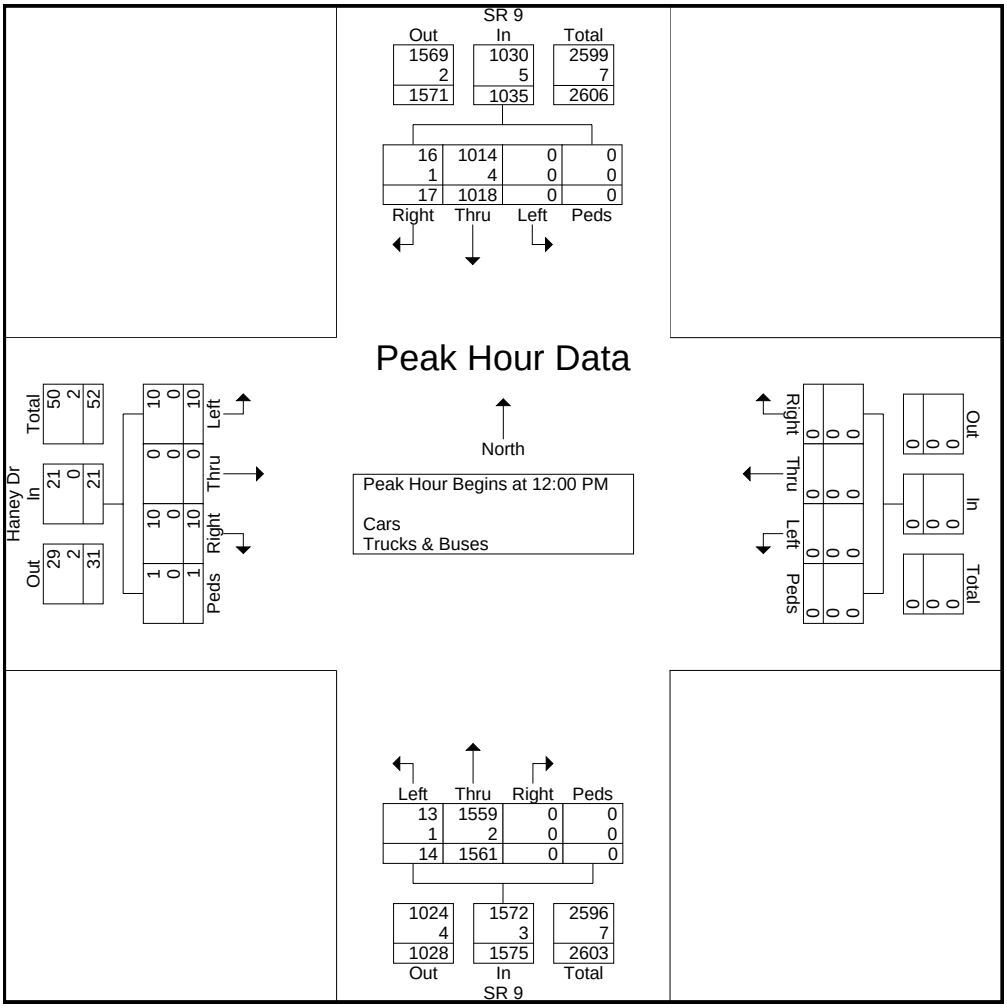
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-02
Site Code : 00850102
Start Date : 1/22/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Haney Dr Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	5	366	0	0	371	0	237	4	0	241	2	0	1	0	3	0	0	0	0	0	615
12:15 PM	0	423	0	0	423	0	263	7	0	270	2	0	1	1	4	0	0	0	0	0	697
12:30 PM	2	379	0	0	381	0	272	2	0	274	5	0	5	0	10	0	0	0	0	0	665
12:45 PM	7	393	0	0	400	0	246	4	0	250	1	0	3	0	4	0	0	0	0	0	654
Total Volume	14	1561	0	0	1575	0	1018	17	0	1035	10	0	10	1	21	0	0	0	0	0	2631
% App. Total	0.9	99.1	0	0		0	98.4	1.6	0		47.6	0	47.6	4.8		0	0	0	0		
PHF	.500	.923	.000	.000	.931	.000	.936	.607	.000	.944	.500	.000	.500	.250	.525	.000	.000	.000	.000	.000	.944
Cars	13	1559					1014														
% Cars	92.9	99.9	0	0	99.8	0	99.6	94.1	0	99.5	100	0	100	100	100	0	0	0	0	0	99.7
Trucks & Buses	1	2	0	0	3	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	8
% Trucks & Buses	7.1	0.1	0	0	0.2	0	0.4	5.9	0	0.5	0	0	0	0	0	0	0	0	0	0	0.3



Traffic Data Collection, Inc.

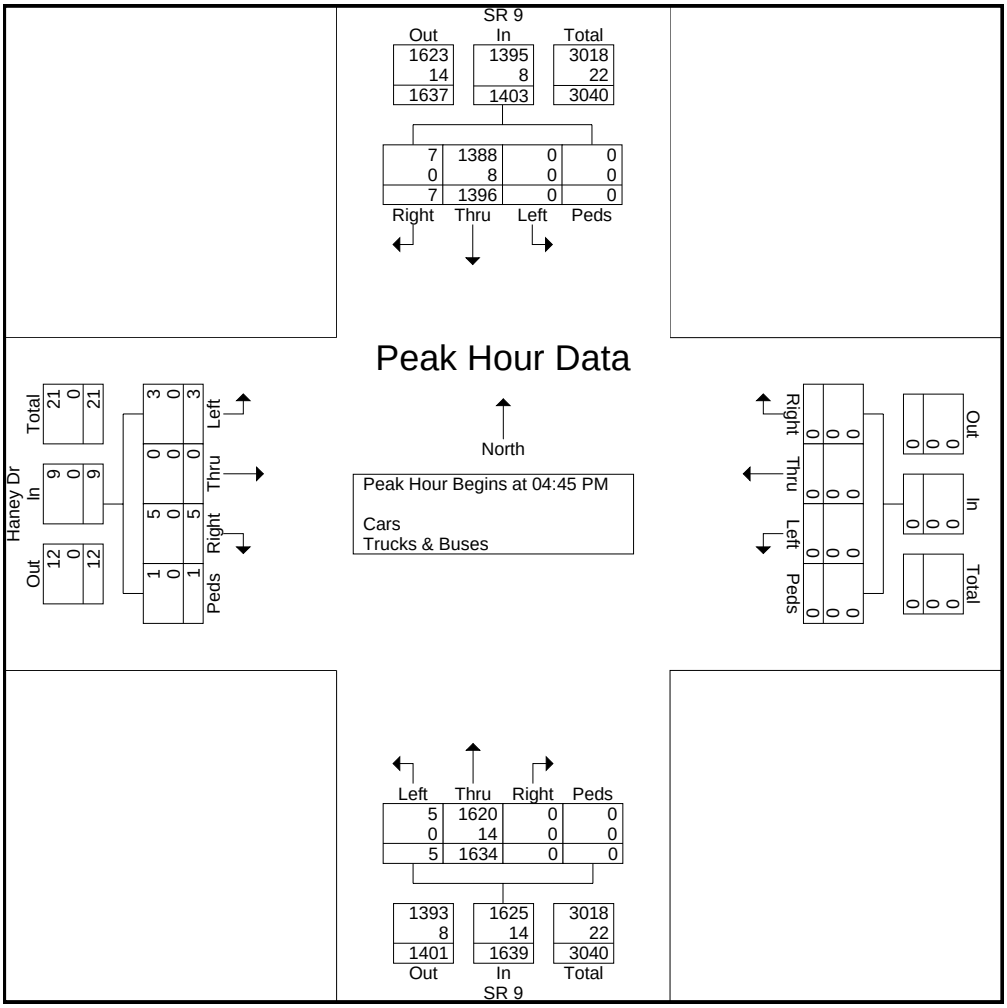
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-02
Site Code : 00850102
Start Date : 1/22/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Haney Dr Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	414	0	0	414	0	307	1	0	308	1	0	2	0	3	0	0	0	0	0	725
05:00 PM	1	456	0	0	457	0	323	1	0	324	2	0	0	0	2	0	0	0	0	0	783
05:15 PM	2	389	0	0	391	0	369	2	0	371	0	0	2	0	2	0	0	0	0	0	764
05:30 PM	2	375	0	0	377	0	397	3	0	400	0	0	1	1	2	0	0	0	0	0	779
Total Volume	5	1634	0	0	1639	0	1396	7	0	1403	3	0	5	1	9	0	0	0	0	0	3051
% App. Total	0.3	99.7	0	0		0	99.5	0.5	0		33.3	0	55.6	11.1		0	0	0	0		
PHF	.625	.896	.000	.000	.897	.000	.879	.583	.000	.877	.375	.000	.625	.250	.750	.000	.000	.000	.000	.000	.974
Cars	5	1620					1388														
% Cars	100	99.1	0	0	99.1	0	99.4	100	0	99.4	100	0	100	100	100	0	0	0	0	0	99.3
Trucks & Buses	0	14	0	0	14	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	22
% Trucks & Buses	0	0.9	0	0	0.9	0	0.6	0	0	0.6	0	0	0	0	0	0	0	0	0	0	0.7



Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-03
Site Code : 00850103
Start Date : 1/23/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Cambridge Sq Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	11	260	1	0	272	4	237	7	0	248	0	0	0	0	0	0	0	0	0	0	520
07:15 AM	5	302	4	0	311	6	288	9	0	303	0	0	0	0	0	0	0	1	0	1	615
07:30 AM	6	444	4	0	454	4	368	9	0	381	0	0	0	0	0	0	0	1	0	1	836
07:45 AM	10	494	1	0	505	8	369	13	0	390	2	0	2	0	4	1	0	0	0	1	900
Total	32	1500	10	0	1542	22	1262	38	0	1322	2	0	2	0	4	1	0	2	0	3	2871
08:00 AM	8	420	3	0	431	7	301	14	0	322	1	1	1	0	3	1	0	2	0	3	759
08:15 AM	4	399	4	0	407	9	321	15	0	345	3	0	0	0	3	2	0	2	0	4	759
08:30 AM	18	356	2	0	376	5	293	14	0	312	1	0	4	0	5	0	0	0	0	0	693
08:45 AM	6	364	5	0	375	12	330	18	0	360	1	1	2	0	4	0	0	1	0	1	740
Total	36	1539	14	0	1589	33	1245	61	0	1339	6	2	7	0	15	3	0	5	0	8	2951
Break																					
11:00 AM	3	235	7	0	245	6	206	4	0	216	10	0	6	0	16	3	0	8	0	11	488
11:15 AM	3	285	12	0	300	3	226	12	0	241	7	3	4	0	14	6	2	10	0	18	573
11:30 AM	7	327	12	0	346	8	218	9	0	235	17	0	8	0	25	6	3	12	0	21	627
11:45 AM	0	289	14	0	303	16	273	12	1	302	8	0	9	0	17	11	2	13	0	26	648
Total	13	1136	45	0	1194	33	923	37	1	994	42	3	27	0	72	26	7	43	0	76	2336
12:00 PM	2	316	15	0	333	12	268	9	0	289	12	1	16	0	29	7	1	19	0	27	678
12:15 PM	8	382	32	2	424	12	255	9	0	276	6	0	17	0	23	3	0	18	1	22	745
12:30 PM	8	399	23	0	430	19	282	6	0	307	9	1	5	0	15	10	1	25	0	36	788
12:45 PM	3	353	21	0	377	20	287	13	0	320	11	2	7	0	20	14	1	27	0	42	759
Total	21	1450	91	2	1564	63	1092	37	0	1192	38	4	45	0	87	34	3	89	1	127	2970
Break																					
04:00 PM	4	339	3	0	346	4	254	5	0	263	11	0	11	0	22	2	0	14	0	16	647
04:15 PM	3	335	1	0	339	4	286	10	0	300	10	0	6	0	16	5	0	8	0	13	668
04:30 PM	3	325	6	0	334	3	290	4	0	297	9	0	13	0	22	2	1	14	0	17	670
04:45 PM	2	398	4	0	404	4	294	7	0	305	13	0	15	0	28	0	0	11	0	11	748
Total	12	1397	14	0	1423	15	1124	26	0	1165	43	0	45	0	88	9	1	47	0	57	2733
05:00 PM	1	480	3	0	484	4	286	2	0	292	22	0	16	0	38	5	0	24	0	29	843
05:15 PM	3	391	2	0	396	4	318	4	0	326	11	0	18	0	29	0	0	15	0	15	766
05:30 PM	1	371	6	0	378	1	317	2	0	320	9	3	8	0	20	1	0	11	0	12	730
05:45 PM	2	380	3	0	385	3	379	2	0	384	4	0	10	0	14	4	0	12	0	16	799
Total	7	1622	14	0	1643	12	1300	10	0	1322	46	3	52	0	101	10	0	62	0	72	3138
Grand Total	121	8644	188	2	8955	178	6946	209	1	7334	177	12	178	0	367	83	11	248	1	343	16999
Apprch %	1.4	96.5	2.1	0		2.4	94.7	2.8	0		48.2	3.3	48.5	0		24.2	3.2	72.3	0.3		
Total %	0.7	50.9	1.1	0	52.7	1	40.9	1.2	0	43.1	1	0.1	1	0	2.2	0.5	0.1	1.5	0	2	
Cars	120	8459	182	2	8763	175	6878	207	1	7261	176	12	176	0	364	82	10	245	1	338	16726
% Cars	99.2	97.9	96.8	100	97.9	98.3	99	99	100	99	99.4	100	98.9	0	99.2	98.8	90.9	98.8	100	98.5	98.4
Trucks & Buses	1	185	6	0	192	3	68	2	0	73	1	0	2	0	3	1	1	3	0	5	273
% Trucks & Buses	0.8	2.1	3.2	0	2.1	1.7	1	1	0	1	0.6	0	1.1	0	0.8	1.2	9.1	1.2	0	1.5	1.6

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-03
Site Code : 00850103
Start Date : 1/23/2008
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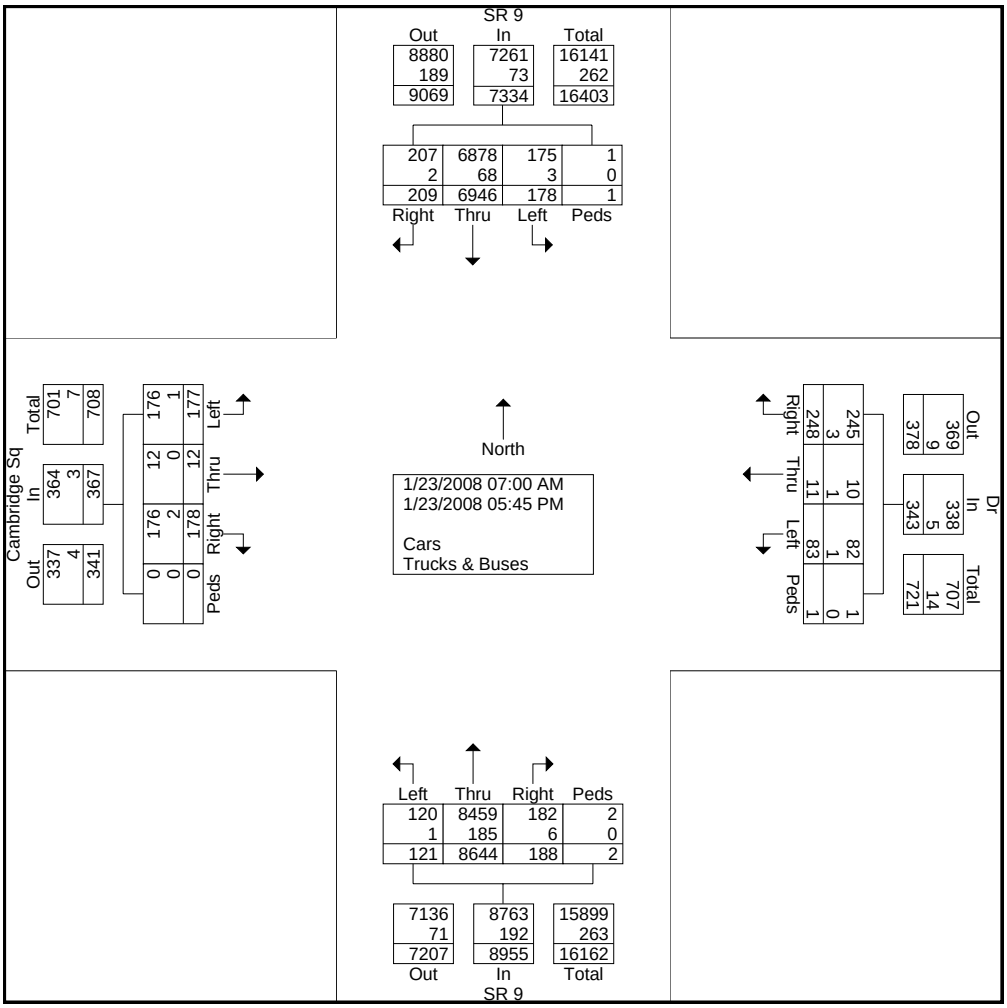

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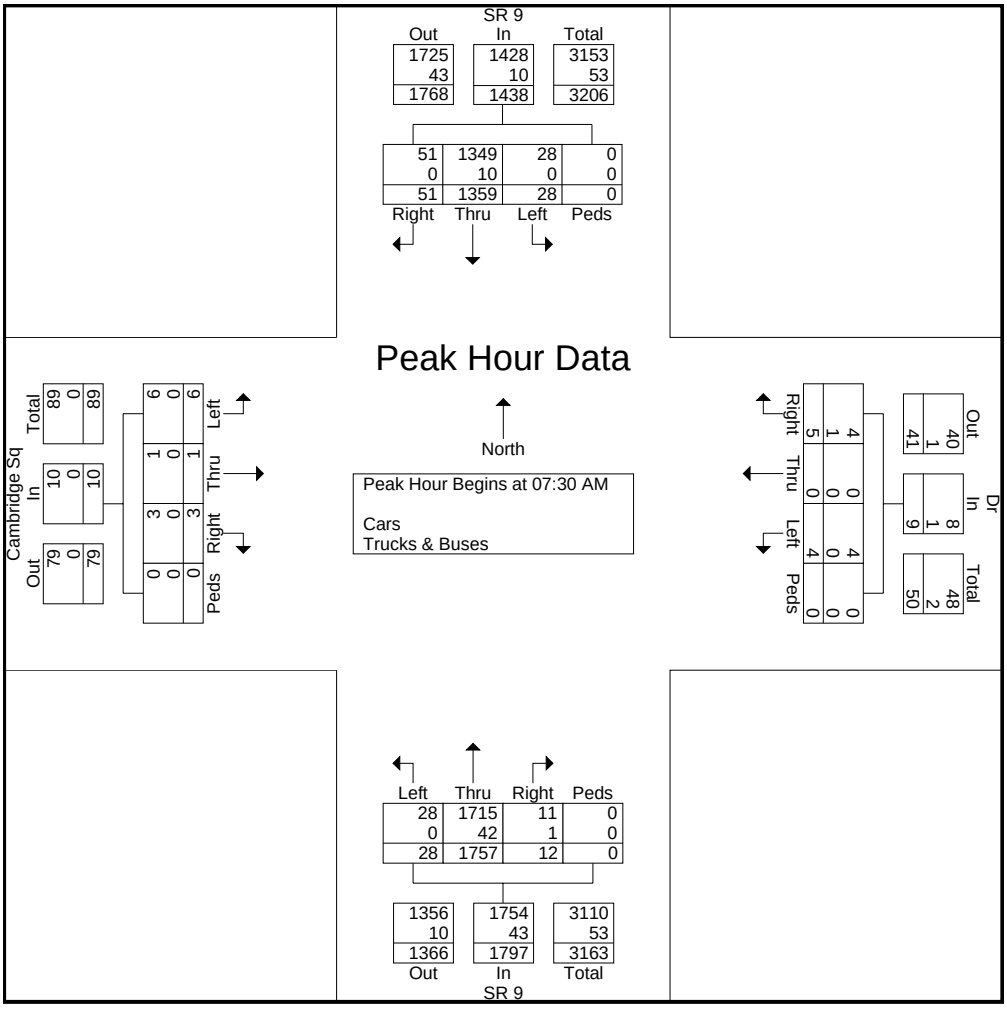
Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-03
Site Code : 00850103
Start Date : 1/23/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Cambridge Sq Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	6	444	4	0	454	4	368	9	0	381	0	0	0	0	0	0	0	1	0	1	836
07:45 AM	10	494	1	0	505	8	369	13	0	390	2	0	2	0	4	1	0	0	0	1	900
08:00 AM	8	420	3	0	431	7	301	14	0	322	1	1	1	0	3	1	0	2	0	3	759
08:15 AM	4	399	4	0	407	9	321	15	0	345	3	0	0	0	3	2	0	2	0	4	759
Total Volume	28	1757	12	0	1797	28	1359	51	0	1438	6	1	3	0	10	4	0	5	0	9	3254
% App. Total	1.6	97.8	0.7	0		1.9	94.5	3.5	0		60	10	30	0		44.4	0	55.6	0		
PHF	.700	.889	.750	.000	.890	.778	.921	.850	.000	.922	.500	.250	.375	.000	.625	.500	.000	.625	.000	.563	.904
Cars	28	1715					1349														
% Cars	100	97.6	91.7	0	97.6	100	99.3	100	0	99.3	100	100	100	0	100	100	0	80.0	0	88.9	98.3
Trucks & Buses	0	42	1	0	43	0	10	0	0	10	0	0	0	0	0	0	0	1	0	1	54
% Trucks & Buses	0	2.4	8.3	0	2.4	0	0.7	0	0	0.7	0	0	0	0	0	0	0	20.0	0	11.1	1.7



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Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-03
Site Code : 00850103
Start Date : 1/23/2008
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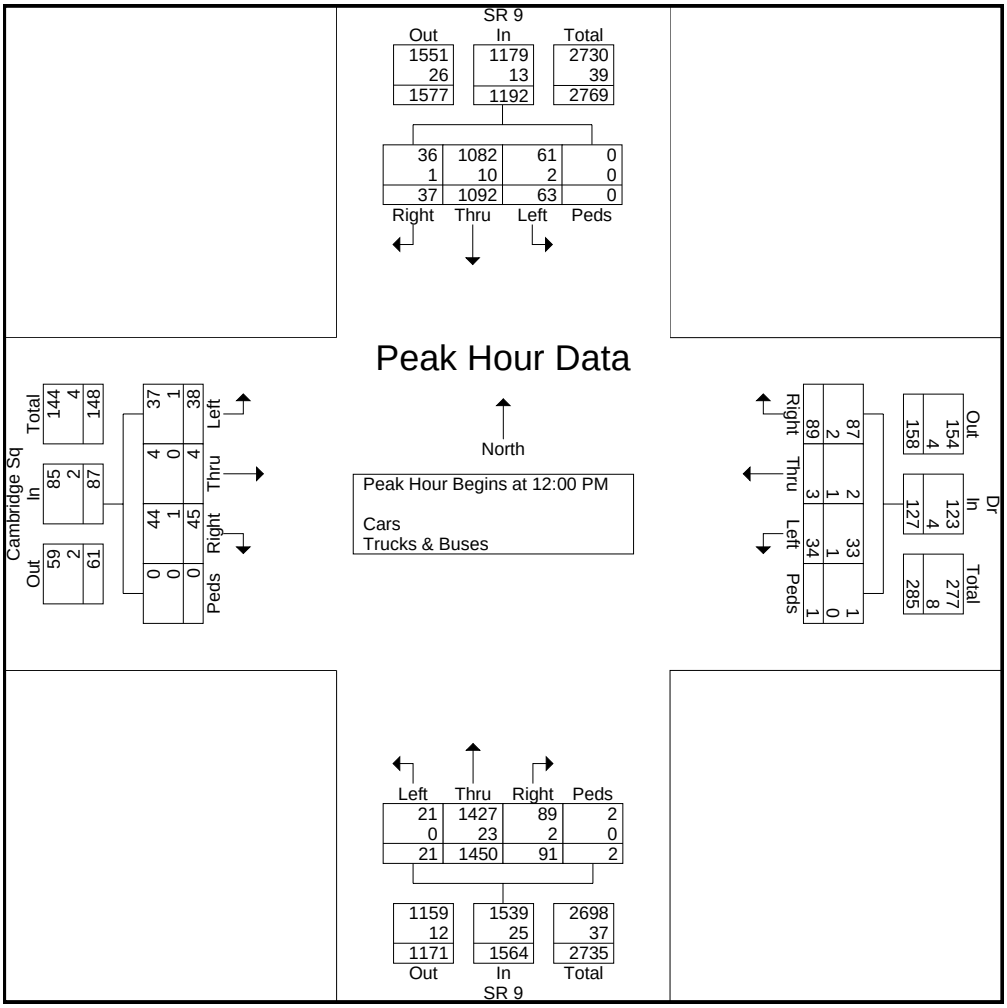
	SR 9 Northbound					SR 9 Southbound					Cambridge Sq Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	2	316	15	0	333	12	268	9	0	289	12	1	16	0	29	7	1	19	0	27	678
12:15 PM	8	382	32	2	424	12	255	9	0	276	6	0	17	0	23	3	0	18	1	22	745
12:30 PM	8	399	23	0	430	19	282	6	0	307	9	1	5	0	15	10	1	25	0	36	788
12:45 PM	3	353	21	0	377	20	287	13	0	320	11	2	7	0	20	14	1	27	0	42	759
Total Volume	21	1450	91	2	1564	63	1092	37	0	1192	38	4	45	0	87	34	3	89	1	127	2970
% App. Total	1.3	92.7	5.8	0.1		5.3	91.6	3.1	0		43.7	4.6	51.7	0		26.8	2.4	70.1	0.8		
PHF	.656	.909	.711	.250	.909	.788	.951	.712	.000	.931	.792	.500	.662	.000	.750	.607	.750	.824	.250	.756	.942
Cars	21	1427					1082														
% Cars	100	98.4	97.8	100	98.4	96.8	99.1	97.3	0	98.9	97.4	100	97.8	0	97.7	97.1	66.7	97.8	100	96.9	98.5
Trucks & Buses	0	23	2	0	25	2	10	1	0	13	1	0	1	0	2	1	1	2	0	4	44
% Trucks & Buses	0	1.6	2.2	0	1.6	3.2	0.9	2.7	0	1.1	2.6	0	2.2	0	2.3	2.9	33.3	2.2	0	3.1	1.5



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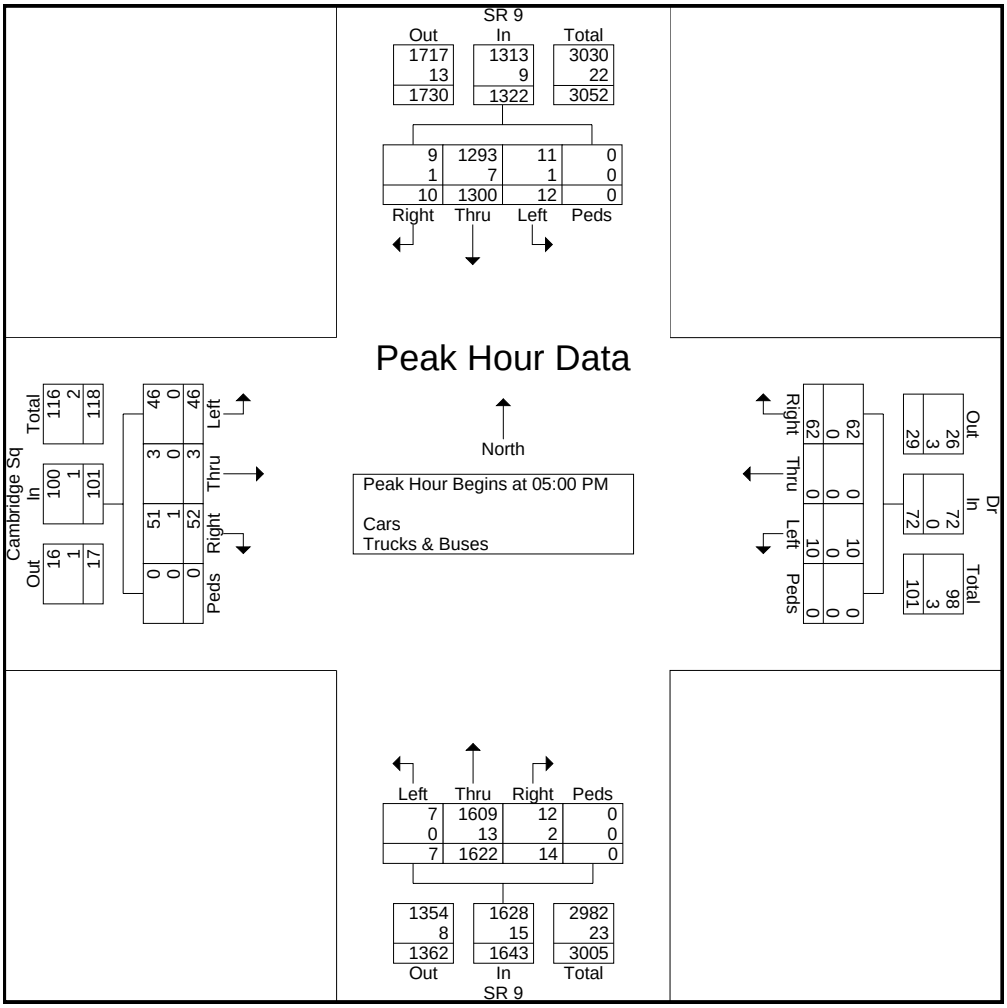
Counter: 2447
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-03
Site Code : 00850103
Start Date : 1/23/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Cambridge Sq Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	480	3	0	484	4	286	2	0	292	22	0	16	0	38	5	0	24	0	29	843
05:15 PM	3	391	2	0	396	4	318	4	0	326	11	0	18	0	29	0	0	15	0	15	766
05:30 PM	1	371	6	0	378	1	317	2	0	320	9	3	8	0	20	1	0	11	0	12	730
05:45 PM	2	380	3	0	385	3	379	2	0	384	4	0	10	0	14	4	0	12	0	16	799
Total Volume	7	1622	14	0	1643	12	1300	10	0	1322	46	3	52	0	101	10	0	62	0	72	3138
% App. Total	0.4	98.7	0.9	0		0.9	98.3	0.8	0		45.5	3	51.5	0		13.9	0	86.1	0		
PHF	.583	.845	.583	.000	.849	.750	.858	.625	.000	.861	.523	.250	.722	.000	.664	.500	.000	.646	.000	.621	.931
Cars	7	1609					1293														
% Cars	100	99.2	85.7	0	99.1	91.7	99.5	90.0	0	99.3	100	100	98.1	0	99.0	100	0	100	0	100	99.2
Trucks & Buses	0	13	2	0	15	1	7	1	0	9	0	0	1	0	1	0	0	0	0	0	25
% Trucks & Buses	0	0.8	14.3	0	0.9	8.3	0.5	10.0	0	0.7	0	0	1.9	0	1.0	0	0	0	0	0	0.8



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Counter: 1934
Counted By: BLR
Weather: Cold
Other: LE

File Name : 08501-04
Site Code : 00850104
Start Date : 1/16/2008
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Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Wills Rd Eastbound					Wills Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	5	180	10	1	196	27	244	5	0	276	3	61	17	0	81	0	4	8	0	12	565
07:15 AM	7	242	10	1	260	29	295	1	0	325	4	67	27	0	98	4	3	3	0	10	693
07:30 AM	13	249	7	0	269	39	294	6	0	339	2	68	37	0	107	7	7	7	0	21	736
07:45 AM	8	290	5	0	303	55	300	4	1	360	10	89	27	0	126	5	11	13	0	29	818
Total	33	961	32	2	1028	150	1133	16	1	1300	19	285	108	0	412	16	25	31	0	72	2812
08:00 AM	22	296	12	0	330	67	299	3	0	369	9	68	38	1	116	7	15	4	0	26	841
08:15 AM	9	285	4	1	299	38	259	4	1	302	14	60	30	0	104	5	22	7	0	34	739
08:30 AM	10	259	11	0	280	39	286	7	0	332	8	45	33	0	86	6	9	11	0	26	724
08:45 AM	9	285	4	0	298	30	299	4	0	333	5	49	40	0	94	6	15	20	0	41	766
Total	50	1125	31	1	1207	174	1143	18	1	1336	36	222	141	1	400	24	61	42	0	127	3070
Break																					
11:00 AM	12	223	7	0	242	13	169	3	1	186	7	16	18	0	41	11	13	17	1	42	511
11:15 AM	22	195	11	0	228	14	220	7	0	241	5	16	23	0	44	15	15	32	0	62	575
11:30 AM	15	215	13	0	243	24	231	3	0	258	5	9	14	0	28	18	21	34	0	73	602
11:45 AM	26	236	15	1	278	33	225	6	0	264	6	17	13	0	36	17	23	27	0	67	645
Total	75	869	46	1	991	84	845	19	1	949	23	58	68	0	149	61	72	110	1	244	2333
12:00 PM	14	251	15	1	281	25	217	5	0	247	5	19	17	0	41	10	20	39	1	70	639
12:15 PM	31	238	13	0	282	35	234	7	0	276	6	10	17	0	33	21	20	28	0	69	660
12:30 PM	24	266	17	0	307	31	243	5	0	279	4	20	24	0	48	20	17	31	0	68	702
12:45 PM	18	260	17	0	295	29	276	7	0	312	12	28	21	0	61	11	11	20	0	42	710
Total	87	1015	62	1	1165	120	970	24	0	1114	27	77	79	0	183	62	68	118	1	249	2711
Break																					
04:00 PM	37	273	9	0	319	21	233	15	0	269	8	14	21	0	43	20	104	33	1	158	789
04:15 PM	24	273	9	0	306	18	260	13	0	291	9	27	20	0	56	15	72	30	0	117	770
04:30 PM	33	282	7	0	322	16	259	8	0	283	4	11	14	0	29	17	77	39	0	133	767
04:45 PM	40	263	6	0	309	8	307	13	0	328	5	14	27	0	46	15	77	39	0	131	814
Total	134	1091	31	0	1256	63	1059	49	0	1171	26	66	82	0	174	67	330	141	1	539	3140
05:00 PM	64	338	10	0	412	13	320	12	0	345	1	12	20	0	33	15	89	41	0	145	935
05:15 PM	45	278	4	0	327	9	356	11	0	376	3	14	18	1	36	15	86	39	0	140	879
05:30 PM	37	283	6	1	327	7	344	8	0	359	5	8	32	2	47	15	91	32	1	139	872
05:45 PM	30	213	5	0	248	6	306	7	0	319	2	8	22	0	32	11	63	19	0	93	692
Total	176	1112	25	1	1314	35	1326	38	0	1399	11	42	92	3	148	56	329	131	1	517	3378
Grand Total	555	6173	227	6	6961	626	6476	164	3	7269	142	750	570	4	1466	286	885	573	4	1748	17444
Apprch %	8	88.7	3.3	0.1		8.6	89.1	2.3	0		9.7	51.2	38.9	0.3		16.4	50.6	32.8	0.2		
Total %	3.2	35.4	1.3	0	39.9	3.6	37.1	0.9	0	41.7	0.8	4.3	3.3	0	8.4	1.6	5.1	3.3	0	10	
Cars	552	6020	226	6	6804	616	6398	163	3	7180	114	735	566	4	1419	279	872	554	4	1709	17112
% Cars	99.5	97.5	99.6	100	97.7	98.4	98.8	99.4	100	98.8	80.3	98	99.3	100	96.8	97.6	98.5	96.7	100	97.8	98.1
Trucks & Buses	3	153	1	0	157	10	78	1	0	89	28	15	4	0	47	7	13	19	0	39	332
% Trucks & Buses	0.5	2.5	0.4	0	2.3	1.6	1.2	0.6	0	1.2	19.7	2	0.7	0	3.2	2.4	1.5	3.3	0	2.2	1.9

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Counter: 1934
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Weather: Cold
Other: LE

File Name : 08501-04
Site Code : 00850104
Start Date : 1/16/2008
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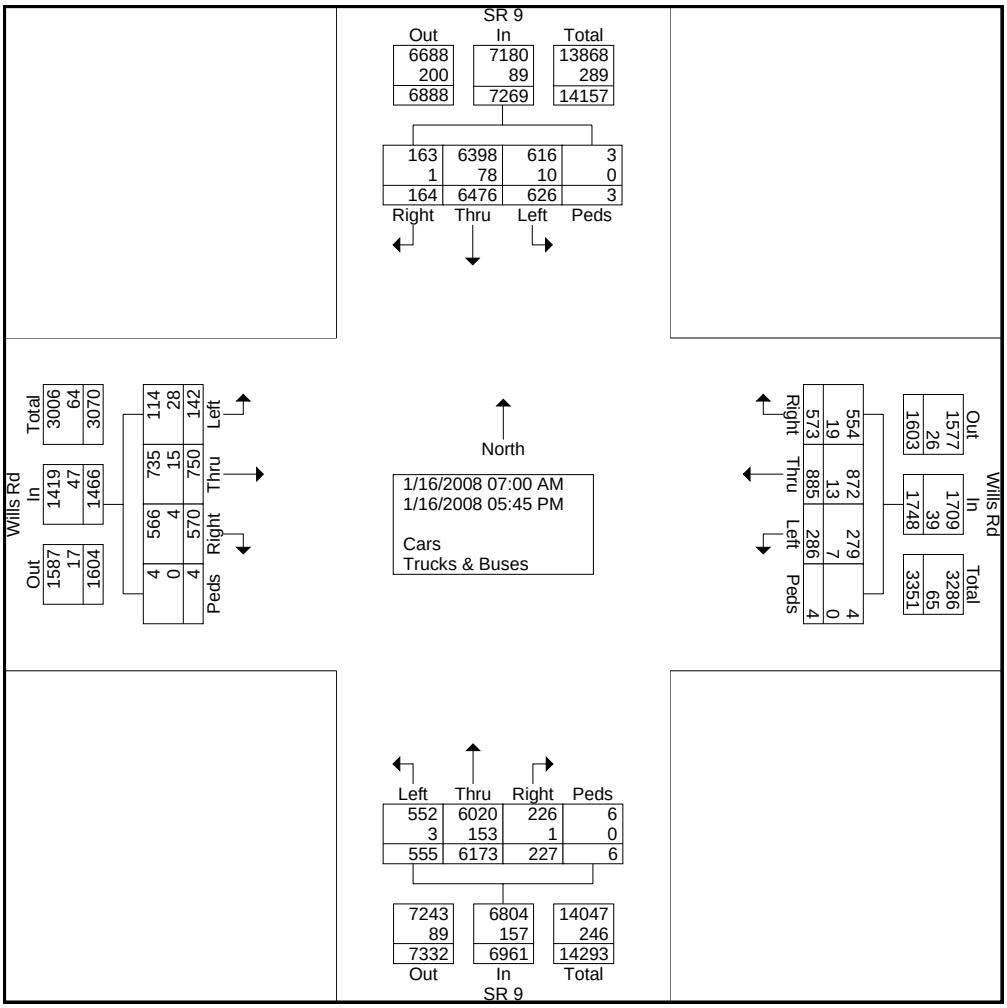

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Counter: 1934
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File Name : 08501-04
Site Code : 00850104
Start Date : 1/16/2008
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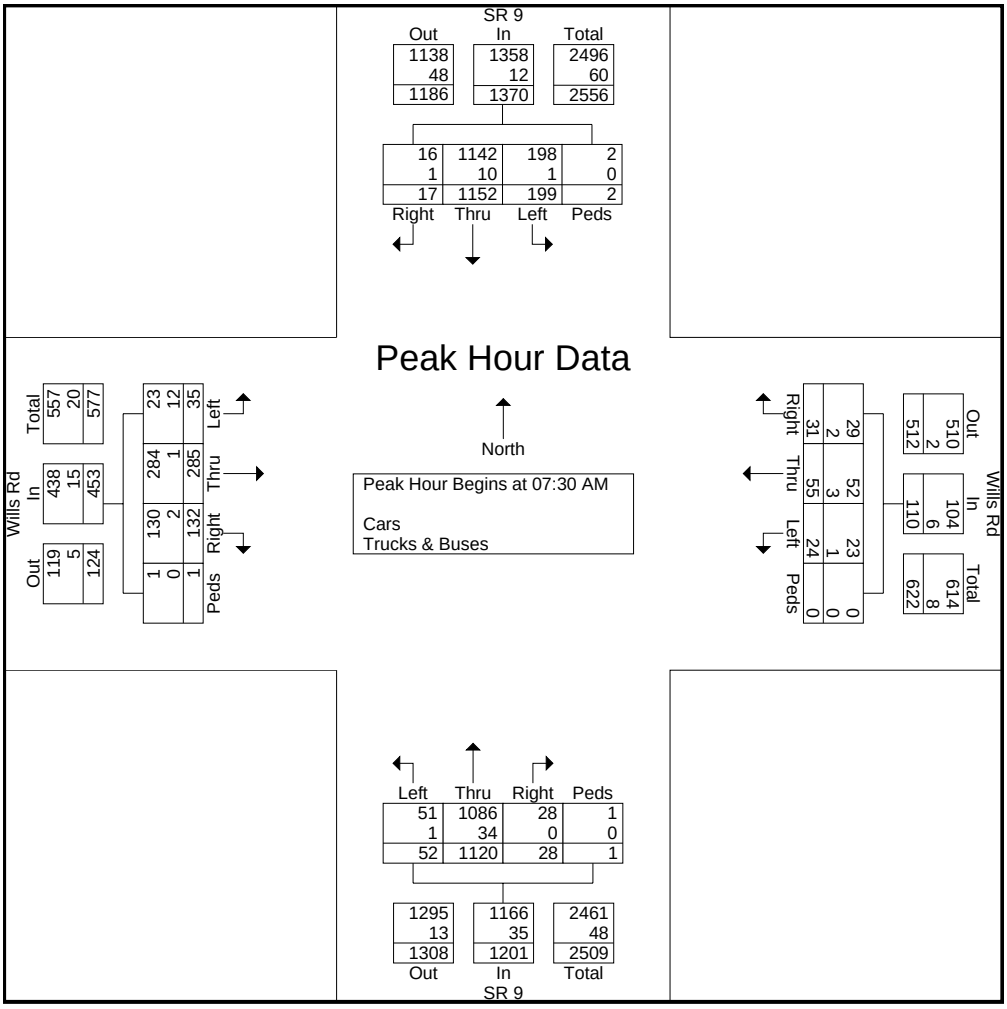
	SR 9 Northbound					SR 9 Southbound					Wills Rd Eastbound					Wills Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	13	249	7	0	269	39	294	6	0	339	2	68	37	0	107	7	7	7	0	21	736
07:45 AM	8	290	5	0	303	55	300	4	1	360	10	89	27	0	126	5	11	13	0	29	818
08:00 AM	22	296	12	0	330	67	299	3	0	369	9	68	38	1	116	7	15	4	0	26	841
08:15 AM	9	285	4	1	299	38	259	4	1	302	14	60	30	0	104	5	22	7	0	34	739
Total Volume	52	1120	28	1	1201	199	1152	17	2	1370	35	285	132	1	453	24	55	31	0	110	3134
% App. Total	4.3	93.3	2.3	0.1		14.5	84.1	1.2	0.1		7.7	62.9	29.1	0.2		21.8	50	28.2	0		
PHF	.591	.946	.583	.250	.910	.743	.960	.708	.500	.928	.625	.801	.868	.250	.899	.857	.625	.596	.000	.809	.932
Cars	51	1086					1142														
% Cars	98.1	97.0	100	100	97.1	99.5	99.1	94.1	100	99.1	65.7	99.6	98.5	100	96.7	95.8	94.5	93.5	0	94.5	97.8
Trucks & Buses	1	34	0	0	35	1	10	1	0	12	12	1	2	0	15	1	3	2	0	6	68
% Trucks & Buses	1.9	3.0	0	0	2.9	0.5	0.9	5.9	0	0.9	34.3	0.4	1.5	0	3.3	4.2	5.5	6.5	0	5.5	2.2



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File Name : 08501-04
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Start Date : 1/16/2008
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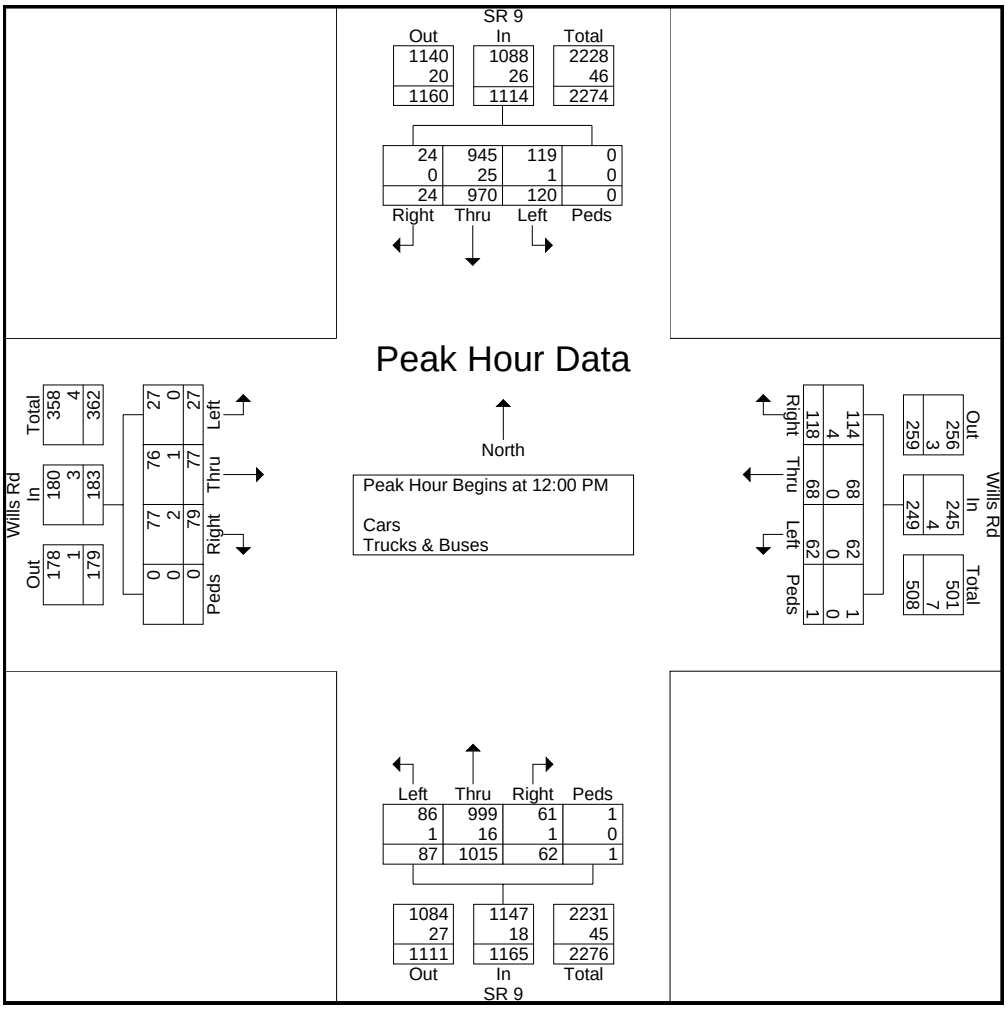
	SR 9 Northbound					SR 9 Southbound					Wills Rd Eastbound					Wills Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	14	251	15	1	281	25	217	5	0	247	5	19	17	0	41	10	20	39	1	70	639
12:15 PM	31	238	13	0	282	35	234	7	0	276	6	10	17	0	33	21	20	28	0	69	660
12:30 PM	24	266	17	0	307	31	243	5	0	279	4	20	24	0	48	20	17	31	0	68	702
12:45 PM	18	260	17	0	295	29	276	7	0	312	12	28	21	0	61	11	11	20	0	42	710
Total Volume	87	1015	62	1	1165	120	970	24	0	1114	27	77	79	0	183	62	68	118	1	249	2711
% App. Total	7.5	87.1	5.3	0.1		10.8	87.1	2.2	0		14.8	42.1	43.2	0		24.9	27.3	47.4	0.4		
PHF	.702	.954	.912	.250	.949	.857	.879	.857	.000	.893	.563	.688	.823	.000	.750	.738	.850	.756	.250	.889	.955
Cars	86	999	61	1	1147	119	945	24	0	1088	27	76	77	0	180	62	68	114	1	245	2660
% Cars	98.9	98.4	98.4	100	98.5	99.2	97.4	100	0	97.7	100	98.7	97.5	0	98.4	100	100	96.6	100	98.4	98.1
Trucks & Buses																					
% Trucks & Buses	1.1	1.6	1.6	0	1.5	0.8	2.6	0	0	2.3	0	1.3	2.5	0	1.6	0	0	3.4	0	1.6	1.9



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Atlanta - Hilton Head

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Counter: 1934
Counted By: BLR
Weather: Cold
Other: LE

File Name : 08501-04
Site Code : 00850104
Start Date : 1/16/2008
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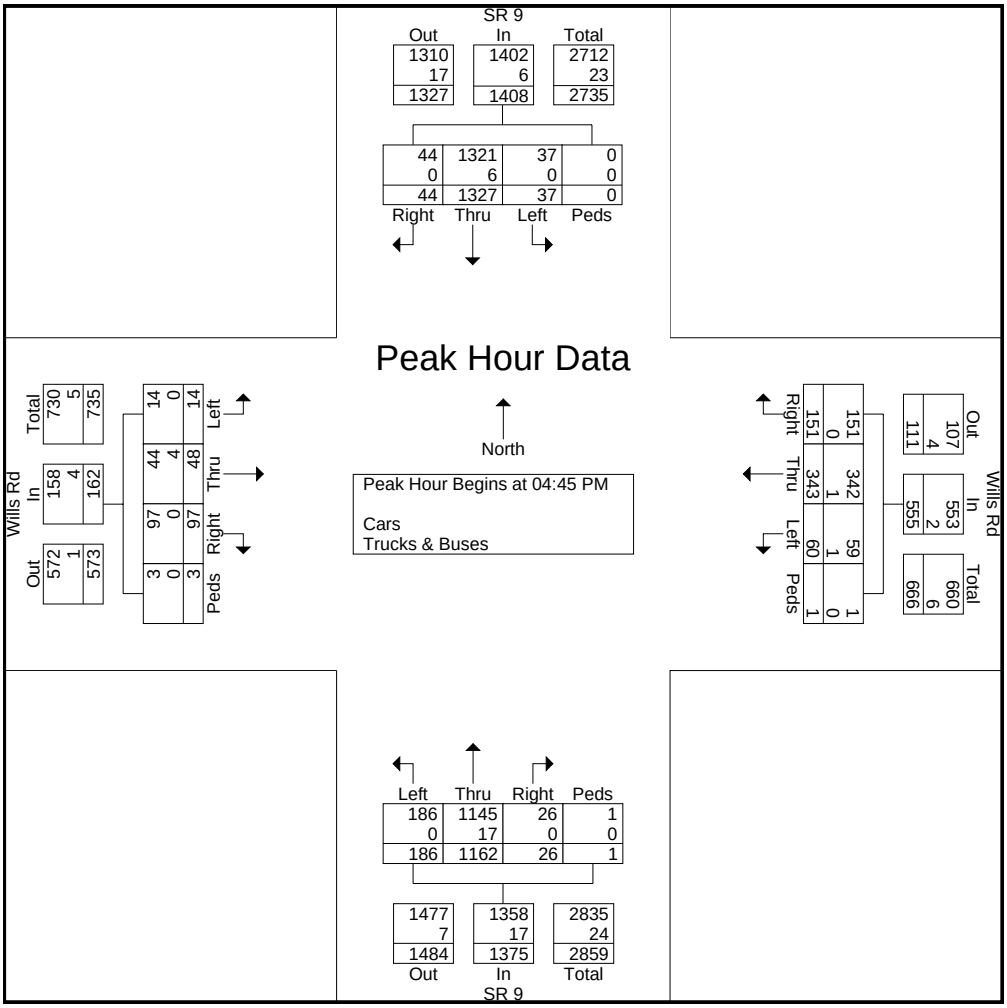
	SR 9 Northbound					SR 9 Southbound					Wills Rd Eastbound					Wills Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	40	263	6	0	309	8	307	13	0	328	5	14	27	0	46	15	77	39	0	131	814
05:00 PM	64	338	10	0	412	13	320	12	0	345	1	12	20	0	33	15	89	41	0	145	935
05:15 PM	45	278	4	0	327	9	356	11	0	376	3	14	18	1	36	15	86	39	0	140	879
05:30 PM	37	283	6	1	327	7	344	8	0	359	5	8	32	2	47	15	91	32	1	139	872
Total Volume	186	1162	26	1	1375	37	1327	44	0	1408	14	48	97	3	162	60	343	151	1	555	3500
% App. Total	13.5	84.5	1.9	0.1		2.6	94.2	3.1	0		8.6	29.6	59.9	1.9		10.8	61.8	27.2	0.2		
PHF	.727	.859	.650	.250	.834	.712	.932	.846	.000	.936	.700	.857	.758	.375	.862	1.000					
Cars	186	1145	26	1	1358	37	1321	44	0	1402	14	44	97	3	158	59	342	151	1	553	3471
% Cars	100	98.5	100	100	98.8	100	99.5	100	0	99.6	100	91.7	100	100	97.5	98.3	99.7	100	100	99.6	99.2
Trucks & Buses	0	17	0	0	17	0	6	0	0	6	0	4	0	0	4	1	1	0	0	2	29
% Trucks & Buses	0	1.5	0	0	1.2	0	0.5	0	0	0.4	0	8.3	0	0	2.5	1.7	0.3	0	0	0.4	0.8



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-05
Site Code : 00850105
Start Date : 1/22/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Northfall Lane Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	2	212	0	0	214	0	283	1	0	284	0	1	0	0	1	0	0	0	0	0	499
07:15 AM	2	283	0	0	285	0	307	6	0	313	0	0	1	0	1	0	0	0	0	0	599
07:30 AM	3	323	0	0	326	0	392	0	0	392	0	0	1	0	1	0	0	0	0	0	719
07:45 AM	4	352	0	0	356	0	390	8	0	398	0	0	0	0	0	0	0	0	0	0	754
Total	11	1170	0	0	1181	0	1372	15	0	1387	0	1	2	0	3	0	0	0	0	0	2571
08:00 AM	15	256	0	0	271	0	318	7	1	326	4	0	1	0	5	0	0	0	0	0	602
08:15 AM	2	252	3	0	257	0	237	10	0	247	1	0	1	1	3	0	0	0	0	0	507
08:30 AM	11	318	0	0	329	0	334	17	1	352	2	0	0	0	2	0	0	0	0	0	683
08:45 AM	9	294	0	0	303	0	353	16	0	369	0	0	4	0	4	0	0	0	0	0	676
Total	37	1120	3	0	1160	0	1242	50	2	1294	7	0	6	1	14	0	0	0	0	0	2468
Break																					
11:00 AM	10	169	0	0	179	0	148	5	0	153	4	6	2	0	12	0	9	0	0	9	353
11:15 AM	11	214	0	0	225	0	203	8	0	211	6	0	7	0	13	0	0	0	0	0	449
11:30 AM	15	215	0	0	230	0	152	9	0	161	2	2	8	0	12	0	0	0	0	0	403
11:45 AM	14	252	0	0	266	0	239	7	0	246	9	0	12	0	21	0	0	0	0	0	533
Total	50	850	0	0	900	0	742	29	0	771	21	8	29	0	58	0	9	0	0	9	1738
12:00 PM	8	188	0	0	196	0	151	5	0	156	5	0	10	0	15	0	0	0	0	0	367
12:15 PM	12	306	0	0	318	0	267	9	0	276	8	0	20	1	29	0	0	0	0	0	623
12:30 PM	10	294	0	0	304	0	275	4	0	279	10	0	10	0	20	0	0	0	0	0	603
12:45 PM	14	296	0	0	310	0	296	11	1	308	4	0	8	0	12	0	0	0	0	0	630
Total	44	1084	0	0	1128	0	989	29	1	1019	27	0	48	1	76	0	0	0	0	0	2223
Break																					
04:00 PM	5	342	0	0	347	0	252	27	0	279	5	0	7	0	12	0	0	0	0	0	638
04:15 PM	9	307	0	0	316	0	270	7	0	277	11	0	7	0	18	0	0	0	0	0	611
04:30 PM	5	331	0	0	336	0	294	5	0	299	8	0	34	0	42	0	0	0	0	0	677
04:45 PM	3	319	0	0	322	0	286	7	0	293	2	0	16	0	18	0	0	0	0	0	633
Total	22	1299	0	0	1321	0	1102	46	0	1148	26	0	64	0	90	0	0	0	0	0	2559
05:00 PM	7	362	0	0	369	0	302	5	0	307	7	0	18	1	26	0	0	0	0	0	702
05:15 PM	8	344	0	0	352	0	310	7	0	317	14	0	4	0	18	0	0	0	0	0	687
05:30 PM	4	318	0	0	322	0	304	5	0	309	12	0	10	0	22	0	0	0	0	0	653
05:45 PM	6	268	0	0	274	0	232	7	0	239	2	0	2	0	4	0	0	0	0	0	517
Total	25	1292	0	0	1317	0	1148	24	0	1172	35	0	34	1	70	0	0	0	0	0	2559
Grand Total	189	6815	3	0	7007	0	6595	193	3	6791	116	9	183	3	311	0	9	0	0	9	14118
Apprch %	2.7	97.3	0	0		0	97.1	2.8	0		37.3	2.9	58.8	1		0	100	0	0		
Total %	1.3	48.3	0	0	49.6	0	46.7	1.4	0	48.1	0.8	0.1	1.3	0	2.2	0	0.1	0	0	0.1	
Cars	187	6571	0	0	6758	0	6471	189	3	6663	116	9	180	3	308	0	9	0	0	9	13738
% Cars	98.9	96.4	0	0	96.4	0	98.1	97.9	100	98.1	100	100	98.4	100	99	0	100	0	0	100	97.3
Trucks & Buses	2	244	3	0	249	0	124	4	0	128	0	0	3	0	3	0	0	0	0	0	380
% Trucks & Buses	1.1	3.6	100	0	3.6	0	1.9	2.1	0	1.9	0	0	1.6	0	1	0	0	0	0	0	2.7

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

Traffic Data Collection, Inc.

Atlanta - Hilton Head

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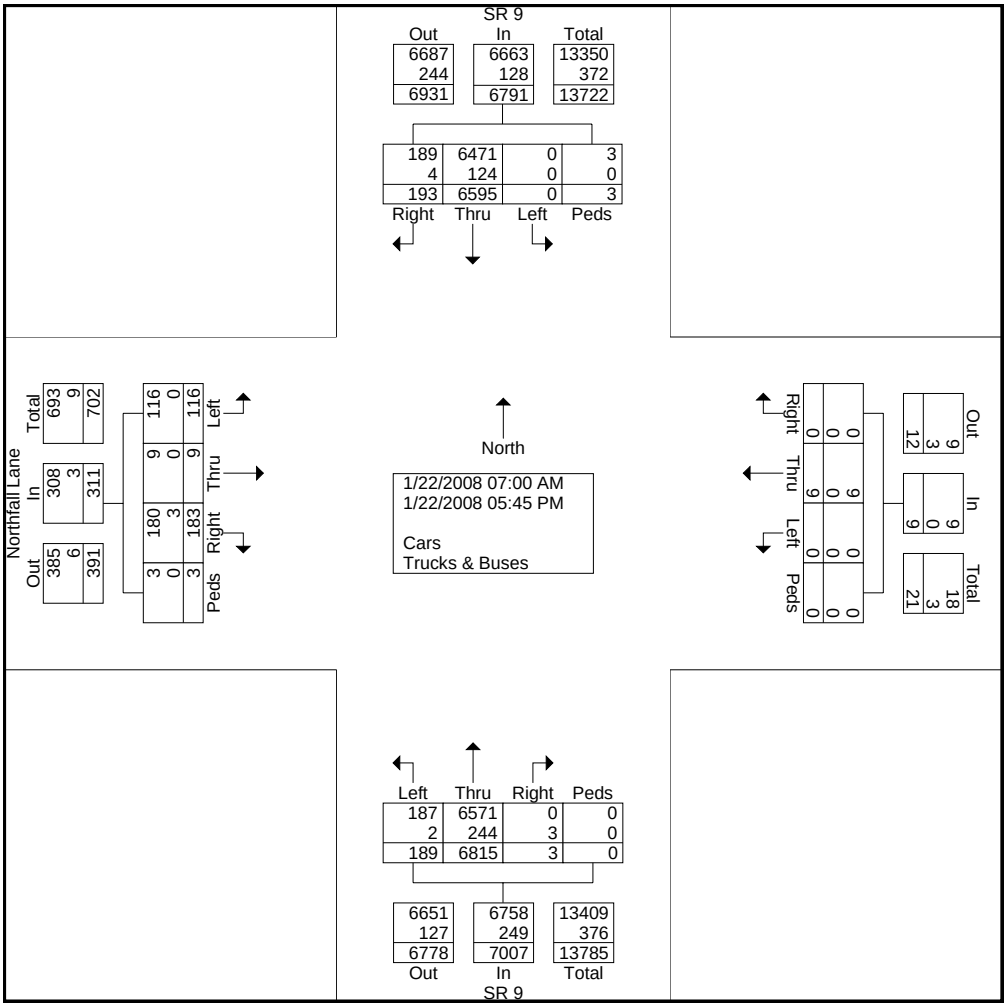
Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-05
Site Code : 00850105
Start Date : 1/22/2008
Page No : 2



Traffic Data Collection, Inc.

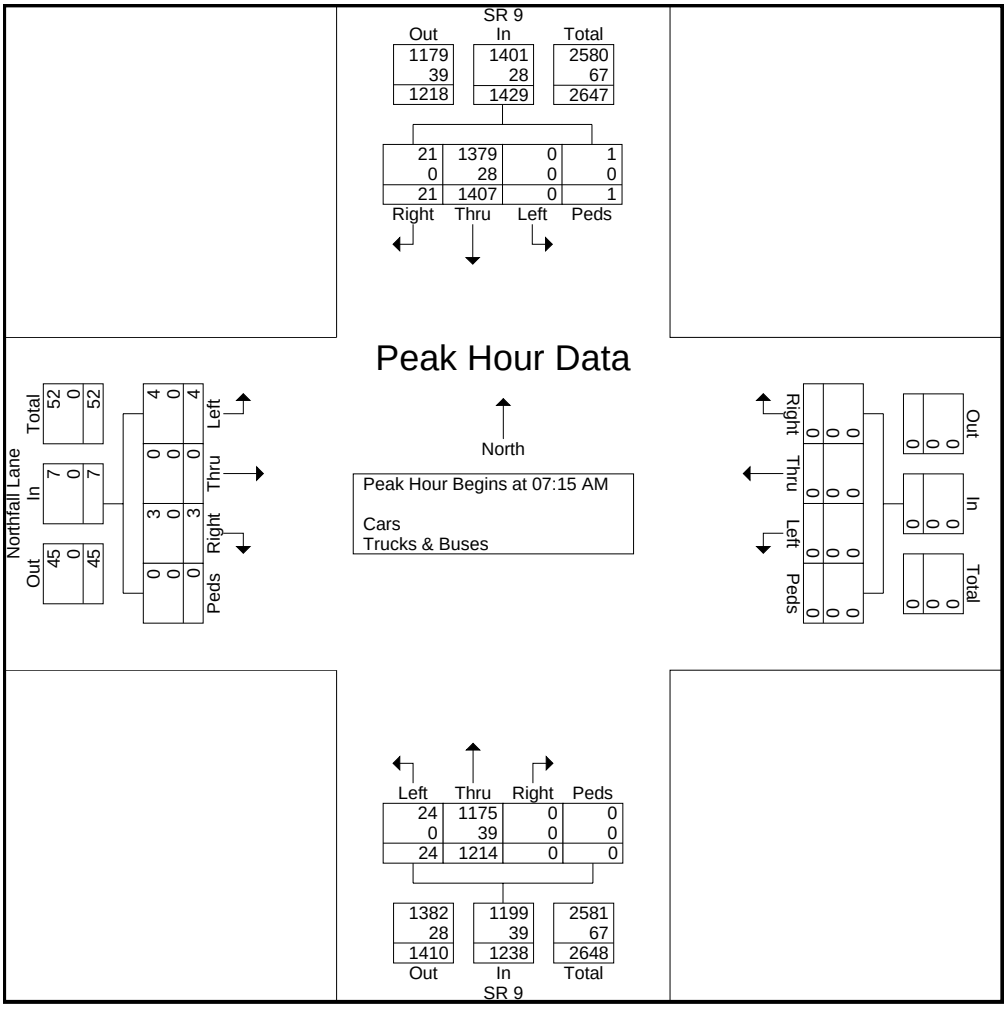
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-05
Site Code : 00850105
Start Date : 1/22/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Northfall Lane Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	2	283	0	0	285	0	307	6	0	313	0	0	1	0	1	0	0	0	0	0	599
07:30 AM	3	323	0	0	326	0	392	0	0	392	0	0	1	0	1	0	0	0	0	0	719
07:45 AM	4	352	0	0	356	0	390	8	0	398	0	0	0	0	0	0	0	0	0	0	754
08:00 AM	15	256	0	0	271	0	318	7	1	326	4	0	1	0	5	0	0	0	0	0	602
Total Volume	24	1214	0	0	1238	0	1407	21	1	1429	4	0	3	0	7	0	0	0	0	0	2674
% App. Total	1.9	98.1	0	0		0	98.5	1.5	0.1		57.1	0	42.9	0		0	0	0	0		
PHF	.400	.862	.000	.000	.869	.000	.897	.656	.250	.898	.250	.000	.750	.000	.350	.000	.000	.000	.000	.000	.887
Cars	24	1175					1379														
% Cars	100	96.8	0	0	96.8	0	98.0	100	100	98.0	100	0	100	0	100	0	0	0	0	0	97.5
Trucks & Buses	0	39	0	0	39	0	28	0	0	28	0	0	0	0	0	0	0	0	0	0	67
% Trucks & Buses	0	3.2	0	0	3.2	0	2.0	0	0	2.0	0	0	0	0	0	0	0	0	0	0	2.5



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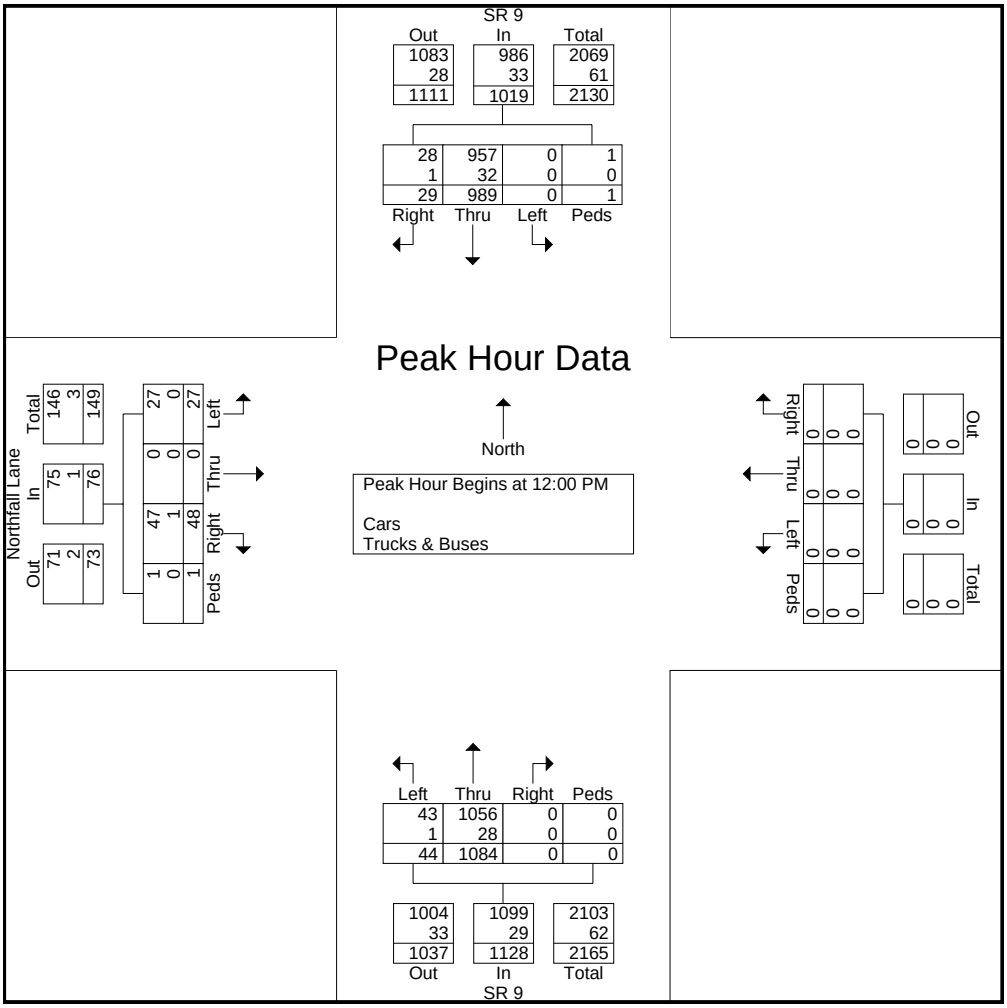
Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-05
Site Code : 00850105
Start Date : 1/22/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Northfall Lane Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	8	188	0	0	196	0	151	5	0	156	5	0	10	0	15	0	0	0	0	0	367
12:15 PM	12	306	0	0	318	0	267	9	0	276	8	0	20	1	29	0	0	0	0	0	623
12:30 PM	10	294	0	0	304	0	275	4	0	279	10	0	10	0	20	0	0	0	0	0	603
12:45 PM	14	296	0	0	310	0	296	11	1	308	4	0	8	0	12	0	0	0	0	0	630
Total Volume	44	1084	0	0	1128	0	989	29	1	1019	27	0	48	1	76	0	0	0	0	0	2223
% App. Total	3.9	96.1	0	0		0	97.1	2.8	0.1		35.5	0	63.2	1.3		0	0	0	0		
PHF	.786	.886	.000	.000	.887	.000	.835	.659	.250	.827	.675	.000	.600	.250	.655	.000	.000	.000	.000	.000	.882
Cars	43	1056																			
% Cars	97.7	97.4	0	0	97.4	0	96.8	96.6	100	96.8	100	0	97.9	100	98.7	0	0	0	0	0	97.2
Trucks & Buses	1	28	0	0	29	0	32	1	0	33	0	0	1	0	1	0	0	0	0	0	63
% Trucks & Buses	2.3	2.6	0	0	2.6	0	3.2	3.4	0	3.2	0	0	2.1	0	1.3	0	0	0	0	0	2.8



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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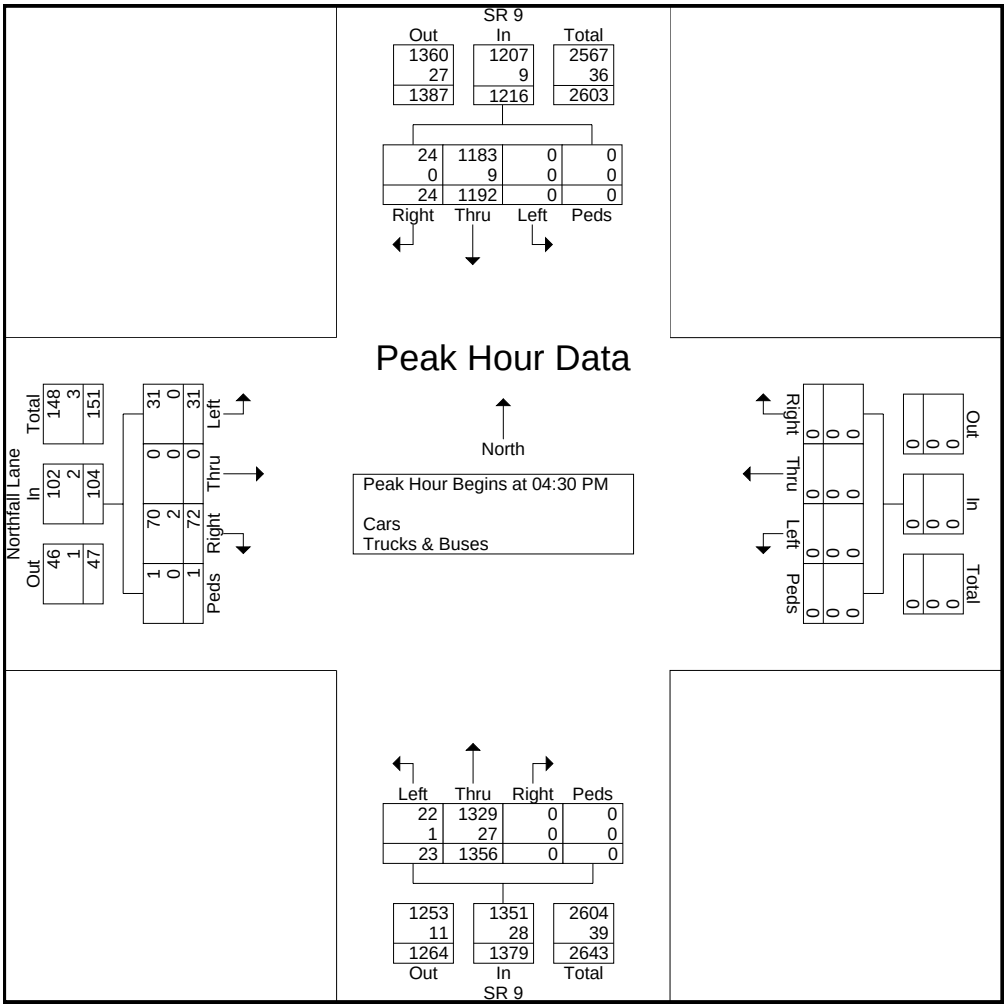
Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-05
Site Code : 00850105
Start Date : 1/22/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Northfall Lane Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	5	331	0	0	336	0	294	5	0	299	8	0	34	0	42	0	0	0	0	0	677
04:45 PM	3	319	0	0	322	0	286	7	0	293	2	0	16	0	18	0	0	0	0	0	633
05:00 PM	7	362	0	0	369	0	302	5	0	307	7	0	18	1	26	0	0	0	0	0	702
05:15 PM	8	344	0	0	352	0	310	7	0	317	14	0	4	0	18	0	0	0	0	0	687
Total Volume	23	1356	0	0	1379	0	1192	24	0	1216	31	0	72	1	104	0	0	0	0	0	2699
% App. Total	1.7	98.3	0	0		0	98	2	0		29.8	0	69.2	1		0	0	0	0		
PHF	.719	.936	.000	.000	.934	.000	.961	.857	.000	.959	.554	.000	.529	.250	.619	.000	.000	.000	.000	.000	.961
Cars	22	1329					1183														
% Cars	95.7	98.0	0	0	98.0	0	99.2	100	0	99.3	100	0	97.2	100	98.1	0	0	0	0	0	98.6
Trucks & Buses	1	27	0	0	28	0	9	0	0	9	0	0	2	0	2	0	0	0	0	0	39
% Trucks & Buses	4.3	2.0	0	0	2.0	0	0.8	0	0	0.7	0	0	2.8	0	1.9	0	0	0	0	0	1.4



Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-06
Site Code : 00850106
Start Date : 1/24/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Brady Pl Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	203	1	0	204	0	232	2	0	234	0	0	0	0	0	1	0	0	0	1	439
07:15 AM	0	259	5	0	264	1	313	2	0	316	0	0	0	0	0	0	0	0	0	0	580
07:30 AM	3	295	8	0	306	1	367	1	0	369	0	0	1	0	1	0	0	0	0	0	676
07:45 AM	1	330	8	0	339	1	431	5	0	437	3	0	0	0	3	0	0	0	0	0	779
Total	4	1087	22	0	1113	3	1343	10	0	1356	3	0	1	0	4	1	0	0	0	1	2474
08:00 AM	1	365	10	0	376	0	383	3	0	386	1	0	0	0	1	1	0	0	0	1	764
08:15 AM	4	272	5	0	281	0	342	3	0	345	2	0	1	0	3	0	0	0	0	0	629
08:30 AM	6	299	4	0	309	0	407	4	0	411	0	0	0	0	0	0	0	0	0	0	720
08:45 AM	3	270	5	0	278	0	377	13	0	390	0	0	2	0	2	0	0	0	0	0	670
Total	14	1206	24	0	1244	0	1509	23	0	1532	3	0	3	0	6	1	0	0	0	1	2783
Break																					
11:00 AM	4	238	2	0	244	1	199	1	0	201	1	0	3	0	4	0	0	0	0	0	449
11:15 AM	3	216	2	0	221	1	258	5	0	264	7	0	5	0	12	0	0	1	0	1	498
11:30 AM	1	264	1	0	266	0	264	13	0	277	8	0	4	0	12	1	0	0	0	1	556
11:45 AM	6	278	4	0	288	1	261	5	0	267	4	0	2	0	6	0	0	0	0	0	561
Total	14	996	9	0	1019	3	982	24	0	1009	20	0	14	0	34	1	0	1	0	2	2064
12:00 PM	3	274	2	0	279	0	263	4	0	267	7	0	7	0	14	0	0	0	0	0	560
12:15 PM	2	270	2	0	274	0	299	11	0	310	6	0	7	0	13	3	0	0	0	3	600
12:30 PM	1	304	8	0	313	1	258	4	0	263	4	0	5	0	9	0	0	0	0	0	585
12:45 PM	2	260	1	0	263	4	305	5	0	314	2	2	3	0	7	0	0	0	0	0	584
Total	8	1108	13	0	1129	5	1125	24	0	1154	19	2	22	0	43	3	0	0	0	3	2329
Break																					
04:00 PM	4	314	6	0	324	1	227	6	0	234	4	0	2	0	6	0	0	0	0	0	564
04:15 PM	1	287	1	0	289	1	314	5	0	320	0	0	5	0	5	0	0	0	0	0	614
04:30 PM	3	310	4	0	317	1	288	4	0	293	7	0	7	0	14	1	0	0	0	1	625
04:45 PM	2	337	3	0	342	0	269	5	0	274	9	0	7	0	16	0	0	0	0	0	632
Total	10	1248	14	0	1272	3	1098	20	0	1121	20	0	21	0	41	1	0	0	0	1	2435
05:00 PM	5	388	5	0	398	0	299	3	0	302	8	0	1	0	9	1	0	0	0	1	710
05:15 PM	2	341	10	0	353	0	323	1	0	324	3	0	6	0	9	0	0	0	0	0	686
05:30 PM	5	322	6	0	333	0	318	3	0	321	5	0	4	0	9	0	0	0	0	0	663
05:45 PM	1	303	6	0	310	1	250	8	0	259	4	1	4	0	9	0	0	0	0	0	578
Total	13	1354	27	0	1394	1	1190	15	0	1206	20	1	15	0	36	1	0	0	0	1	2637
Grand Total	63	6999	109	0	7171	15	7247	116	0	7378	85	3	76	0	164	8	0	1	0	9	14722
Apprch %	0.9	97.6	1.5	0		0.2	98.2	1.6	0		51.8	1.8	46.3	0		88.9	0	11.1	0		
Total %	0.4	47.5	0.7	0	48.7	0.1	49.2	0.8	0	50.1	0.6	0	0.5	0	1.1	0.1	0	0	0	0.1	
Cars	63	6914	108	0	7085	15	7190	115	0	7320	85	3	76	0	164	8	0	1	0	9	14578
% Cars	100	98.8	99.1	0	98.8	100	99.2	99.1	0	99.2	100	100	100	0	100	100	0	100	0	100	99
Trucks & Buses	0	85	1	0	86	0	57	1	0	58	0	0	0	0	0	0	0	0	0	0	144
% Trucks & Buses	0	1.2	0.9	0	1.2	0	0.8	0.9	0	0.8	0	0	0	0	0	0	0	0	0	0	1

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-06
Site Code : 00850106
Start Date : 1/24/2008
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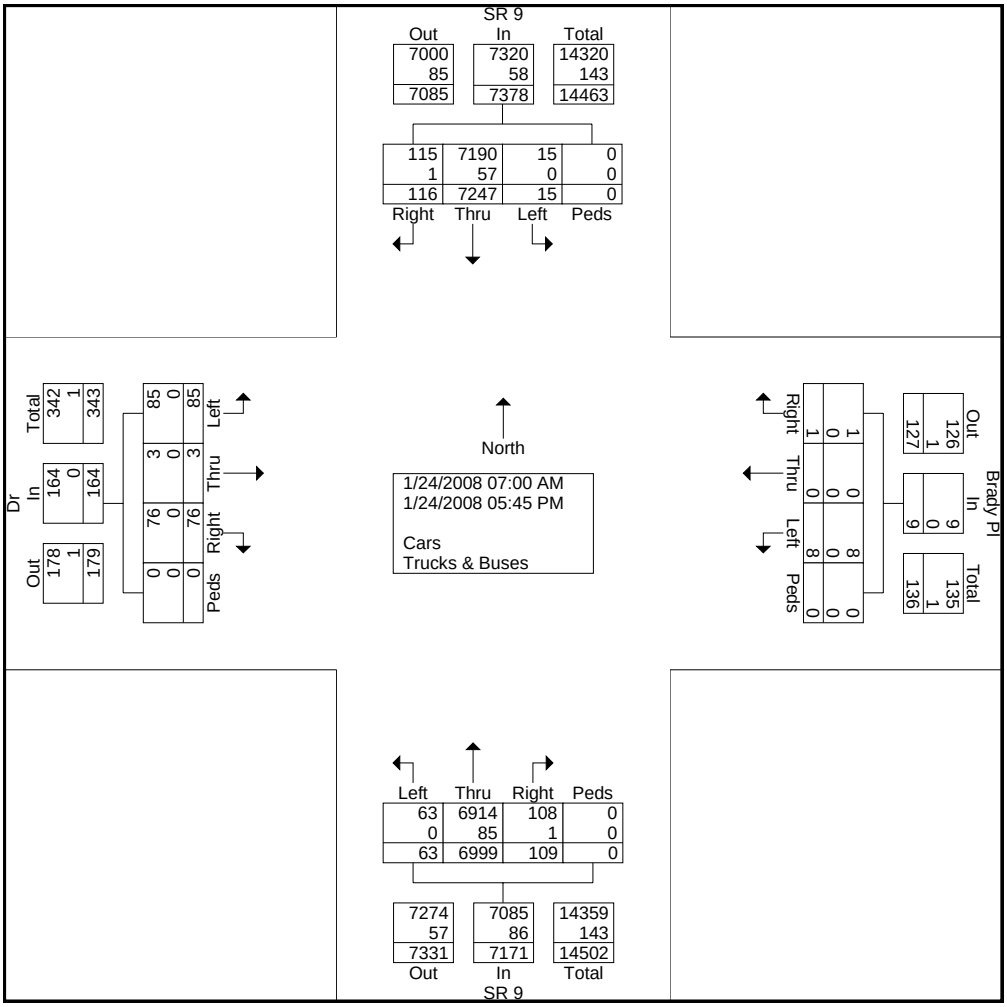


Traffic Data Collection, Inc.

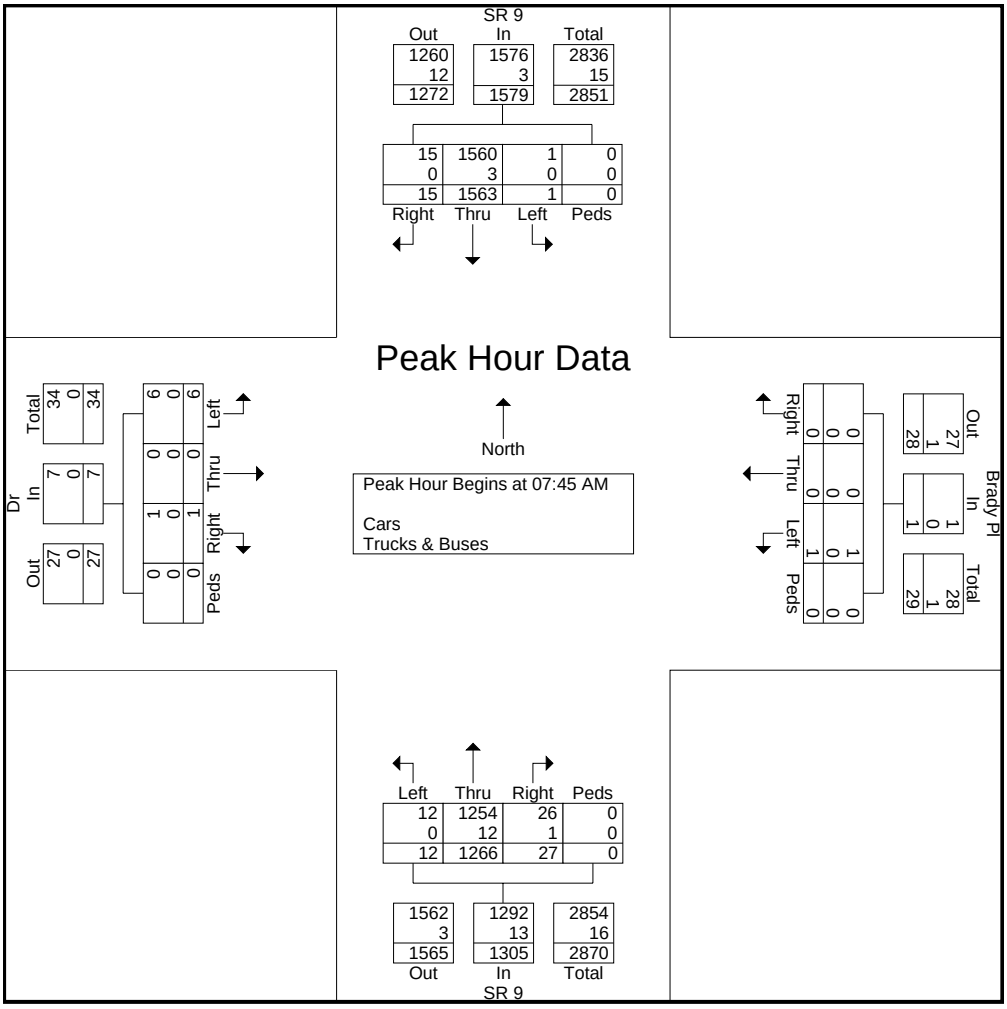
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-06
Site Code : 00850106
Start Date : 1/24/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Brady Pl Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	1	330	8	0	339	1	431	5	0	437	3	0	0	0	3	0	0	0	0	0	779
08:00 AM	1	365	10	0	376	0	383	3	0	386	1	0	0	0	1	1	0	0	0	1	764
08:15 AM	4	272	5	0	281	0	342	3	0	345	2	0	1	0	3	0	0	0	0	0	629
08:30 AM	6	299	4	0	309	0	407	4	0	411	0	0	0	0	0	0	0	0	0	0	720
Total Volume	12	1266	27	0	1305	1	1563	15	0	1579	6	0	1	0	7	1	0	0	0	1	2892
% App. Total	0.9	97	2.1	0		0.1	99	0.9	0		85.7	0	14.3	0		100	0	0	0		
PHF	.500	.867	.675	.000	.868	.250	.907	.750	.000	.903	.500	.000	.250	.000	.583	.250	.000	.000	.000	.250	.928
Cars	12	1254					1560														
% Cars	100	99.1	96.3	0	99.0	100	99.8	100	0	99.8	100	0	100	0	100	100	0	0	0	100	99.4
Trucks & Buses	0	12	1	0	13	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	16
% Trucks & Buses	0	0.9	3.7	0	1.0	0	0.2	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0.6



Traffic Data Collection, Inc.

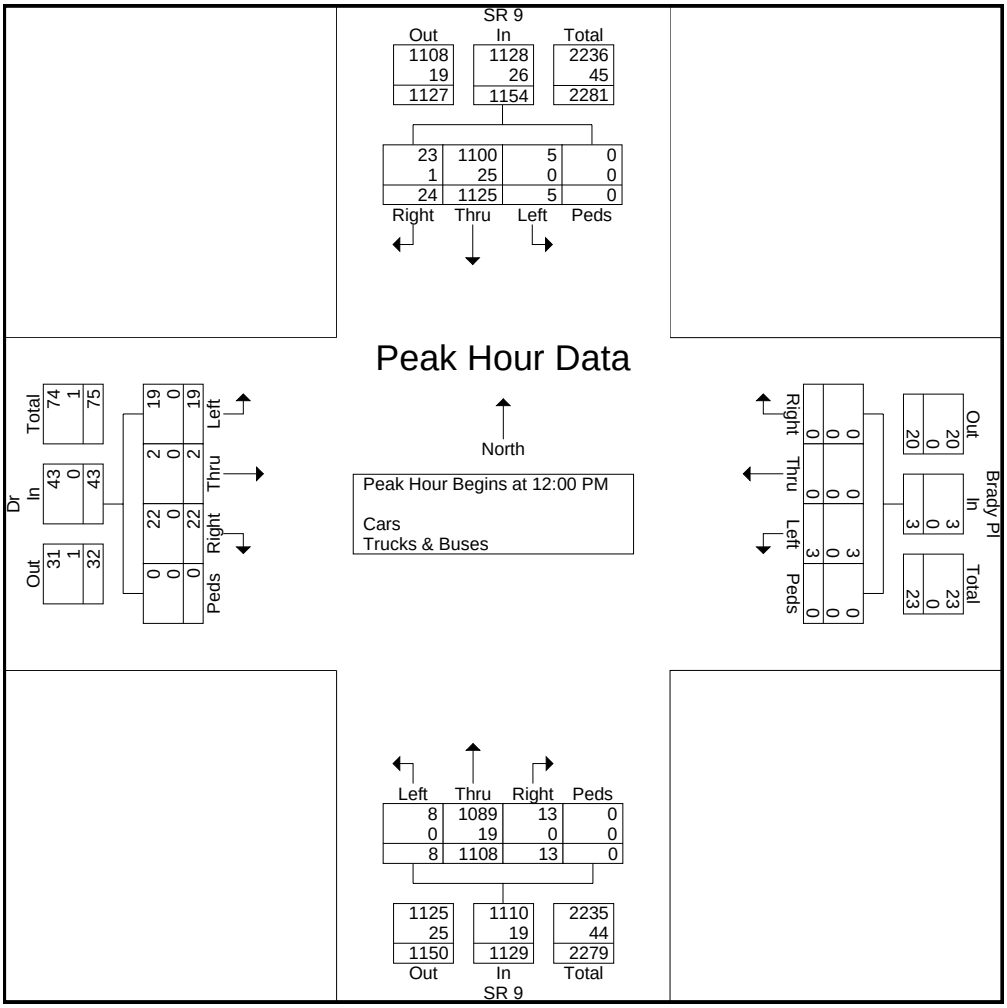
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-06
Site Code : 00850106
Start Date : 1/24/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Brady Pl Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	3	274	2	0	279	0	263	4	0	267	7	0	7	0	14	0	0	0	0	0	560
12:15 PM	2	270	2	0	274	0	299	11	0	310	6	0	7	0	13	3	0	0	0	3	600
12:30 PM	1	304	8	0	313	1	258	4	0	263	4	0	5	0	9	0	0	0	0	0	585
12:45 PM	2	260	1	0	263	4	305	5	0	314	2	2	3	0	7	0	0	0	0	0	584
Total Volume	8	1108	13	0	1129	5	1125	24	0	1154	19	2	22	0	43	3	0	0	0	3	2329
% App. Total	0.7	98.1	1.2	0		0.4	97.5	2.1	0		44.2	4.7	51.2	0		100	0	0	0		
PHF	.667	.911	.406	.000	.902	.313	.922	.545	.000	.919	.679	.250	.786	.000	.768	.250	.000	.000	.000	.250	.970
Cars	8	1089					1100														
% Cars	100	98.3	100	0	98.3	100	97.8	95.8	0	97.7	100	100	100	0	100	100	0	0	0	100	98.1
Trucks & Buses	0	19	0	0	19	0	25	1	0	26	0	0	0	0	0	0	0	0	0	0	45
% Trucks & Buses	0	1.7	0	0	1.7	0	2.2	4.2	0	2.3	0	0	0	0	0	0	0	0	0	0	1.9



Traffic Data Collection, Inc.

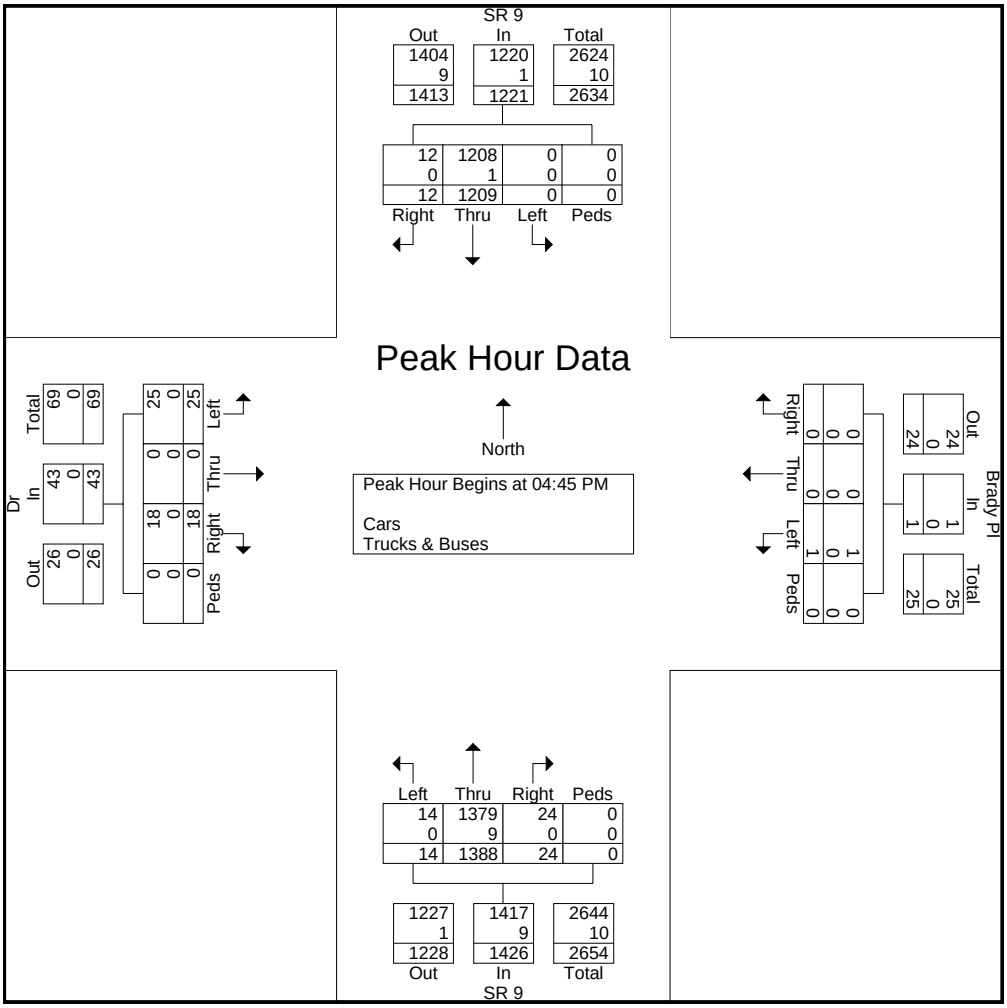
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: JRM
Weather: Cold
Other: LE

File Name : 08501-06
Site Code : 00850106
Start Date : 1/24/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Brady Pl Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	337	3	0	342	0	269	5	0	274	9	0	7	0	16	0	0	0	0	0	632
05:00 PM	5	388	5	0	398	0	299	3	0	302	8	0	1	0	9	1	0	0	0	1	710
05:15 PM	2	341	10	0	353	0	323	1	0	324	3	0	6	0	9	0	0	0	0	0	686
05:30 PM	5	322	6	0	333	0	318	3	0	321	5	0	4	0	9	0	0	0	0	0	663
Total Volume	14	1388	24	0	1426	0	1209	12	0	1221	25	0	18	0	43	1	0	0	0	1	2691
% App. Total	1	97.3	1.7	0		0	99	1	0		58.1	0	41.9	0		100	0	0	0		
PHF	.700	.894	.600	.000	.896	.000	.936	.600	.000	.942	.694	.000	.643	.000	.672	.250	.000	.000	.000	.250	.948
Cars	14	1379					1208														
% Cars	100	99.4	100	0	99.4	0	99.9	100	0	99.9	100	0	100	0	100	100	0	0	0	100	99.6
Trucks & Buses	0	9	0	0	9	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	10
% Trucks & Buses	0	0.6	0	0	0.6	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0.4



Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935/2446
Counted By: BLR/JRM
Weather: Mild
Other: LE

File Name : 08501-07 recount
Site Code : 00850107
Start Date : 3/11/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Roswell St Eastbound					Maxwell St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	167	3	0	170	26	272	3	0	301	2	43	18	0	63	2	4	6	0	12	546
07:15 AM	0	227	4	0	231	47	305	4	1	357	2	36	37	0	75	7	7	7	2	23	686
07:30 AM	0	274	1	0	275	27	319	4	0	350	12	27	40	1	80	6	12	15	0	33	738
07:45 AM	0	301	1	0	302	35	389	7	0	431	15	20	51	0	86	16	12	15	1	44	863
Total	0	969	9	0	978	135	1285	18	1	1439	31	126	146	1	304	31	35	43	3	112	2833
08:00 AM	0	308	2	0	310	31	331	3	0	365	8	22	58	0	88	8	17	22	0	47	810
08:15 AM	0	293	1	0	294	41	333	2	2	378	5	46	49	0	100	5	16	18	0	39	811
08:30 AM	0	320	1	0	321	33	352	4	0	389	5	27	49	1	82	6	9	16	0	31	823
08:45 AM	0	300	2	0	302	31	303	4	0	338	12	33	44	0	89	9	12	21	1	43	772
Total	0	1221	6	0	1227	136	1319	13	2	1470	30	128	200	1	359	28	54	77	1	160	3216
Break																					
04:00 PM	0	313	1	0	314	22	254	11	0	287	7	24	23	0	54	8	45	25	0	78	733
04:15 PM	0	327	2	0	329	27	283	13	0	323	6	27	21	0	54	6	43	18	0	67	773
04:30 PM	1	302	2	2	307	25	264	14	1	304	13	38	28	0	79	13	50	33	1	97	787
04:45 PM	0	336	1	0	337	27	292	8	0	327	6	18	24	0	48	11	31	23	0	65	777
Total	1	1278	6	2	1287	101	1093	46	1	1241	32	107	96	0	235	38	169	99	1	307	3070
05:00 PM	0	378	0	0	378	16	299	7	1	323	6	22	29	0	57	14	64	34	0	112	870
05:15 PM	0	370	1	0	371	15	361	10	0	386	5	17	24	0	46	3	51	22	0	76	879
05:30 PM	0	293	0	1	294	9	305	7	1	322	6	22	18	1	47	16	50	36	0	102	765
05:45 PM	0	269	6	1	276	21	322	6	0	349	8	22	14	0	44	6	47	18	0	71	740
Total	0	1310	7	2	1319	61	1287	30	2	1380	25	83	85	1	194	39	212	110	0	361	3254
Grand Total	1	4778	28	4	4811	433	4984	107	6	5530	118	444	527	3	1092	136	470	329	5	940	12373
Apprch %	0	99.3	0.6	0.1		7.8	90.1	1.9	0.1		10.8	40.7	48.3	0.3		14.5	50	35	0.5		
Total %	0	38.6	0.2	0	38.9	3.5	40.3	0.9	0	44.7	1	3.6	4.3	0	8.8	1.1	3.8	2.7	0	7.6	
Cars	0	4661	26	4	4691	356	4941	105	6	5408	118	379	524	3	1024	133	451	296	5	885	12008
% Cars	0	97.6	92.9	100	97.5	82.2	99.1	98.1	100	97.8	100	85.4	99.4	100	93.8	97.8	96	90	100	94.1	97.1
Trucks & Buses	1	117	2	0	120	77	43	2	0	122	0	65	3	0	68	3	19	33	0	55	365
% Trucks & Buses	100	2.4	7.1	0	2.5	17.8	0.9	1.9	0	2.2	0	14.6	0.6	0	6.2	2.2	4	10	0	5.9	2.9

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

Traffic Data Collection, Inc.

Atlanta - Hilton Head

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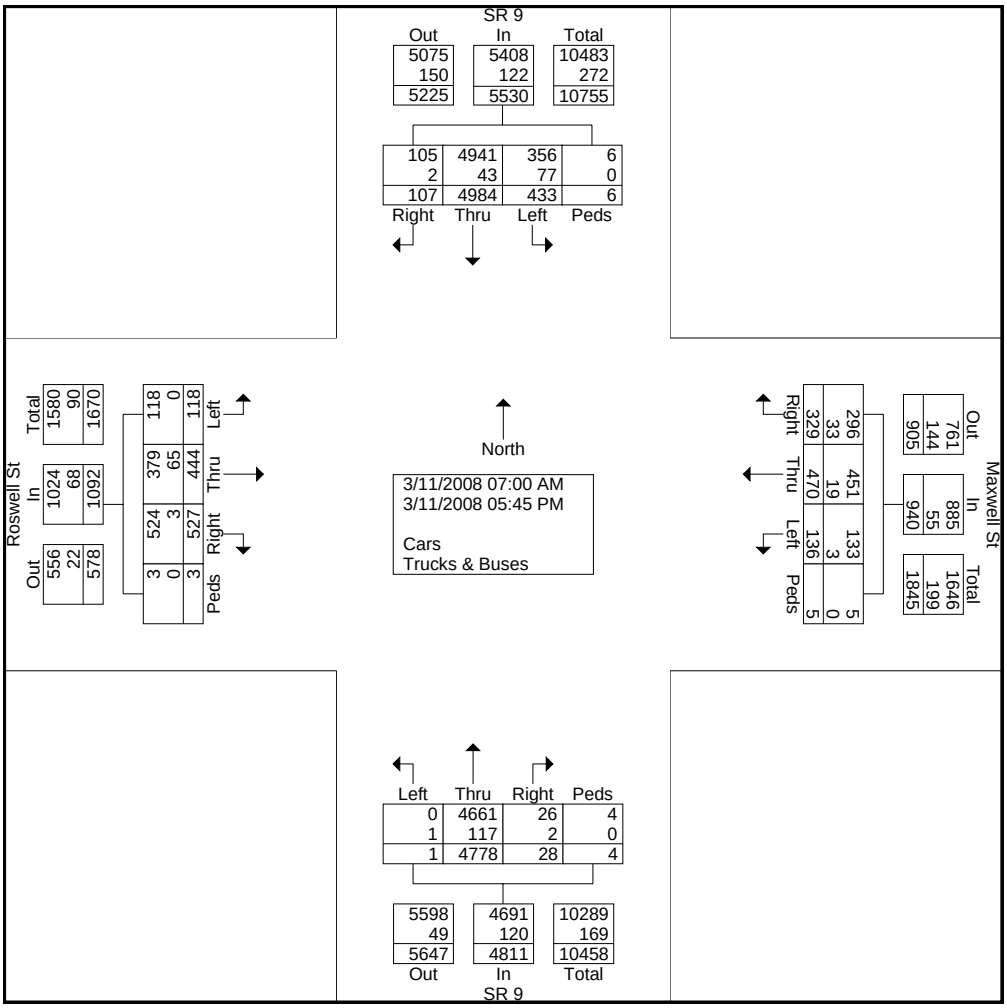
Counter: 1935/2446
Counted By: BLR/JRM
Weather: Mild
Other: LE

File Name : 08501-07 recount
Site Code : 00850107
Start Date : 3/11/2008
Page No : 2



Traffic Data Collection, Inc.

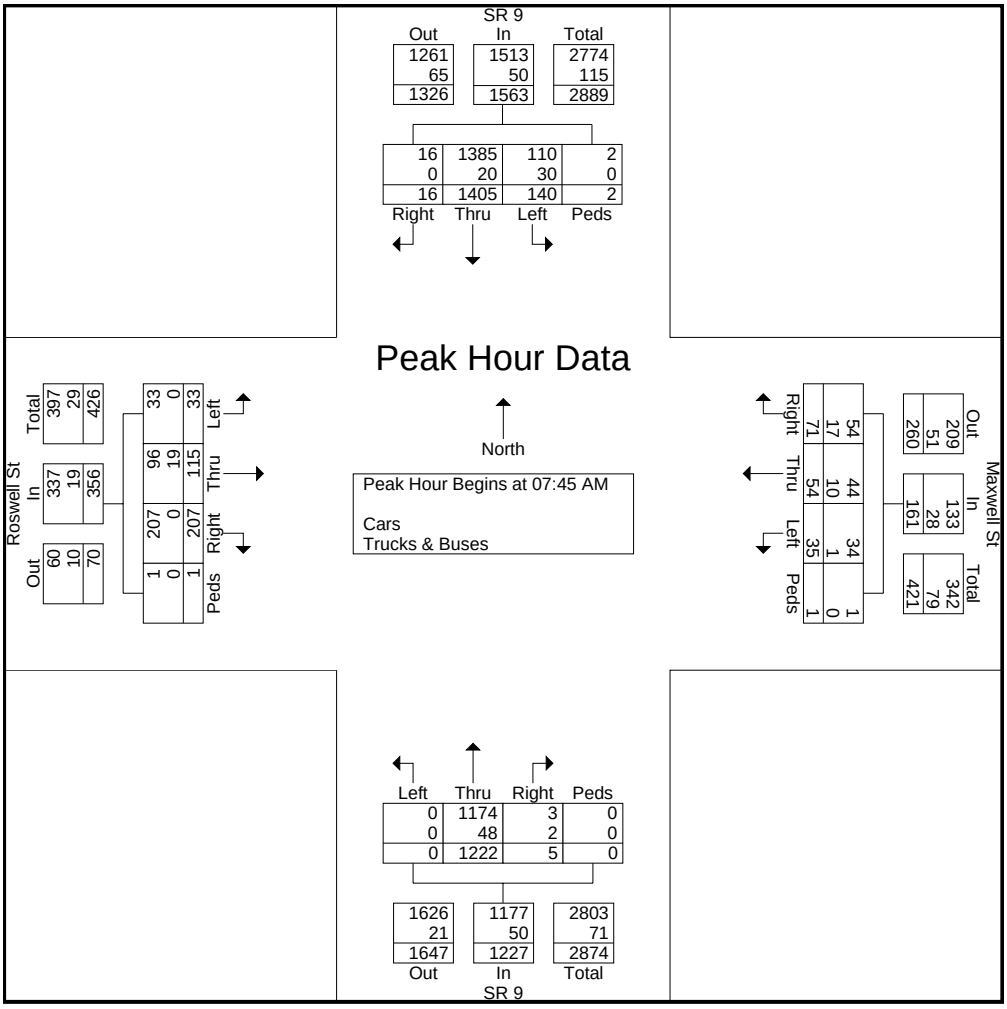
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935/2446
Counted By: BLR/JRM
Weather: Mild
Other: LE

File Name : 08501-07 recount
Site Code : 00850107
Start Date : 3/11/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Roswell St Eastbound					Maxwell St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	301	1	0	302	35	389	7	0	431	15	20	51	0	86	16	12	15	1	44	863
08:00 AM	0	308	2	0	310	31	331	3	0	365	8	22	58	0	88	8	17	22	0	47	810
08:15 AM	0	293	1	0	294	41	333	2	2	378	5	46	49	0	100	5	16	18	0	39	811
08:30 AM	0	320	1	0	321	33	352	4	0	389	5	27	49	1	82	6	9	16	0	31	823
Total Volume	0	1222	5	0	1227	140	1405	16	2	1563	33	115	207	1	356	35	54	71	1	161	3307
% App. Total	0	99.6	0.4	0		9	89.9	1	0.1		9.3	32.3	58.1	0.3		21.7	33.5	44.1	0.6		
PHF	.000	.955	.625	.000	.956	.854	.903	.571	.250	.907	.550	.625	.892	.250	.890	.547	.794	.807	.250	.856	.958
Cars	0	1174					1385														
% Cars	0	96.1	60.0	0	95.9	78.6	98.6	100	100	96.8	100	83.5	100	100	94.7	97.1	81.5	76.1	100	82.6	95.6
Trucks & Buses	0	48	2	0	50	30	20	0	0	50	0	19	0	0	19	1	10	17	0	28	147
% Trucks & Buses	0	3.9	40.0	0	4.1	21.4	1.4	0	0	3.2	0	16.5	0	0	5.3	2.9	18.5	23.9	0	17.4	4.4



Traffic Data Collection, Inc.

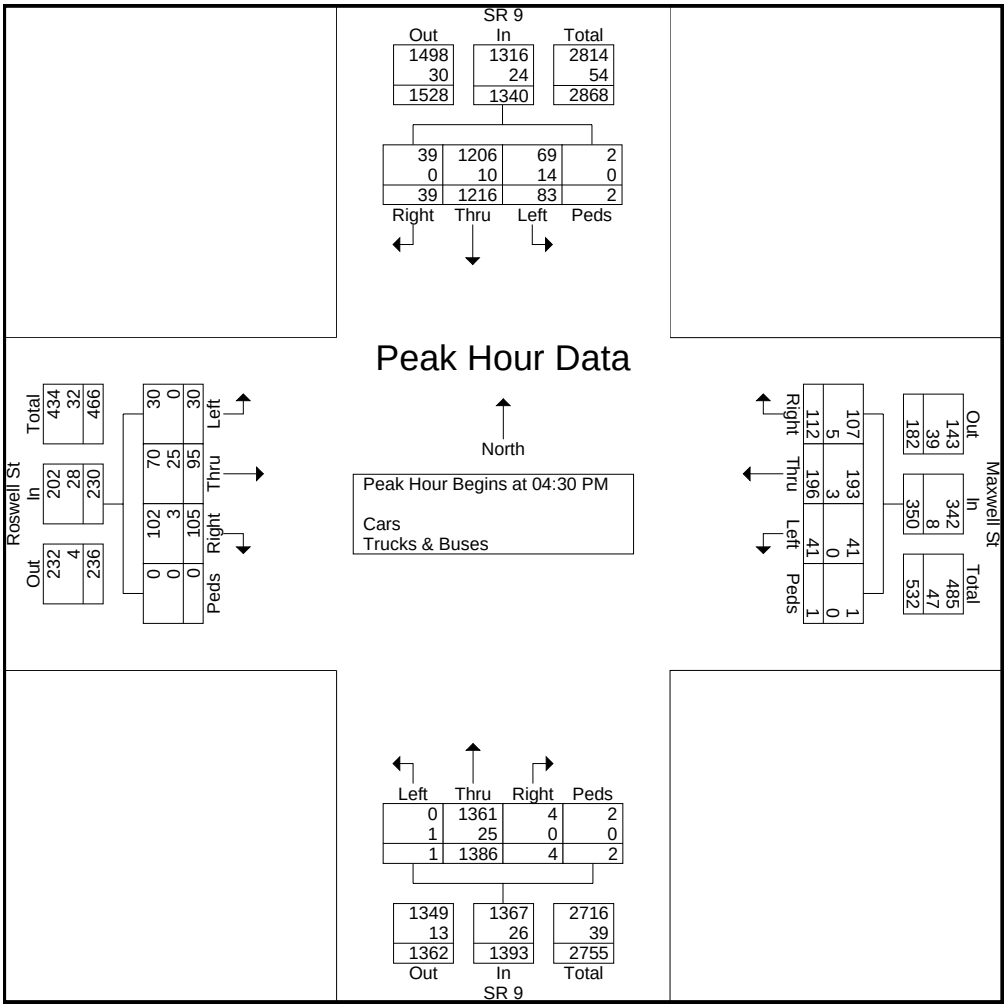
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935/2446
Counted By: BLR/JRM
Weather: Mild
Other: LE

File Name : 08501-07 recount
Site Code : 00850107
Start Date : 3/11/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Roswell St Eastbound					Maxwell St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	302	2	2	307	25	264	14	1	304	13	38	28	0	79	13	50	33	1	97	787
04:45 PM	0	336	1	0	337	27	292	8	0	327	6	18	24	0	48	11	31	23	0	65	777
05:00 PM	0	378	0	0	378	16	299	7	1	323	6	22	29	0	57	14	64	34	0	112	870
05:15 PM	0	370	1	0	371	15	361	10	0	386	5	17	24	0	46	3	51	22	0	76	879
Total Volume	1	1386	4	2	1393	83	1216	39	2	1340	30	95	105	0	230	41	196	112	1	350	3313
% App. Total	0.1	99.5	0.3	0.1		6.2	90.7	2.9	0.1		13	41.3	45.7	0		11.7	56	32	0.3		
PHF	.250	.917	.500	.250	.921	.769	.842	.696	.500	.868	.577	.625	.905	.000	.728	.732	.766	.824	.250	.781	.942
Cars	0	1361					1206														
% Cars	0	98.2	100	100	98.1	83.1	99.2	100	100	98.2	100	73.7	97.1	0	87.8	100	98.5	95.5	100	97.7	97.4
Trucks & Buses	1	25	0	0	26	14	10	0	0	24	0	25	3	0	28	0	3	5	0	8	86
% Trucks & Buses	100	1.8	0	0	1.9	16.9	0.8	0	0	1.8	0	26.3	2.9	0	12.2	0	1.5	4.5	0	2.3	2.6



Traffic Data Collection, Inc.

Atlanta - Hilton Head
www.trafficdatacollection.com

Counter: 1934
Counted By: BLR
Weather: Cold
Other: LE

File Name : 08501-08
Site Code : 00850108
Start Date : 1/22/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					DeVore Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	198	16	0	214	10	261	0	0	271	0	0	0	0	0	15	0	4	0	19	504
07:15 AM	0	235	23	1	259	13	328	0	0	341	0	0	0	0	0	25	0	4	0	29	629
07:30 AM	0	282	33	0	315	7	392	3	0	402	0	0	0	0	0	10	3	4	0	17	734
07:45 AM	0	280	52	0	332	14	373	0	0	387	0	0	0	0	0	14	0	3	0	17	736
Total	0	995	124	1	1120	44	1354	3	0	1401	0	0	0	0	0	64	3	15	0	82	2603
08:00 AM	0	292	42	0	334	11	358	0	0	369	2	0	0	0	2	12	0	5	0	17	722
08:15 AM	0	257	50	0	307	10	333	0	0	343	0	0	0	0	0	19	0	8	1	28	678
08:30 AM	0	252	44	0	296	7	327	0	0	334	0	0	0	0	0	12	0	9	0	21	651
08:45 AM	0	282	32	0	314	7	353	0	0	360	0	0	0	0	0	19	0	7	1	27	701
Total	0	1083	168	0	1251	35	1371	0	0	1406	2	0	0	0	2	62	0	29	2	93	2752
Break																					
11:00 AM	0	192	27	0	219	7	219	0	0	226	0	0	0	0	0	21	0	8	0	29	474
11:15 AM	0	229	28	0	257	6	207	0	0	213	0	0	0	0	0	16	0	5	0	21	491
11:30 AM	1	261	29	0	291	10	214	2	0	226	0	0	1	0	1	17	0	10	0	27	545
11:45 AM	0	248	33	2	283	10	257	1	0	268	0	0	4	0	4	16	0	6	0	22	577
Total	1	930	117	2	1050	33	897	3	0	933	0	0	5	0	5	70	0	29	0	99	2087
12:00 PM	0	254	37	0	291	7	193	1	0	201	0	0	1	1	2	13	0	7	0	20	514
12:15 PM	1	263	40	0	304	7	241	1	0	249	0	0	1	0	1	23	0	9	0	32	586
12:30 PM	1	270	37	0	308	5	256	0	0	261	0	0	2	1	3	14	0	12	0	26	598
12:45 PM	1	243	29	0	273	9	255	0	0	264	0	0	1	0	1	24	0	7	0	31	569
Total	3	1030	143	0	1176	28	945	2	0	975	0	0	5	2	7	74	0	35	0	109	2267
Break																					
04:00 PM	0	309	31	0	340	3	253	0	0	256	0	0	0	0	0	19	2	14	0	35	631
04:15 PM	1	304	27	1	333	1	265	2	1	269	0	0	0	0	0	14	0	12	0	26	628
04:30 PM	0	327	23	0	350	8	273	0	0	281	0	0	1	0	1	21	0	10	0	31	663
04:45 PM	0	320	27	0	347	1	260	0	0	261	0	0	0	0	0	14	0	15	1	30	638
Total	1	1260	108	1	1370	13	1051	2	1	1067	0	0	1	0	1	68	2	51	1	122	2560
05:00 PM	1	316	50	0	367	3	259	1	0	263	0	0	0	0	0	21	0	10	0	31	661
05:15 PM	1	330	38	0	369	8	318	1	0	327	1	0	2	0	3	17	0	8	0	25	724
05:30 PM	0	338	30	0	368	3	287	1	0	291	0	0	0	2	2	17	0	14	0	31	692
05:45 PM	0	293	33	0	326	7	259	0	0	266	0	0	0	0	0	17	0	13	0	30	622
Total	2	1277	151	0	1430	21	1123	3	0	1147	1	0	2	2	5	72	0	45	0	117	2699
Grand Total	7	6575	811	4	7397	174	6741	13	1	6929	3	0	13	4	20	410	5	204	3	622	14968
Apprch %	0.1	88.9	11	0.1		2.5	97.3	0.2	0		15	0	65	20		65.9	0.8	32.8	0.5		
Total %	0	43.9	5.4	0	49.4	1.2	45	0.1	0	46.3	0	0	0.1	0	0.1	2.7	0	1.4	0	4.2	
Cars	7	6442	790	4	7243	167	6550	13	1	6731	3	0	13	3	19	405	5	201	3	614	14607
% Cars	100	98	97.4	100	97.9	96	97.2	100	100	97.1	100	0	100	75	95	98.8	100	98.5	100	98.7	97.6
Trucks & Buses	0	133	21	0	154	7	191	0	0	198	0	0	0	1	1	5	0	3	0	8	361
% Trucks & Buses	0	2	2.6	0	2.1	4	2.8	0	0	2.9	0	0	0	25	5	1.2	0	1.5	0	1.3	2.4

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Weather: Cold
Other: LE

File Name : 08501-08
Site Code : 00850108
Start Date : 1/22/2008
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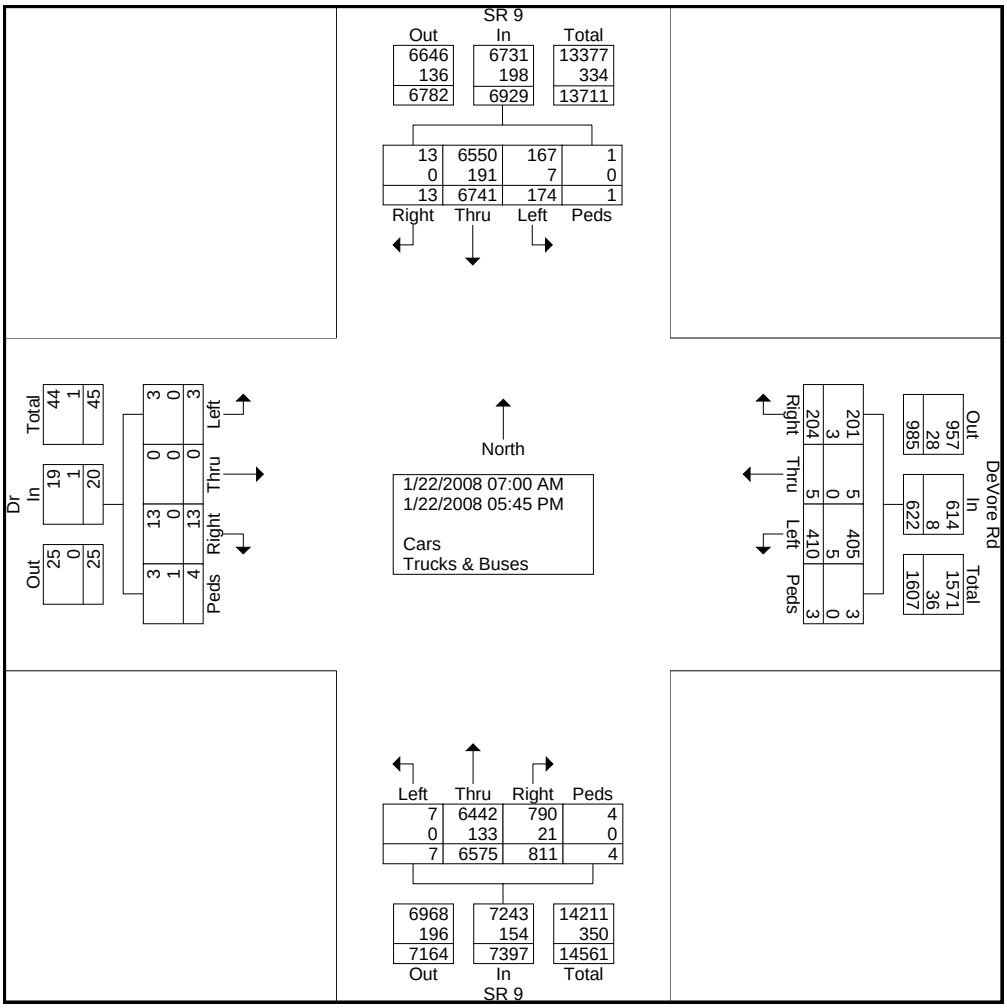

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Other: LE

File Name : 08501-08
Site Code : 00850108
Start Date : 1/22/2008
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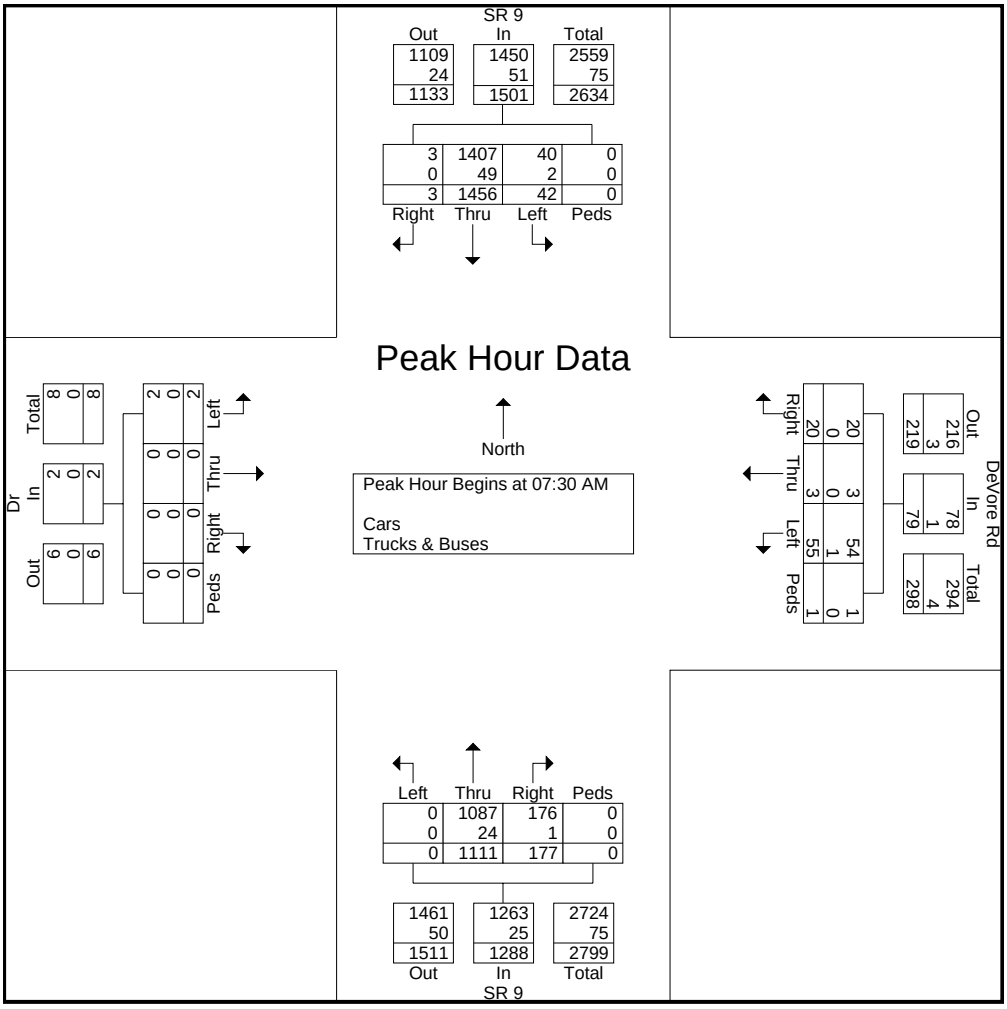
	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					DeVore Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	282	33	0	315	7	392	3	0	402	0	0	0	0	0	10	3	4	0	17	734
07:45 AM	0	280	52	0	332	14	373	0	0	387	0	0	0	0	0	14	0	3	0	17	736
08:00 AM	0	292	42	0	334	11	358	0	0	369	2	0	0	0	2	12	0	5	0	17	722
08:15 AM	0	257	50	0	307	10	333	0	0	343	0	0	0	0	0	19	0	8	1	28	678
Total Volume	0	1111	177	0	1288	42	1456	3	0	1501	2	0	0	0	2	55	3	20	1	79	2870
% App. Total	0	86.3	13.7	0		2.8	97	0.2	0		100	0	0	0		69.6	3.8	25.3	1.3		
PHF	.000	.951	.851	.000	.964	.750	.929	.250	.000	.933	.250	.000	.000	.000	.250	.724	.250	.625	.250	.705	.975
Cars	0	1087					1407														
% Cars	0	97.8	99.4	0	98.1	95.2	96.6	100	0	96.6	100	0	0	0	100	98.2	100	100	100	98.7	97.3
Trucks & Buses	0	24	1	0	25	2	49	0	0	51	0	0	0	0	0	1	0	0	0	1	77
% Trucks & Buses	0	2.2	0.6	0	1.9	4.8	3.4	0	0	3.4	0	0	0	0	0	1.8	0	0	0	1.3	2.7



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Other: LE

File Name : 08501-08
Site Code : 00850108
Start Date : 1/22/2008
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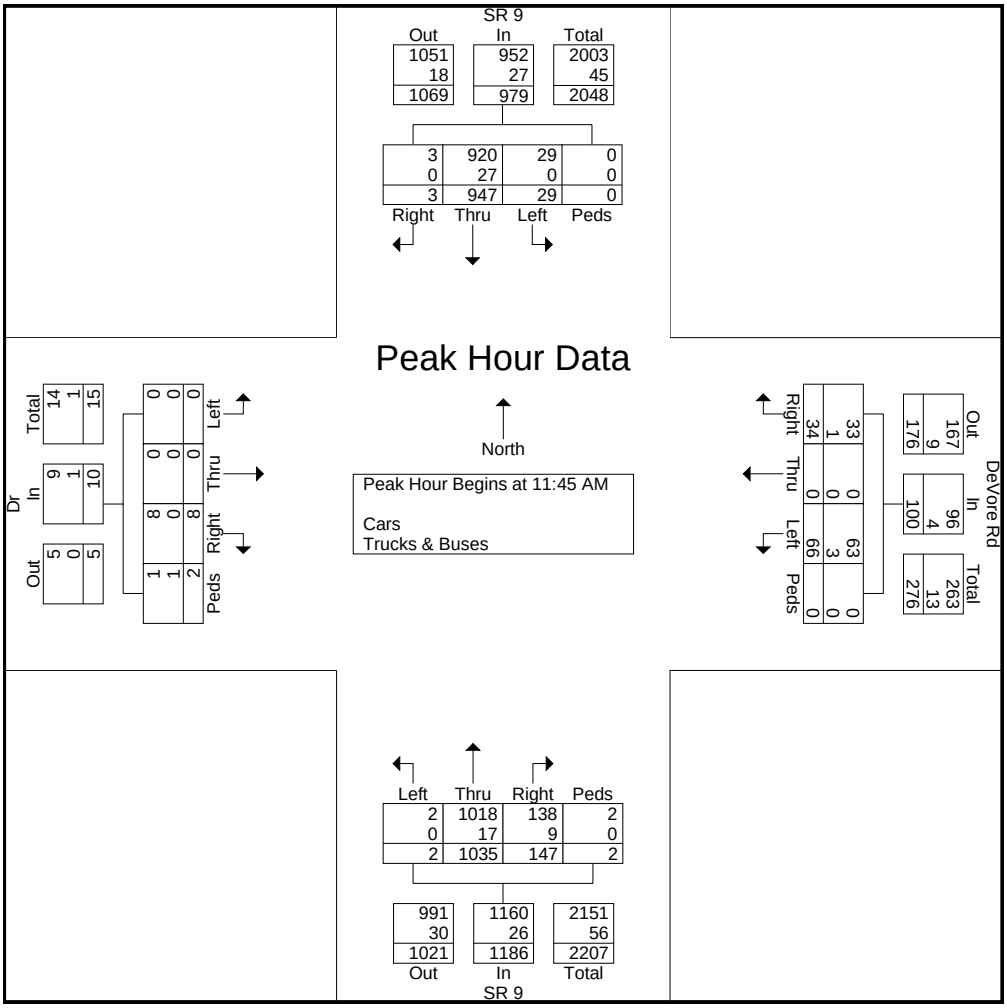
	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					DeVore Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	0	248	33	2	283	10	257	1	0	268	0	0	4	0	4	16	0	6	0	22	577
12:00 PM	0	254	37	0	291	7	193	1	0	201	0	0	1	1	2	13	0	7	0	20	514
12:15 PM	1	263	40	0	304	7	241	1	0	249	0	0	1	0	1	23	0	9	0	32	586
12:30 PM	1	270	37	0	308	5	256	0	0	261	0	0	2	1	3	14	0	12	0	26	598
Total Volume	2	1035	147	2	1186	29	947	3	0	979	0	0	8	2	10	66	0	34	0	100	2275
% App. Total	0.2	87.3	12.4	0.2		3	96.7	0.3	0		0	0	80	20		66	0	34	0		
PHF	.500	.958	.919	.250	.963	.725	.921	.750	.000	.913	.000	.000	.500	.500	.625	.717	.000	.708	.000	.781	.951
Cars	2	1018																			
% Cars	100	98.4	93.9	100	97.8	100	97.1	100	0	97.2	0	0	100	50.0	90.0	95.5	0	97.1	0	96.0	97.5
Trucks & Buses	0	17	9	0	26	0	27	0	0	27	0	0	0	1	1	3	0	1	0	4	58
% Trucks & Buses	0	1.6	6.1	0	2.2	0	2.9	0	0	2.8	0	0	0	50.0	10.0	4.5	0	2.9	0	4.0	2.5



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File Name : 08501-08
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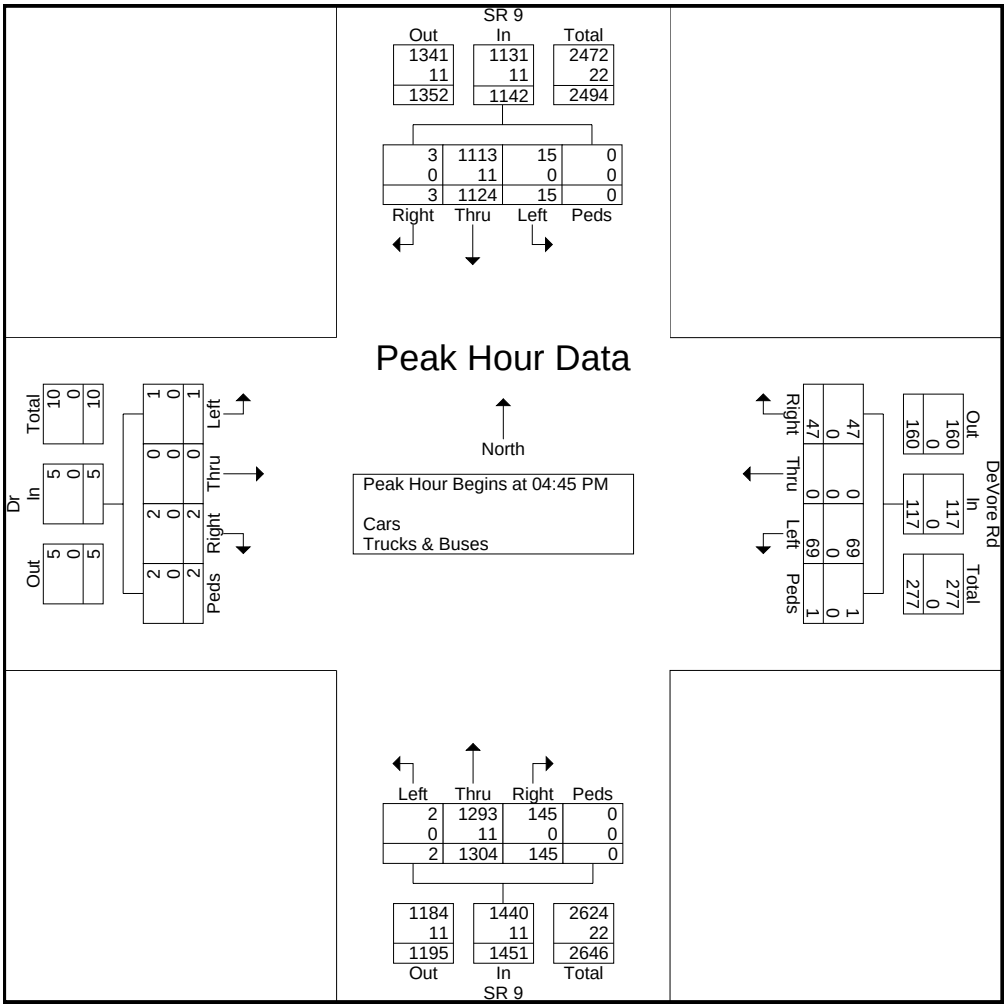
	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					DeVore Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	320	27	0	347	1	260	0	0	261	0	0	0	0	0	14	0	15	1	30	638
05:00 PM	1	316	50	0	367	3	259	1	0	263	0	0	0	0	0	21	0	10	0	31	661
05:15 PM	1	330	38	0	369	8	318	1	0	327	1	0	2	0	3	17	0	8	0	25	724
05:30 PM	0	338	30	0	368	3	287	1	0	291	0	0	0	2	2	17	0	14	0	31	692
Total Volume	2	1304	145	0	1451	15	1124	3	0	1142	1	0	2	2	5	69	0	47	1	117	2715
% App. Total	0.1	89.9	10	0		1.3	98.4	0.3	0		20	0	40	40		59	0	40.2	0.9		
PHF	.500	.964	.725	.000	.983	.469	.884	.750	.000	.873	.250	.000	.250	.250	.417	.821	.000	.783	.250	.944	.938
Cars	2	1293					1113														
% Cars	100	99.2	100	0	99.2	100	99.0	100	0	99.0	100	0	100	100	100	100	0	100	100	100	99.2
Trucks & Buses	0	11	0	0	11	0	11	0	0	11	0	0	0	0	0	0	0	0	0	0	22
% Trucks & Buses	0	0.8	0	0	0.8	0	1.0	0	0	1.0	0	0	0	0	0	0	0	0	0	0	0.8



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File Name : 08501-09
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Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Eastbound					Janis Lane Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	183	0	0	183	0	291	0	0	291	0	0	0	0	0	0	0	0	0	0	474
07:15 AM	0	183	0	0	183	1	308	0	0	309	0	0	0	0	0	1	0	0	0	1	493
07:30 AM	0	263	0	0	263	1	379	0	0	380	0	0	0	0	0	1	0	1	0	2	645
07:45 AM	0	291	0	0	291	1	381	0	0	382	0	0	0	0	0	0	0	1	0	1	674
Total	0	920	0	0	920	3	1359	0	0	1362	0	0	0	0	0	2	0	2	0	4	2286
08:00 AM	0	303	0	0	303	0	361	0	0	361	0	0	0	0	0	0	0	1	0	1	665
08:15 AM	0	280	2	0	282	0	379	0	0	379	0	0	0	0	0	0	0	0	0	0	661
08:30 AM	0	218	2	0	220	0	366	0	0	366	0	0	0	0	0	0	0	0	0	0	586
08:45 AM	0	248	0	1	249	2	347	0	0	349	0	0	0	0	0	0	0	0	1	1	599
Total	0	1049	4	1	1054	2	1453	0	0	1455	0	0	0	0	0	0	0	1	1	2	2511
Break																					
11:00 AM	0	226	3	1	230	2	227	0	0	229	0	0	0	0	0	0	0	1	2	3	462
11:15 AM	0	244	1	0	245	3	230	0	0	233	0	0	0	1	1	0	0	2	2	4	483
11:30 AM	0	267	0	2	269	2	265	0	0	267	0	0	0	0	0	1	0	3	0	4	540
11:45 AM	0	241	2	1	244	0	246	0	0	246	0	0	1	0	1	0	0	2	0	2	493
Total	0	978	6	4	988	7	968	0	0	975	0	0	1	1	2	1	0	8	4	13	1978
12:00 PM	1	274	3	0	278	1	262	0	0	263	0	0	0	0	0	1	0	1	1	3	544
12:15 PM	0	302	1	1	304	0	252	0	0	252	0	0	0	0	0	2	0	1	0	3	559
12:30 PM	0	323	0	0	323	1	315	0	0	316	0	0	0	1	1	0	0	1	0	1	641
12:45 PM	0	298	1	0	299	1	328	0	0	329	0	0	0	0	0	0	0	1	0	1	629
Total	1	1197	5	1	1204	3	1157	0	0	1160	0	0	0	1	1	3	0	4	1	8	2373
Break																					
04:00 PM	0	340	1	1	342	0	249	0	0	249	0	0	0	0	0	0	0	3	0	3	594
04:15 PM	0	316	2	0	318	1	282	0	1	284	0	0	0	1	1	0	0	2	0	2	605
04:30 PM	0	391	1	0	392	1	268	0	0	269	0	0	0	1	1	0	0	0	1	1	663
04:45 PM	0	378	1	0	379	2	273	0	0	275	0	0	0	0	0	0	0	3	0	3	657
Total	0	1425	5	1	1431	4	1072	0	1	1077	0	0	0	2	2	0	0	8	1	9	2519
05:00 PM	0	445	2	1	448	0	250	0	0	250	0	0	0	0	0	0	0	1	0	1	699
05:15 PM	1	389	2	1	393	0	273	0	0	273	0	0	0	0	0	0	0	1	0	1	667
05:30 PM	0	400	1	0	401	2	268	0	0	270	0	0	0	0	0	1	0	3	2	6	677
05:45 PM	0	373	1	0	374	1	295	0	3	299	0	0	0	0	0	0	0	0	1	1	674
Total	1	1607	6	2	1616	3	1086	0	3	1092	0	0	0	0	0	1	0	5	3	9	2717
Grand Total	2	7176	26	9	7213	22	7095	0	4	7121	0	0	1	4	5	7	0	28	10	45	14384
Apprch %	0	99.5	0.4	0.1		0.3	99.6	0	0.1		0	0	20	80		15.6	0	62.2	22.2		
Total %	0	49.9	0.2	0.1	50.1	0.2	49.3	0	0	49.5	0	0	0	0	0	0	0	0.2	0.1	0.3	
Cars	1	7071	26	9	7107	21	6931	0	4	6956	0	0	1	4	5	7	0	25	10	42	14110
% Cars	50	98.5	100	100	98.5	95.5	97.7	0	100	97.7	0	0	100	100	100	100	0	89.3	100	93.3	98.1
Trucks & Buses	1	105	0	0	106	1	164	0	0	165	0	0	0	0	0	0	0	3	0	3	274
% Trucks & Buses	50	1.5	0	0	1.5	4.5	2.3	0	0	2.3	0	0	0	0	0	0	0	10.7	0	6.7	1.9

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Other: LE

File Name : 08501-09
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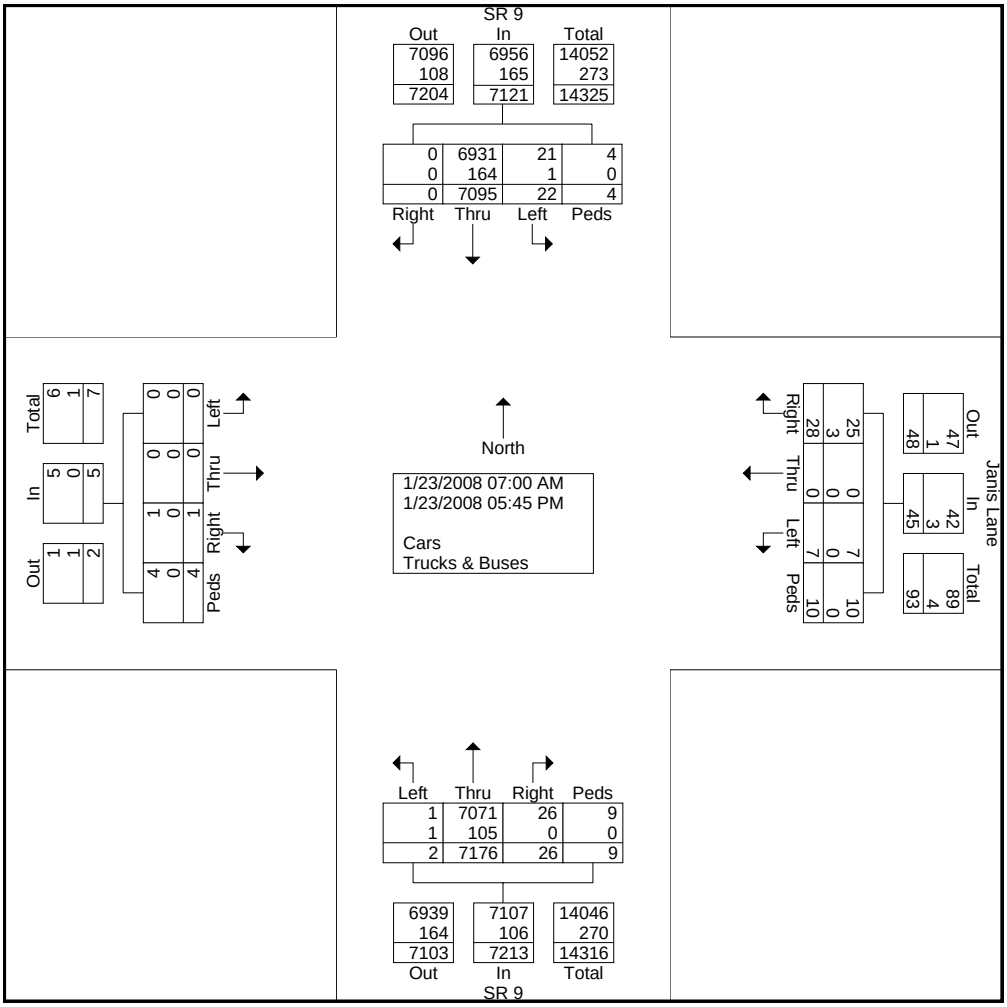

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File Name : 08501-09
Site Code : 00850109
Start Date : 1/23/2008
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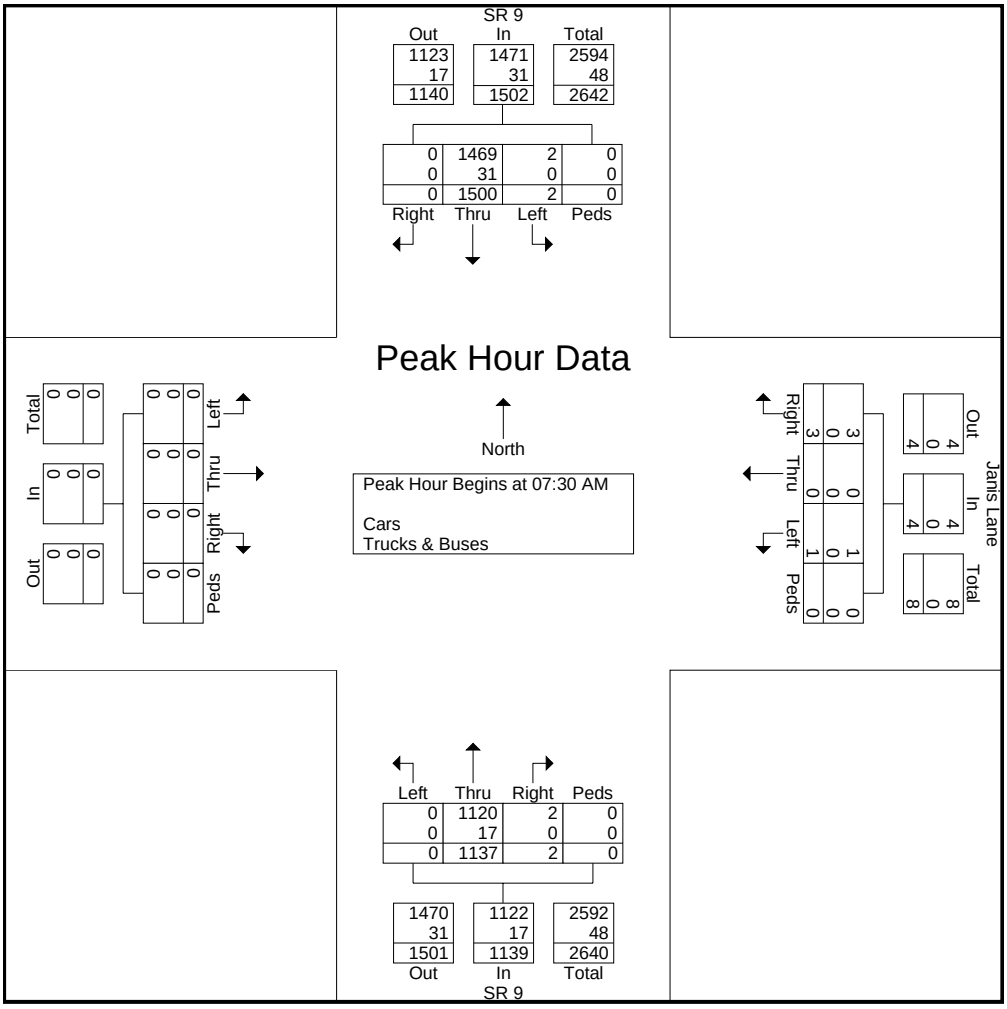
	SR 9 Northbound					SR 9 Southbound					Eastbound					Janis Lane Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	263	0	0	263	1	379	0	0	380	0	0	0	0	0	1	0	1	0	2	645
07:45 AM	0	291	0	0	291	1	381	0	0	382	0	0	0	0	0	0	0	1	0	1	674
08:00 AM	0	303	0	0	303	0	361	0	0	361	0	0	0	0	0	0	0	1	0	1	665
08:15 AM	0	280	2	0	282	0	379	0	0	379	0	0	0	0	0	0	0	0	0	0	661
Total Volume	0	1137	2	0	1139	2	1500	0	0	1502	0	0	0	0	0	1	0	3	0	4	2645
% App. Total	0	99.8	0.2	0		0.1	99.9	0	0		0	0	0	0		25	0	75	0		
PHF	.000	.938	.250	.000	.940	.500	.984	.000	.000	.983	.000	.000	.000	.000	.000	.250	.000	.750	.000	.500	.981
Cars	0	1120					1469														
% Cars	0	98.5	100	0	98.5	100	97.9	0	0	97.9	0	0	0	0	0	100	0	100	0	100	98.2
Trucks & Buses	0	17	0	0	17	0	31	0	0	31	0	0	0	0	0	0	0	0	0	0	48
% Trucks & Buses	0	1.5	0	0	1.5	0	2.1	0	0	2.1	0	0	0	0	0	0	0	0	0	0	1.8



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File Name : 08501-09
Site Code : 00850109
Start Date : 1/23/2008
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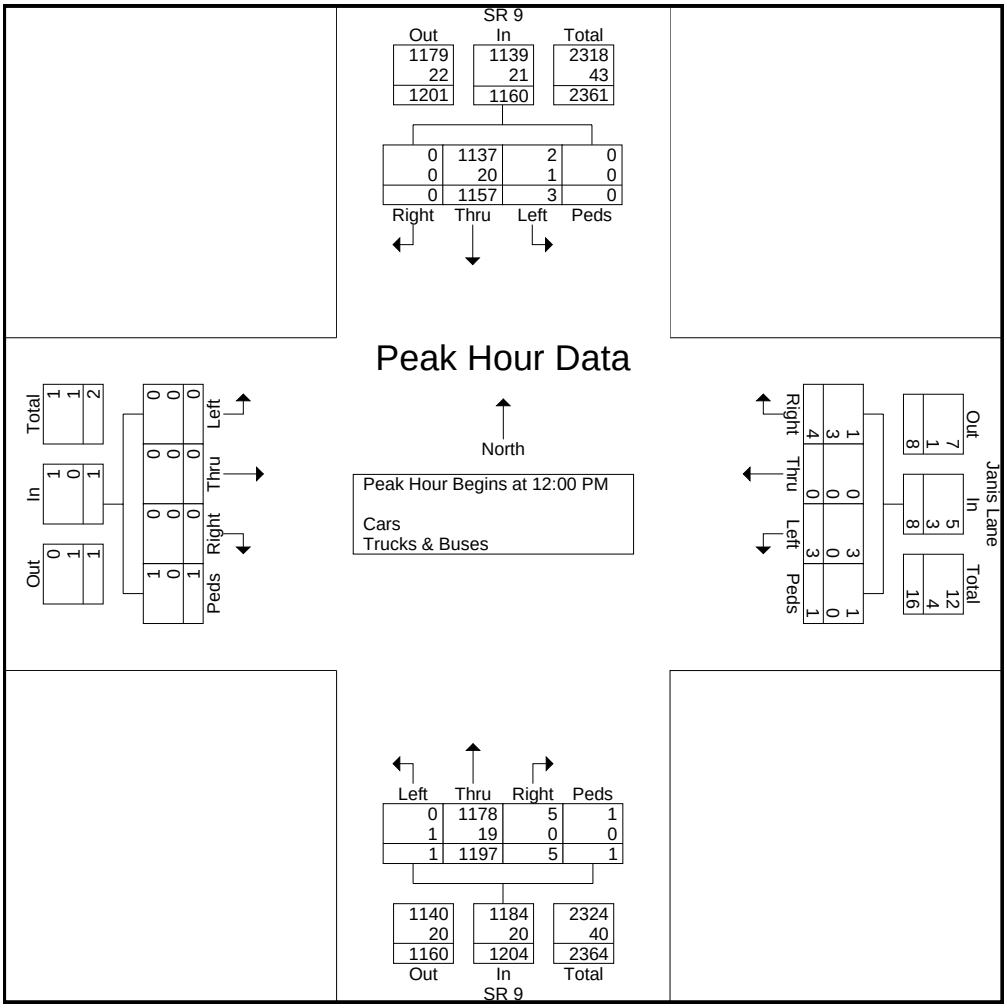
	SR 9 Northbound					SR 9 Southbound					Eastbound					Janis Lane Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	1	274	3	0	278	1	262	0	0	263	0	0	0	0	0	1	0	1	1	3	544
12:15 PM	0	302	1	1	304	0	252	0	0	252	0	0	0	0	0	2	0	1	0	3	559
12:30 PM	0	323	0	0	323	1	315	0	0	316	0	0	0	1	1	0	0	1	0	1	641
12:45 PM	0	298	1	0	299	1	328	0	0	329	0	0	0	0	0	0	0	1	0	1	629
Total Volume	1	1197	5	1	1204	3	1157	0	0	1160	0	0	0	1	1	3	0	4	1	8	2373
% App. Total	0.1	99.4	0.4	0.1		0.3	99.7	0	0		0	0	0	100		37.5	0	50	12.5		
PHF	.250	.926	.417	.250	.932	.750	.882	.000	.000	.881	.000	.000	.000	.250	.250	.375	.000	1.000			
Cars	0	1178	5	1	1184	2	1137	0	0	1139	0	0	0	1	1	3	0	1	1	5	2329
% Cars	0	98.4	100	100	98.3	66.7	98.3	0	0	98.2	0	0	0	100	100	100	0	25.0	100	62.5	98.1
Trucks & Buses	1	19	0	0	20	1	20	0	0	21	0	0	0	0	0	0	0	3	0	3	44
% Trucks & Buses	100	1.6	0	0	1.7	33.3	1.7	0	0	1.8	0	0	0	0	0	0	0	75.0	0	37.5	1.9



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File Name : 08501-09
Site Code : 00850109
Start Date : 1/23/2008
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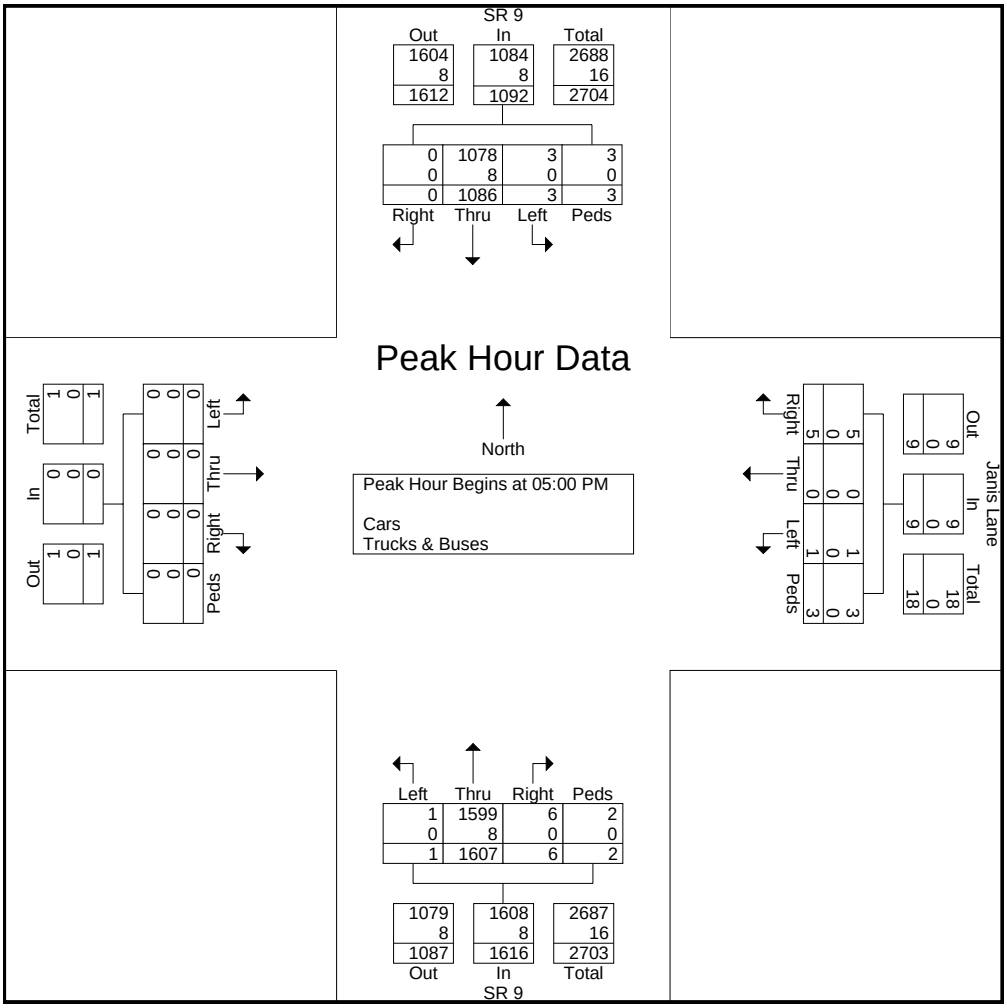
	SR 9 Northbound					SR 9 Southbound					Eastbound					Janis Lane Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	445	2	1	448	0	250	0	0	250	0	0	0	0	0	0	0	1	0	1	699
05:15 PM	1	389	2	1	393	0	273	0	0	273	0	0	0	0	0	0	0	1	0	1	667
05:30 PM	0	400	1	0	401	2	268	0	0	270	0	0	0	0	0	1	0	3	2	6	677
05:45 PM	0	373	1	0	374	1	295	0	3	299	0	0	0	0	0	0	0	0	1	1	674
Total Volume	1	1607	6	2	1616	3	1086	0	3	1092	0	0	0	0	0	1	0	5	3	9	2717
% App. Total	0.1	99.4	0.4	0.1		0.3	99.5	0	0.3		0	0	0	0		11.1	0	55.6	33.3		
PHF	.250	.903	.750	.500	.902	.375	.920	.000	.250	.913	.000	.000	.000	.000	.000	.250	.000	.417	.375	.375	.972
Cars	1	1599					1078														
% Cars	100	99.5	100	100	99.5	100	99.3	0	100	99.3	0	0	0	0	0	100	0	100	100	100	99.4
Trucks & Buses	0	8	0	0	8	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	16
% Trucks & Buses	0	0.5	0	0	0.5	0	0.7	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0.6



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Atlanta - Hilton Head

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Counter: 2447/1935
Counted By: JRM/JFU
Weather: Mild
Other: LE

File Name : 08501-10
Site Code : 00850110
Start Date : 1/29/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Old Milton Pkwy Eastbound					Old Milton Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	5	92	53	0	150	74	199	8	1	282	8	210	7	0	225	113	96	12	0	221	878
07:15 AM	1	129	109	0	239	95	227	12	1	335	18	253	3	0	274	139	108	28	0	275	1123
07:30 AM	11	152	130	0	293	85	201	2	0	288	16	311	3	0	330	155	123	32	2	312	1223
07:45 AM	8	160	163	0	331	86	207	4	0	297	25	290	8	0	323	174	114	55	0	343	1294
Total	25	533	455	0	1013	340	834	26	2	1202	67	1064	21	0	1152	581	441	127	2	1151	4518
08:00 AM	11	214	145	0	370	125	201	5	0	331	25	325	3	0	353	75	88	36	3	202	1256
08:15 AM	7	145	136	0	288	58	160	6	0	224	14	338	13	0	365	113	115	24	1	253	1130
08:30 AM	4	201	117	0	322	68	217	6	2	293	25	324	5	0	354	138	116	21	0	275	1244
08:45 AM	12	222	122	0	356	75	227	10	0	312	20	296	9	0	325	126	132	40	0	298	1291
Total	34	782	520	0	1336	326	805	27	2	1160	84	1283	30	0	1397	452	451	121	4	1028	4921
Break																					
11:00 AM	9	138	83	0	230	38	111	11	0	160	19	116	18	0	153	120	108	49	0	277	820
11:15 AM	16	149	106	0	271	71	147	15	0	233	23	128	17	0	168	125	96	38	0	259	931
11:30 AM	12	147	118	0	277	75	148	25	0	248	26	138	14	3	181	113	126	62	0	301	1007
11:45 AM	11	135	103	0	249	40	130	20	0	190	34	171	29	0	234	110	157	49	0	316	989
Total	48	569	410	0	1027	224	536	71	0	831	102	553	78	3	736	468	487	198	0	1153	3747
12:00 PM	18	200	116	0	334	62	128	19	0	209	25	163	5	0	193	87	145	49	0	281	1017
12:15 PM	17	156	94	0	267	65	121	18	0	204	13	130	10	0	153	117	168	68	1	354	978
12:30 PM	29	196	129	0	354	75	154	18	0	247	34	161	21	0	216	127	118	53	0	298	1115
12:45 PM	17	157	120	0	294	69	136	17	0	222	23	149	17	0	189	143	146	57	0	346	1051
Total	81	709	459	0	1249	271	539	72	0	882	95	603	53	0	751	474	577	227	1	1279	4161
Break																					
04:00 PM	20	247	128	0	395	39	185	18	0	242	14	109	11	0	134	146	221	59	0	426	1197
04:15 PM	25	179	124	0	328	62	177	17	0	256	24	135	4	2	165	130	264	49	0	443	1192
04:30 PM	34	269	151	0	454	44	141	13	0	198	36	116	4	0	156	132	311	63	0	506	1314
04:45 PM	19	275	116	0	410	52	198	26	0	276	16	114	5	0	135	137	280	92	0	509	1330
Total	98	970	519	0	1587	197	701	74	0	972	90	474	24	2	590	545	1076	263	0	1884	5033
05:00 PM	36	264	159	0	459	61	172	22	0	255	20	144	9	0	173	102	353	92	0	547	1434
05:15 PM	40	304	162	0	506	50	158	17	0	225	31	108	2	0	141	194	277	118	0	589	1461
05:30 PM	27	264	163	0	454	67	182	13	0	262	32	148	8	0	188	124	221	58	0	403	1307
05:45 PM	37	340	113	0	490	40	179	18	0	237	13	150	5	0	168	130	293	91	0	514	1409
Total	140	1172	597	0	1909	218	691	70	0	979	96	550	24	0	670	550	1144	359	0	2053	5611
Grand Total	426	4735	2960	0	8121	1576	4106	340	4	6026	534	4527	230	5	5296	3070	4176	1295	7	8548	27991
Apprch %	5.2	58.3	36.4	0		26.2	68.1	5.6	0.1		10.1	85.5	4.3	0.1		35.9	48.9	15.1	0.1		
Total %	1.5	16.9	10.6	0	29	5.6	14.7	1.2	0	21.5	1.9	16.2	0.8	0	18.9	11	14.9	4.6	0	30.5	
Cars	421	4699	2925	0	8045	1531	3940	328	4	5803	533	4508	230	5	5276	3005	4071	1245	7	8328	27452
% Cars	98.8	99.2	98.8	0	99.1	97.1	96	96.5	100	96.3	99.8	99.6	100	100	99.6	97.9	97.5	96.1	100	97.4	98.1
Trucks & Buses	5	36	35	0	76	45	166	12	0	223	1	19	0	0	20	65	105	50	0	220	539
% Trucks & Buses	1.2	0.8	1.2	0	0.9	2.9	4	3.5	0	3.7	0.2	0.4	0	0	0.4	2.1	2.5	3.9	0	2.6	1.9

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Counter: 2447/1935
Counted By: JRM/JFU
Weather: Mild
Other: LE

File Name : 08501-10
Site Code : 00850110
Start Date : 1/29/2008
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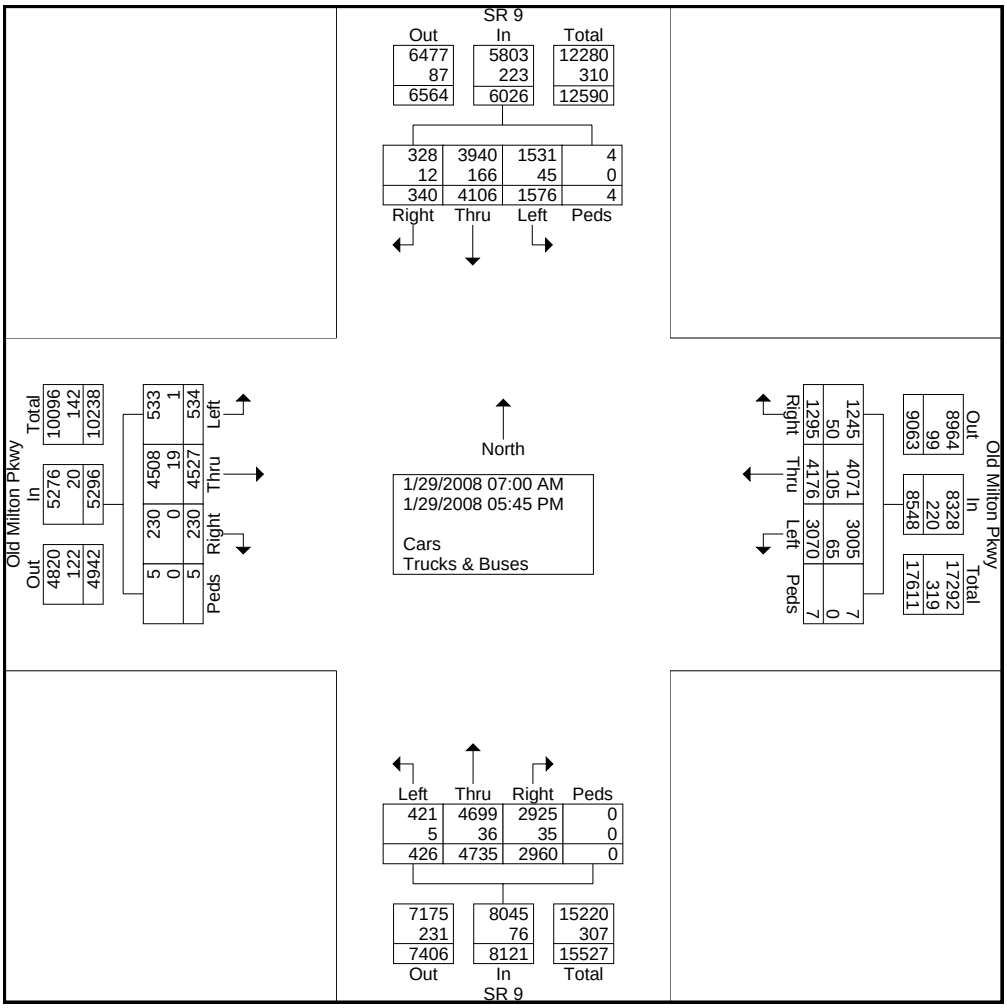

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Atlanta - Hilton Head

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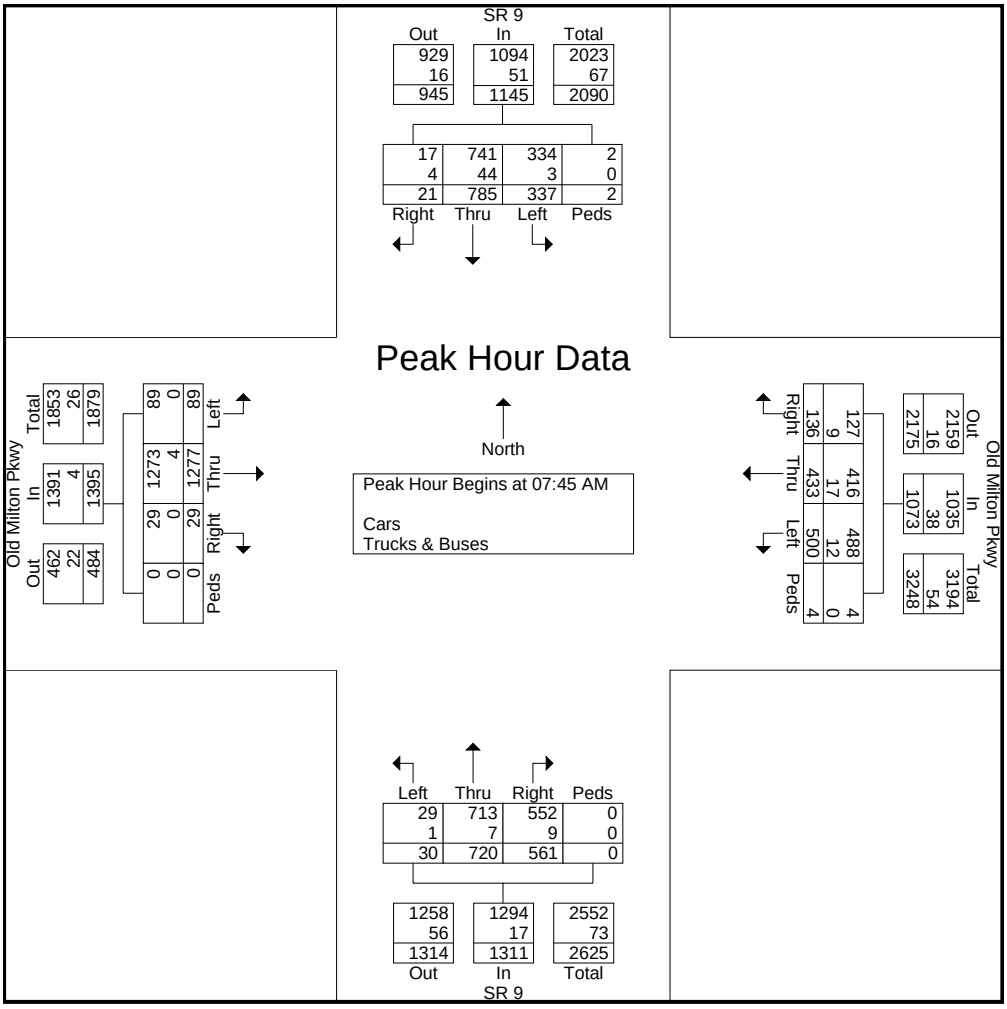
Counter: 2447/1935
Counted By: JRM/JFU
Weather: Mild
Other: LE

File Name : 08501-10
Site Code : 00850110
Start Date : 1/29/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Old Milton Pkwy Eastbound					Old Milton Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	8	160	163	0	331	86	207	4	0	297	25	290	8	0	323	174	114	55	0	343	1294
08:00 AM	11	214	145	0	370	125	201	5	0	331	25	325	3	0	353	75	88	36	3	202	1256
08:15 AM	7	145	136	0	288	58	160	6	0	224	14	338	13	0	365	113	115	24	1	253	1130
08:30 AM	4	201	117	0	322	68	217	6	2	293	25	324	5	0	354	138	116	21	0	275	1244
Total Volume	30	720	561	0	1311	337	785	21	2	1145	89	1277	29	0	1395	500	433	136	4	1073	4924
% App. Total	2.3	54.9	42.8	0		29.4	68.6	1.8	0.2		6.4	91.5	2.1	0		46.6	40.4	12.7	0.4		
PHF	.682	.841	.860	.000	.886	.674	.904	.875	.250	.865	.890	.945	.558	.000	.955	.718	.933	.618	.333	.782	.951
Cars	29	713	552	0	1294	334	741	17	2	1094	89	1273									
% Cars	96.7	99.0	98.4	0	98.7	99.1	94.4	81.0	100	95.5	100	99.7	100	0	99.7	97.6	96.1	93.4	100	96.5	97.8
Trucks & Buses	1	7	9	0	17	3	44	4	0	51	0	4	0	0	4	12	17	9	0	38	110
% Trucks & Buses	3.3	1.0	1.6	0	1.3	0.9	5.6	19.0	0	4.5	0	0.3	0	0	0.3	2.4	3.9	6.6	0	3.5	2.2



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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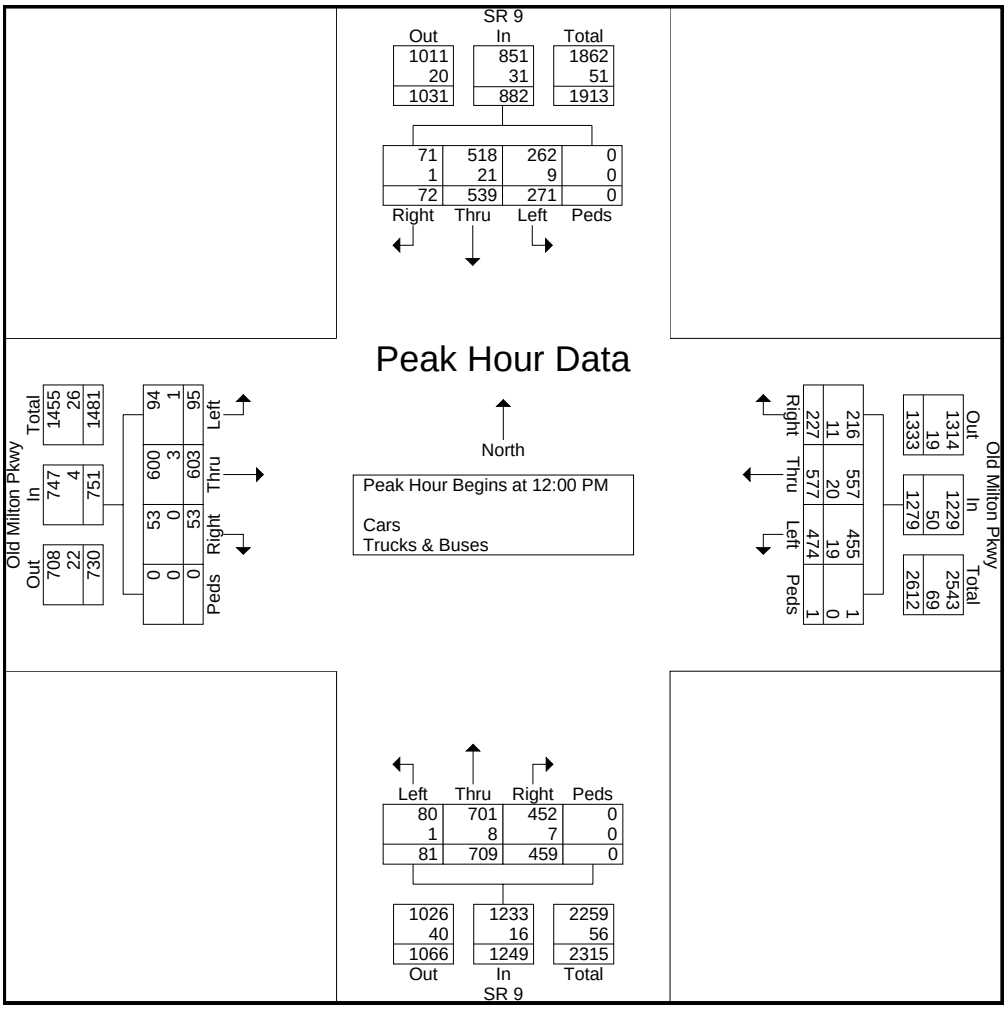
Counter: 2447/1935
Counted By: JRM/JFU
Weather: Mild
Other: LE

File Name : 08501-10
Site Code : 00850110
Start Date : 1/29/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Old Milton Pkwy Eastbound					Old Milton Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	18	200	116	0	334	62	128	19	0	209	25	163	5	0	193	87	145	49	0	281	1017
12:15 PM	17	156	94	0	267	65	121	18	0	204	13	130	10	0	153	117	168	68	1	354	978
12:30 PM	29	196	129	0	354	75	154	18	0	247	34	161	21	0	216	127	118	53	0	298	1115
12:45 PM	17	157	120	0	294	69	136	17	0	222	23	149	17	0	189	143	146	57	0	346	1051
Total Volume	81	709	459	0	1249	271	539	72	0	882	95	603	53	0	751	474	577	227	1	1279	4161
% App. Total	6.5	56.8	36.7	0		30.7	61.1	8.2	0		12.6	80.3	7.1	0		37.1	45.1	17.7	0.1		
PHF	.698	.886	.890	.000	.882	.903	.875	.947	.000	.893	.699	.925	.631	.000	.869	.829	.859	.835	.250	.903	.933
Cars	80	701	452	0	1233	262	518	71	0	851	94	600	53	0	747	455	557	216	1	1229	4060
% Cars	98.8	98.9	98.5	0	98.7	96.7	96.1	98.6	0	96.5	98.9	99.5	100	0	99.5	96.0	96.5	95.2	100	96.1	97.6
Trucks & Buses																					
% Trucks & Buses	1.2	1.1	1.5	0	1.3	3.3	3.9	1.4	0	3.5	1.1	0.5	0	0	0.5	4.0	3.5	4.8	0	3.9	2.4



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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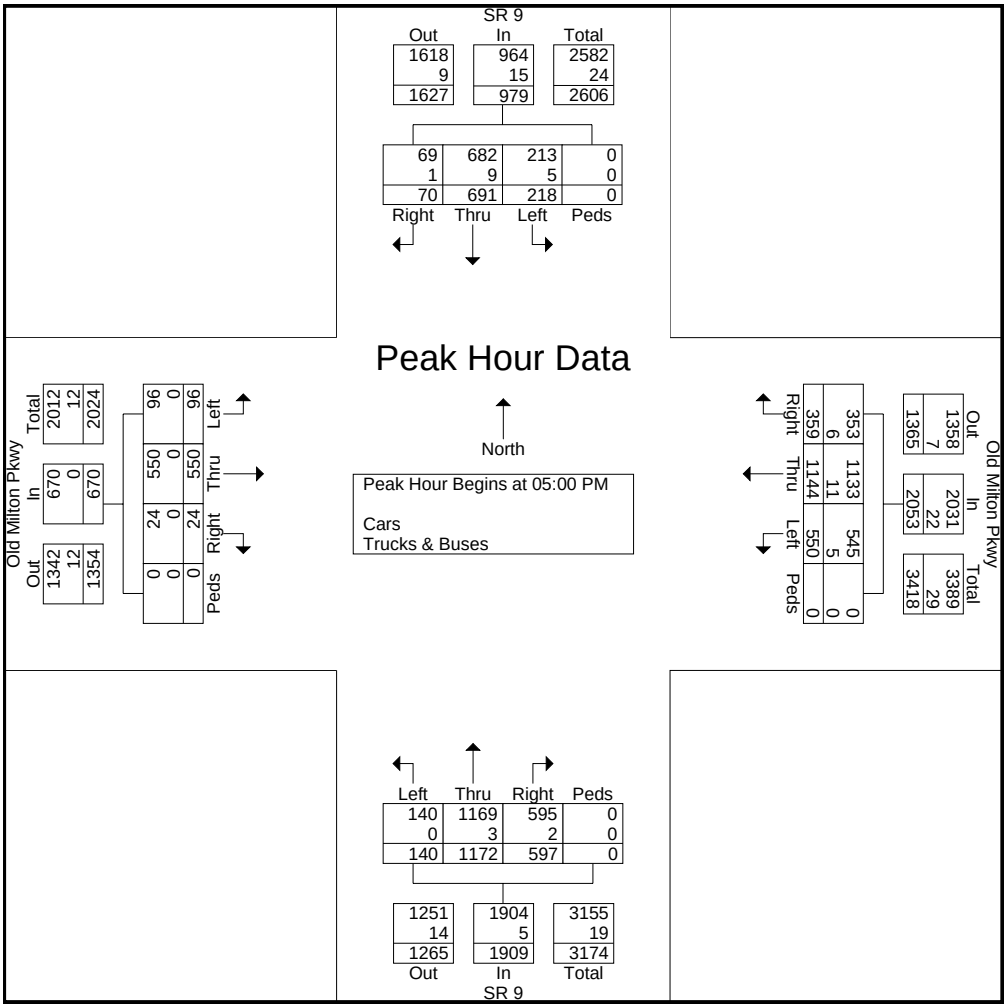
Counter: 2447/1935
Counted By: JRM/JFU
Weather: Mild
Other: LE

File Name : 08501-10
Site Code : 00850110
Start Date : 1/29/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Old Milton Pkwy Eastbound					Old Milton Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	36	264	159	0	459	61	172	22	0	255	20	144	9	0	173	102	353	92	0	547	1434
05:15 PM	40	304	162	0	506	50	158	17	0	225	31	108	2	0	141	194	277	118	0	589	1461
05:30 PM	27	264	163	0	454	67	182	13	0	262	32	148	8	0	188	124	221	58	0	403	1307
05:45 PM	37	340	113	0	490	40	179	18	0	237	13	150	5	0	168	130	293	91	0	514	1409
Total Volume	140	1172	597	0	1909	218	691	70	0	979	96	550	24	0	670	550	1144	359	0	2053	5611
% App. Total	7.3	61.4	31.3	0		22.3	70.6	7.2	0		14.3	82.1	3.6	0		26.8	55.7	17.5	0		
PHF	.875	.862	.916	.000	.943	.813	.949	.795	.000	.934	.750	.917	.667	.000	.891	.709	.810	.761	.000	.871	.960
Cars	140	1169															1133				
% Cars	100	99.7	99.7	0	99.7	97.7	98.7	98.6	0	98.5	100	100	100	0	100	99.1	99.0	98.3	0	98.9	99.3
Trucks & Buses	0	3	2	0	5	5	9	1	0	15	0	0	0	0	0	5	11	6	0	22	42
% Trucks & Buses	0	0.3	0.3	0	0.3	2.3	1.3	1.4	0	1.5	0	0	0	0	0	0.9	1.0	1.7	0	1.1	0.7



Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-11
Site Code : 00850111
Start Date : 1/23/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Marietta St Eastbound					Marietta St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	2	169	4	0	175	0	252	5	0	257	1	0	2	0	3	0	0	0	0	0	435
07:15 AM	2	131	3	0	136	1	332	5	0	338	1	0	1	0	2	0	0	0	0	0	476
07:30 AM	1	197	3	0	201	0	332	6	0	338	1	2	0	0	3	1	1	1	0	3	545
07:45 AM	2	178	1	0	181	3	319	22	1	345	1	0	6	0	7	0	0	0	0	0	533
Total	7	675	11	0	693	4	1235	38	1	1278	4	2	9	0	15	1	1	1	0	3	1989
08:00 AM	1	184	4	0	189	0	311	1	0	312	2	1	1	0	4	0	0	1	0	1	506
08:15 AM	2	195	4	0	201	2	307	3	0	312	0	1	5	0	6	1	0	0	0	1	520
08:30 AM	1	162	9	0	172	8	309	4	0	321	1	0	2	0	3	2	0	1	0	3	499
08:45 AM	1	198	7	0	206	0	273	2	0	275	0	0	5	0	5	2	2	0	0	4	490
Total	5	739	24	0	768	10	1200	10	0	1220	3	2	13	0	18	5	2	2	0	9	2015
Break																					
11:00 AM	1	148	16	0	165	0	174	1	0	175	0	0	4	0	4	2	0	0	0	2	346
11:15 AM	3	174	17	0	194	0	172	2	0	174	1	0	2	0	3	0	1	1	0	2	373
11:30 AM	1	190	16	0	207	2	212	2	0	216	2	0	1	0	3	4	2	2	0	8	434
11:45 AM	5	201	23	0	229	2	182	2	0	186	4	1	2	0	7	4	0	1	0	5	427
Total	10	713	72	0	795	4	740	7	0	751	7	1	9	0	17	10	3	4	0	17	1580
12:00 PM	3	194	25	0	222	2	215	2	0	219	2	0	4	0	6	1	1	0	0	2	449
12:15 PM	1	251	11	0	263	4	228	6	0	238	0	0	1	0	1	0	0	1	0	1	503
12:30 PM	3	228	34	0	265	0	230	1	0	231	0	1	0	0	1	6	0	4	0	10	507
12:45 PM	3	206	26	0	235	3	206	2	0	211	0	1	1	0	2	7	2	0	0	9	457
Total	10	879	96	0	985	9	879	11	0	899	2	2	6	0	10	14	3	5	0	22	1916
Break																					
04:00 PM	5	246	19	0	270	2	228	1	0	231	1	1	2	0	4	2	2	1	0	5	510
04:15 PM	4	229	18	0	251	1	219	2	0	222	0	0	3	0	3	4	5	3	0	12	488
04:30 PM	3	298	18	0	319	5	251	3	0	259	0	1	0	0	1	3	1	2	0	6	585
04:45 PM	3	264	28	0	295	0	242	6	0	248	1	1	1	0	3	1	0	4	0	5	551
Total	15	1037	83	0	1135	8	940	12	0	960	2	3	6	0	11	10	8	10	0	28	2134
05:00 PM	3	310	14	0	327	0	241	10	0	251	0	1	3	0	4	1	0	4	0	5	587
05:15 PM	5	325	14	0	344	4	285	5	0	294	0	0	0	0	0	1	4	2	0	7	645
05:30 PM	4	303	18	0	325	8	203	7	0	218	0	0	0	0	0	2	3	4	0	9	552
05:45 PM	5	303	20	0	328	4	248	3	0	255	0	0	1	0	1	0	3	8	0	11	595
Total	17	1241	66	0	1324	16	977	25	0	1018	0	1	4	0	5	4	10	18	0	32	2379
Grand Total	64	5284	352	0	5700	51	5971	103	1	6126	18	11	47	0	76	44	27	40	0	111	12013
Apprch %	1.1	92.7	6.2	0		0.8	97.5	1.7	0		23.7	14.5	61.8	0		39.6	24.3	36	0		
Total %	0.5	44	2.9	0	47.4	0.4	49.7	0.9	0	51	0.1	0.1	0.4	0	0.6	0.4	0.2	0.3	0	0.9	
Cars	63	5127	344	0	5534	51	5769	102	1	5923	17	11	45	0	73	44	27	38	0	109	11639
% Cars	98.4	97	97.7	0	97.1	100	96.6	99	100	96.7	94.4	100	95.7	0	96.1	100	100	95	0	98.2	96.9
Trucks & Buses	1	157	8	0	166	0	202	1	0	203	1	0	2	0	3	0	0	2	0	2	374
% Trucks & Buses	1.6	3	2.3	0	2.9	0	3.4	1	0	3.3	5.6	0	4.3	0	3.9	0	0	5	0	1.8	3.1

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

Traffic Data Collection, Inc.

Atlanta - Hilton Head

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Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-11
Site Code : 00850111
Start Date : 1/23/2008
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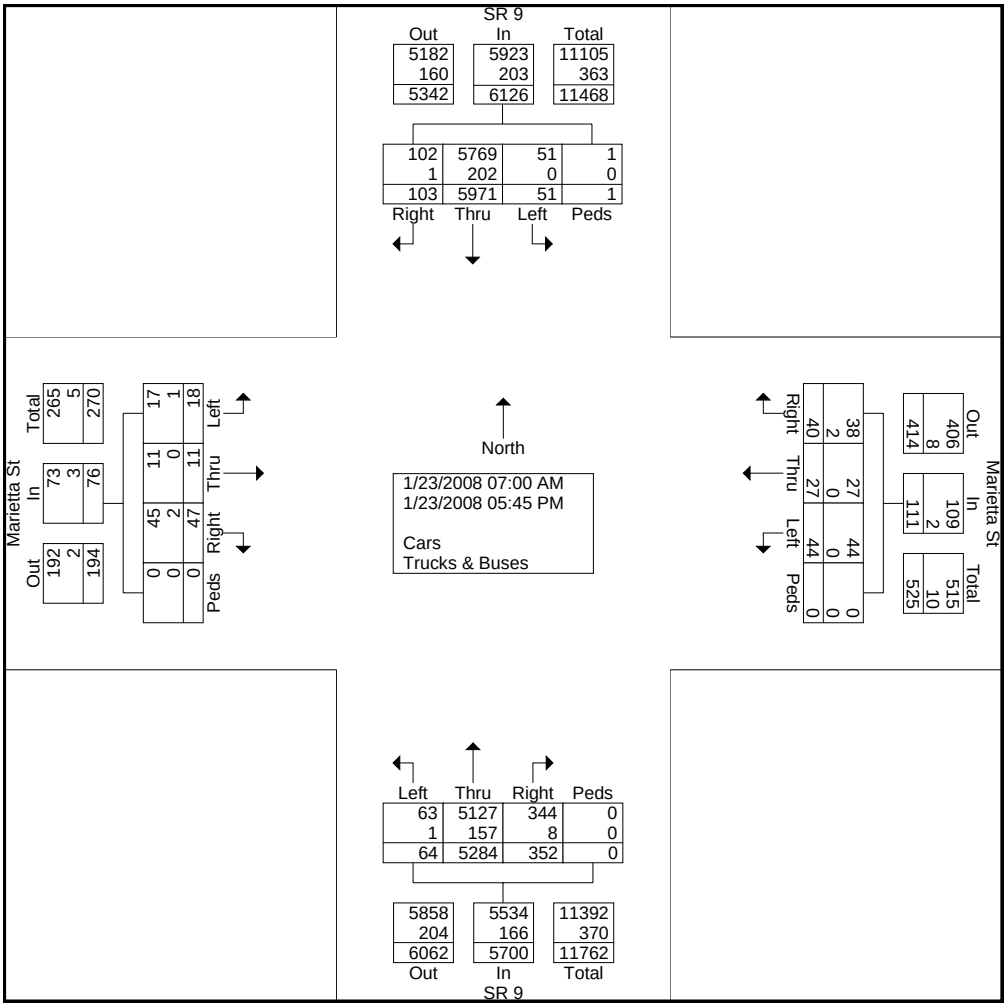


Traffic Data Collection, Inc.

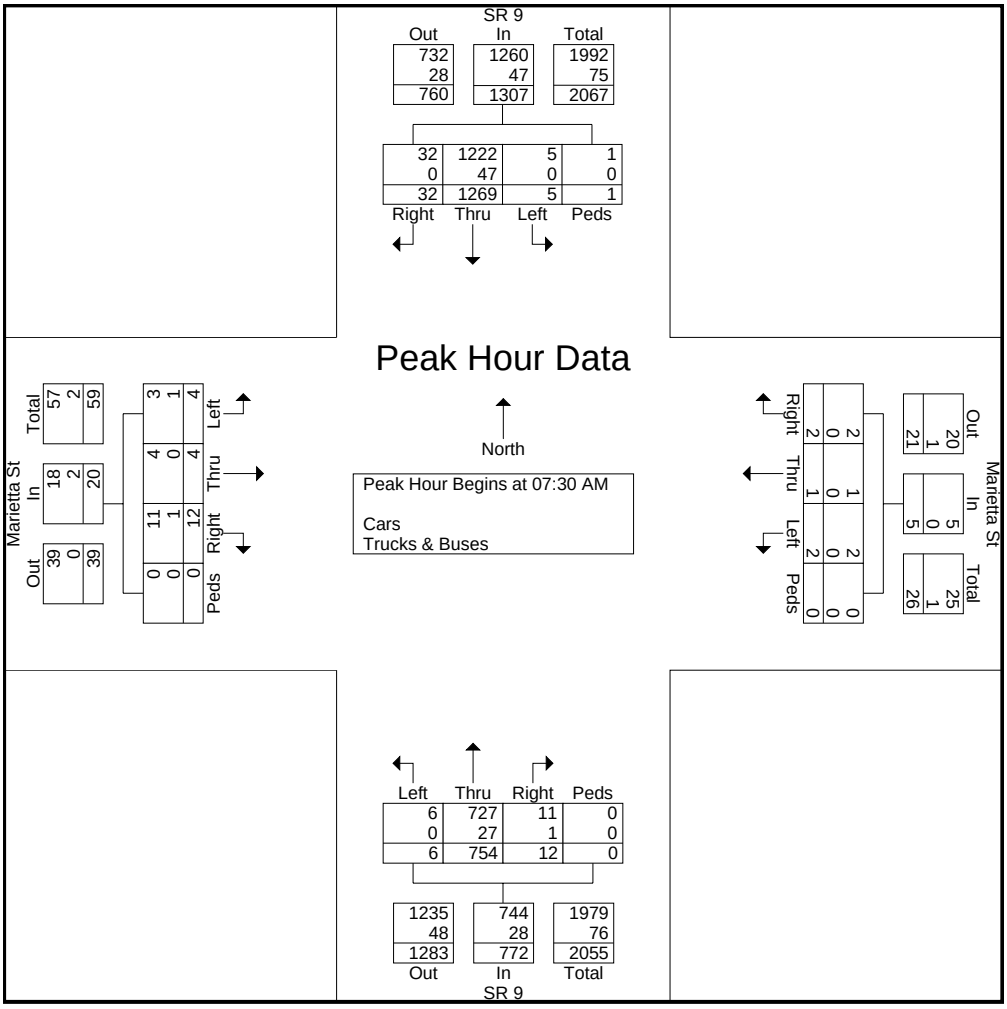
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-11
Site Code : 00850111
Start Date : 1/23/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Marietta St Eastbound					Marietta St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	1	197	3	0	201	0	332	6	0	338	1	2	0	0	3	1	1	1	0	3	545
07:45 AM	2	178	1	0	181	3	319	22	1	345	1	0	6	0	7	0	0	0	0	0	533
08:00 AM	1	184	4	0	189	0	311	1	0	312	2	1	1	0	4	0	0	1	0	1	506
08:15 AM	2	195	4	0	201	2	307	3	0	312	0	1	5	0	6	1	0	0	0	1	520
Total Volume	6	754	12	0	772	5	1269	32	1	1307	4	4	12	0	20	2	1	2	0	5	2104
% App. Total	0.8	97.7	1.6	0		0.4	97.1	2.4	0.1		20	20	60	0		40	20	40	0		
PHF	.750	.957	.750	.000	.960	.417	.956	.364	.250	.947	.500	.500	.500	.000	.714	.500	.250	.500	.000	.417	.965
Cars	6	727	11	0	744	5	1222														
% Cars	100	96.4	91.7	0	96.4	100	96.3	100	100	96.4	75.0	100	91.7	0	90.0	100	100	100	0	100	96.3
Trucks & Buses	0	27	1	0	28	0	47	0	0	47	1	0	1	0	2	0	0	0	0	0	77
% Trucks & Buses	0	3.6	8.3	0	3.6	0	3.7	0	0	3.6	25.0	0	8.3	0	10.0	0	0	0	0	0	3.7



Traffic Data Collection, Inc.

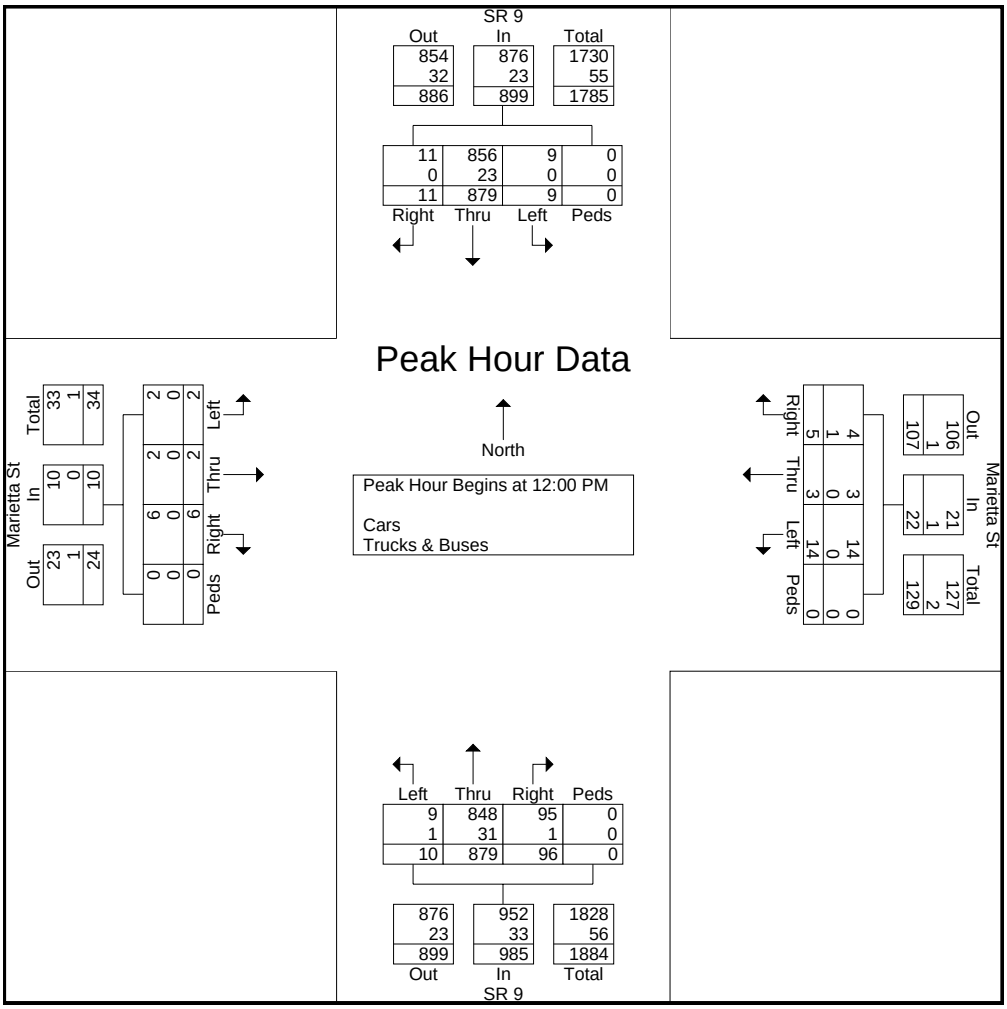
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-11
Site Code : 00850111
Start Date : 1/23/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Marietta St Eastbound					Marietta St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	3	194	25	0	222	2	215	2	0	219	2	0	4	0	6	1	1	0	0	2	449
12:15 PM	1	251	11	0	263	4	228	6	0	238	0	0	1	0	1	0	0	1	0	1	503
12:30 PM	3	228	34	0	265	0	230	1	0	231	0	1	0	0	1	6	0	4	0	10	507
12:45 PM	3	206	26	0	235	3	206	2	0	211	0	1	1	0	2	7	2	0	0	9	457
Total Volume	10	879	96	0	985	9	879	11	0	899	2	2	6	0	10	14	3	5	0	22	1916
% App. Total	1	89.2	9.7	0		1	97.8	1.2	0		20	20	60	0		63.6	13.6	22.7	0		
PHF	.833	.875	.706	.000	.929	.563	.955	.458	.000	.944	.250	.500	.375	.000	.417	.500	.375	.313	.000	.550	.945
Cars	9	848	95	0	952	9	856	11	0	876	2	2	6	0	10	14	3	4	0	21	1859
% Cars	90.0	96.5	99.0	0	96.6	100	97.4	100	0	97.4	100	100	100	0	100	100	100	80.0	0	95.5	97.0
Trucks & Buses																					
% Trucks & Buses	10.0	3.5	1.0	0	3.4	0	2.6	0	0	2.6	0	0	0	0	0	0	0	20.0	0	4.5	3.0



Traffic Data Collection, Inc.

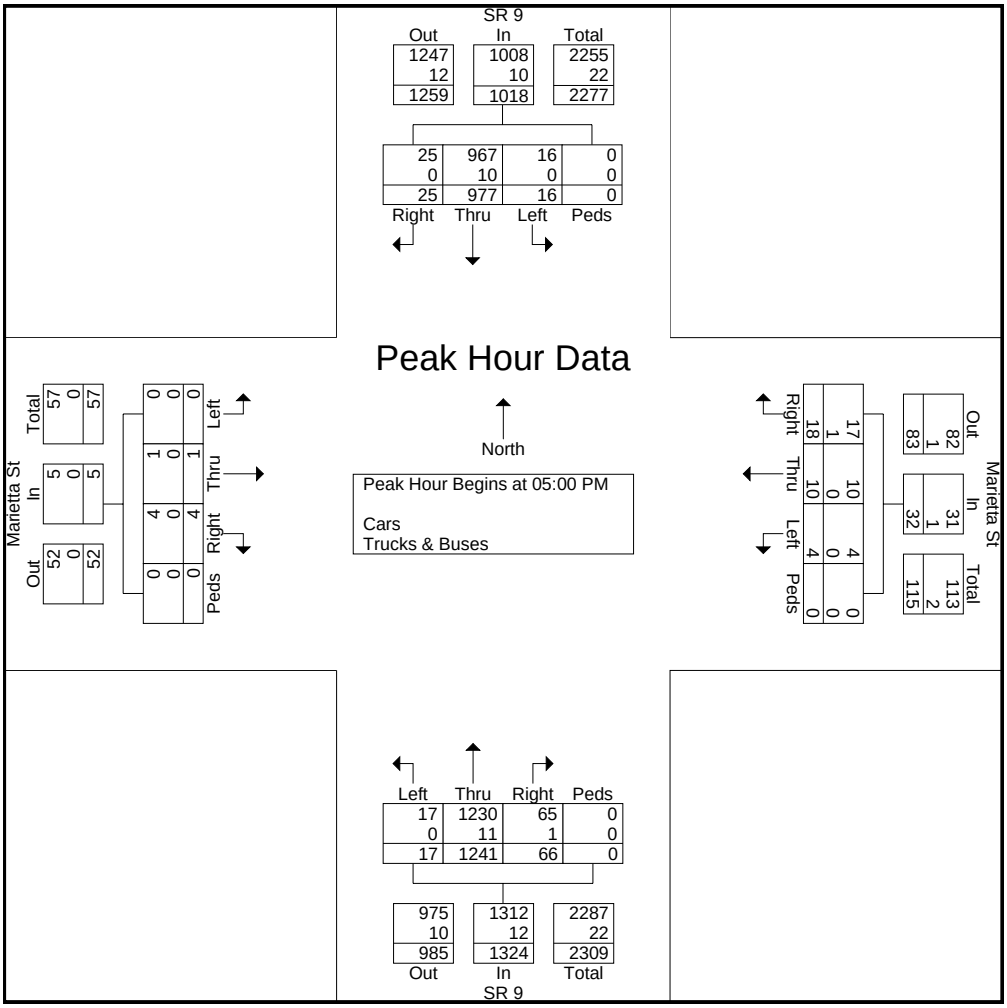
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-11
Site Code : 00850111
Start Date : 1/23/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Marietta St Eastbound					Marietta St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	3	310	14	0	327	0	241	10	0	251	0	1	3	0	4	1	0	4	0	5	587
05:15 PM	5	325	14	0	344	4	285	5	0	294	0	0	0	0	0	1	4	2	0	7	645
05:30 PM	4	303	18	0	325	8	203	7	0	218	0	0	0	0	0	2	3	4	0	9	552
05:45 PM	5	303	20	0	328	4	248	3	0	255	0	0	1	0	1	0	3	8	0	11	595
Total Volume	17	1241	66	0	1324	16	977	25	0	1018	0	1	4	0	5	4	10	18	0	32	2379
% App. Total	1.3	93.7	5	0		1.6	96	2.5	0		0	20	80	0		12.5	31.2	56.2	0		
PHF	.850	.955	.825	.000	.962	.500	.857	.625	.000	.866	.000	.250	.333	.000	.313	.500	.625	.563	.000	.727	.922
Cars	17	1230																			
% Cars	100	99.1	98.5	0	99.1	100	99.0	100	0	99.0	0	100	100	0	100	100	100	94.4	0	96.9	99.0
Trucks & Buses	0	11	1	0	12	0	10	0	0	10	0	0	0	0	0	0	0	1	0	1	23
% Trucks & Buses	0	0.9	1.5	0	0.9	0	1.0	0	0	1.0	0	0	0	0	0	0	0	5.6	0	3.1	1.0



Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-12
Site Code : 00850112
Start Date : 1/24/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Norcross St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	12	145	0	0	157	5	269	0	0	274	0	0	0	0	0	0	3	2	0	5	436
07:15 AM	0	136	0	0	136	10	331	0	0	341	0	0	0	0	0	0	6	0	0	6	483
07:30 AM	0	188	0	0	188	9	302	0	0	311	0	0	0	0	0	0	6	0	0	6	505
07:45 AM	1	180	0	0	181	33	386	1	0	420	0	0	0	0	0	0	6	0	0	6	607
Total	13	649	0	0	662	57	1288	1	0	1346	0	0	0	0	0	0	21	2	0	23	2031
08:00 AM	0	248	0	0	248	13	326	0	0	339	1	0	1	0	2	0	10	1	0	11	600
08:15 AM	1	218	0	0	219	13	307	0	0	320	0	0	0	0	0	0	10	0	0	10	549
08:30 AM	1	166	0	0	167	8	311	2	0	321	1	0	1	0	2	0	3	1	0	4	494
08:45 AM	0	204	0	0	204	12	297	1	0	310	0	0	2	0	2	0	9	0	0	9	525
Total	2	836	0	0	838	46	1241	3	0	1290	2	0	4	0	6	0	32	2	0	34	2168
Break																					
11:00 AM	0	182	0	0	182	10	174	1	0	185	1	0	1	0	2	0	9	0	0	9	378
11:15 AM	2	156	1	0	159	2	202	2	0	206	1	0	2	0	3	0	12	0	0	12	380
11:30 AM	0	183	0	0	183	13	202	2	0	217	0	0	2	0	2	0	23	0	0	23	425
11:45 AM	3	204	0	0	207	14	215	2	0	231	0	0	2	0	2	0	13	0	0	13	453
Total	5	725	1	0	731	39	793	7	0	839	2	0	7	0	9	0	57	0	0	57	1636
12:00 PM	1	209	0	0	210	7	210	0	0	217	0	0	3	0	3	0	19	0	0	19	449
12:15 PM	1	193	0	0	194	9	178	1	0	188	0	0	2	0	2	1	32	0	0	33	417
12:30 PM	0	206	0	0	206	14	231	0	0	245	0	0	1	0	1	0	31	1	0	32	484
12:45 PM	5	253	1	0	259	7	225	0	0	232	0	0	2	0	2	0	20	0	0	20	513
Total	7	861	1	0	869	37	844	1	0	882	0	0	8	0	8	1	102	1	0	104	1863
Break																					
04:00 PM	0	183	0	0	183	6	194	0	0	200	0	0	0	0	0	0	17	0	0	17	400
04:15 PM	0	217	0	0	217	5	231	0	0	236	1	0	0	0	1	0	22	1	0	23	477
04:30 PM	0	242	0	0	242	10	246	1	0	257	1	0	1	0	2	0	18	0	0	18	519
04:45 PM	3	222	0	0	225	5	176	1	0	182	1	0	1	0	2	5	40	0	0	45	454
Total	3	864	0	0	867	26	847	2	0	875	3	0	2	0	5	5	97	1	0	103	1850
05:00 PM	1	291	0	0	292	10	232	2	0	244	1	1	2	0	4	0	37	0	0	37	577
05:15 PM	1	311	0	0	312	9	280	0	0	289	0	0	1	0	1	0	35	0	0	35	637
05:30 PM	1	248	0	0	249	4	239	1	0	244	0	0	0	0	0	0	29	0	1	30	523
05:45 PM	1	298	0	0	299	11	207	1	0	219	0	0	1	0	1	0	29	0	0	29	548
Total	4	1148	0	0	1152	34	958	4	0	996	1	1	4	0	6	0	130	0	1	131	2285
Grand Total	34	5083	2	0	5119	239	5971	18	0	6228	8	1	25	0	34	6	439	6	1	452	11833
Apprch %	0.7	99.3	0	0		3.8	95.9	0.3	0		23.5	2.9	73.5	0		1.3	97.1	1.3	0.2		
Total %	0.3	43	0	0	43.3	2	50.5	0.2	0	52.6	0.1	0	0.2	0	0.3	0.1	3.7	0.1	0	3.8	
Cars	32	4921	2	0	4955	237	5753	17	0	6007	8	1	24	0	33	6	424	6	1	437	11432
% Cars	94.1	96.8	100	0	96.8	99.2	96.3	94.4	0	96.5	100	100	96	0	97.1	100	96.6	100	100	96.7	96.6
Trucks & Buses	2	162	0	0	164	2	218	1	0	221	0	0	1	0	1	0	15	0	0	15	401
% Trucks & Buses	5.9	3.2	0	0	3.2	0.8	3.7	5.6	0	3.5	0	0	4	0	2.9	0	3.4	0	0	3.3	3.4

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

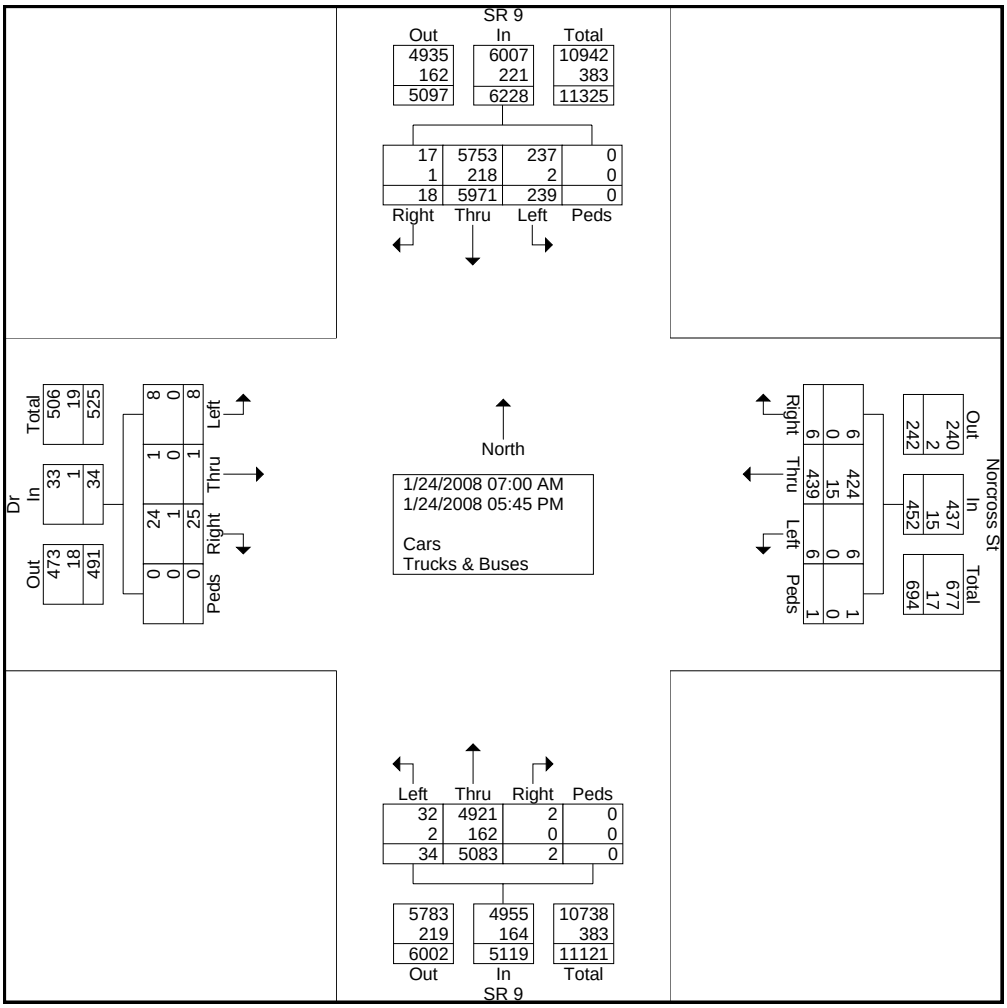
Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-12
Site Code : 00850112
Start Date : 1/24/2008
Page No : 2



Traffic Data Collection, Inc.

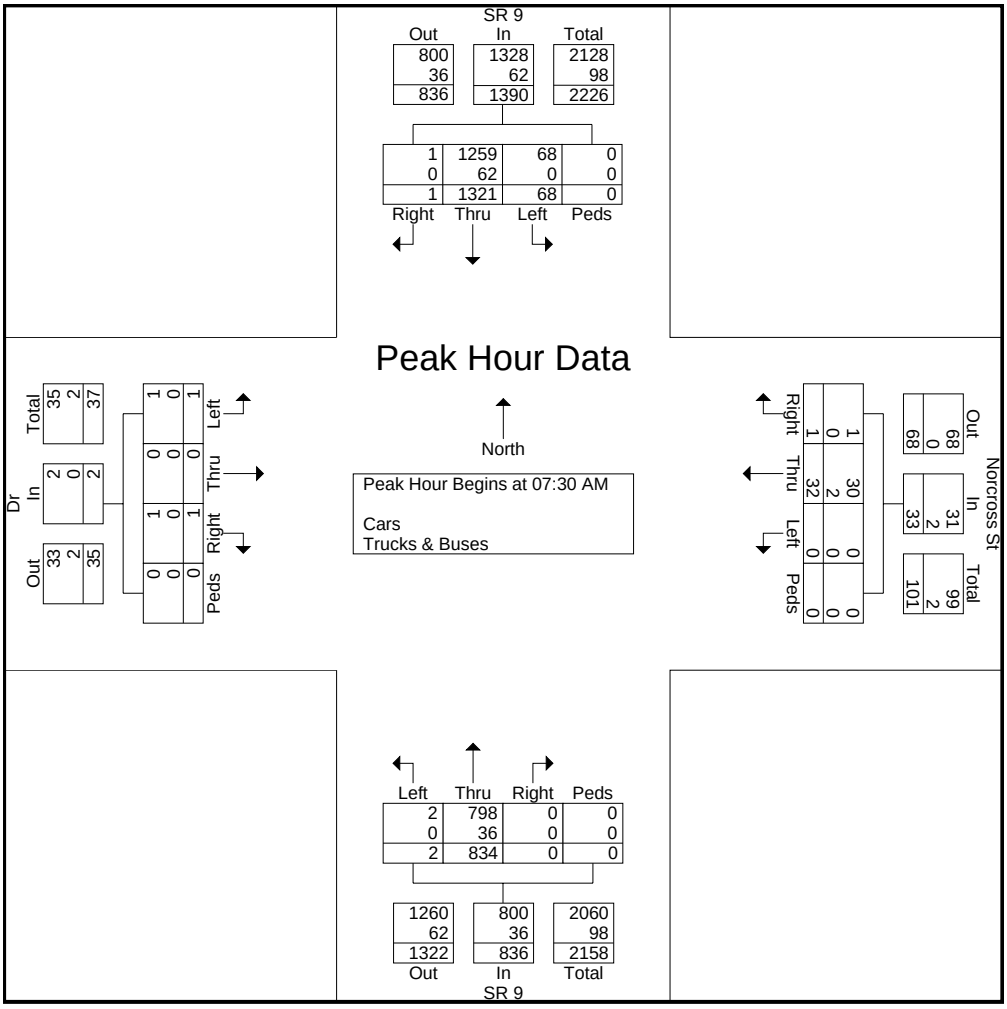
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-12
Site Code : 00850112
Start Date : 1/24/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Norcross St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	188	0	0	188	9	302	0	0	311	0	0	0	0	0	0	6	0	0	6	505
07:45 AM	1	180	0	0	181	33	386	1	0	420	0	0	0	0	0	0	6	0	0	6	607
08:00 AM	0	248	0	0	248	13	326	0	0	339	1	0	1	0	2	0	10	1	0	11	600
08:15 AM	1	218	0	0	219	13	307	0	0	320	0	0	0	0	0	0	10	0	0	10	549
Total Volume	2	834	0	0	836	68	1321	1	0	1390	1	0	1	0	2	0	32	1	0	33	2261
% App. Total	0.2	99.8	0	0		4.9	95	0.1	0		50	0	50	0		0	97	3	0		
PHF	.500	.841	.000	.000	.843	.515	.856	.250	.000	.827	.250	.000	.250	.000	.250	.000	.800	.250	.000	.750	.931
Cars	2	798	0	0	800	68	1259														
% Cars	100	95.7	0	0	95.7	100	95.3	100	0	95.5	100	0	100	0	100	0	93.8	100	0	93.9	95.6
Trucks & Buses	0	36	0	0	36	0	62	0	0	62	0	0	0	0	0	0	2	0	0	2	100
% Trucks & Buses	0	4.3	0	0	4.3	0	4.7	0	0	4.5	0	0	0	0	0	0	6.3	0	0	6.1	4.4



Traffic Data Collection, Inc.

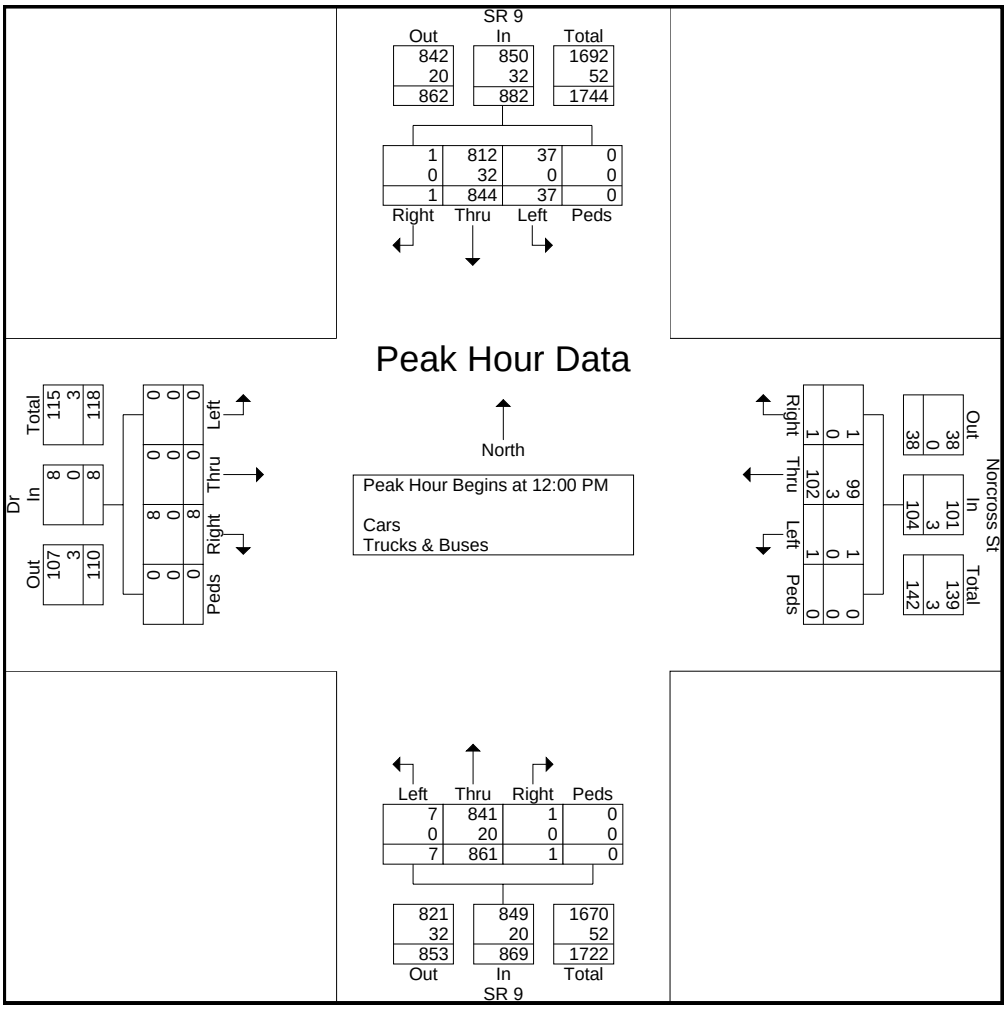
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-12
Site Code : 00850112
Start Date : 1/24/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Norcross St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	1	209	0	0	210	7	210	0	0	217	0	0	3	0	3	0	19	0	0	19	449
12:15 PM	1	193	0	0	194	9	178	1	0	188	0	0	2	0	2	1	32	0	0	33	417
12:30 PM	0	206	0	0	206	14	231	0	0	245	0	0	1	0	1	0	31	1	0	32	484
12:45 PM	5	253	1	0	259	7	225	0	0	232	0	0	2	0	2	0	20	0	0	20	513
Total Volume	7	861	1	0	869	37	844	1	0	882	0	0	8	0	8	1	102	1	0	104	1863
% App. Total	0.8	99.1	0.1	0		4.2	95.7	0.1	0		0	0	100	0		1	98.1	1	0		
PHF	.350	.851	.250	.000	.839	.661	.913	.250	.000	.900	.000	.000	.667	.000	.667	.250	.797	.250	.000	.788	.908
Cars	7	841	1	0	849	37	812	1	0	850	0	0	8	0	8	1	99	1	0	101	1808
% Cars	100	97.7	100	0	97.7	100	96.2	100	0	96.4	0	0	100	0	100	100	97.1	100	0	97.1	97.0
Trucks & Buses																					
% Trucks & Buses	0	2.3	0	0	2.3	0	3.8	0	0	3.6	0	0	0	0	0	0	2.9	0	0	2.9	3.0



Traffic Data Collection, Inc.

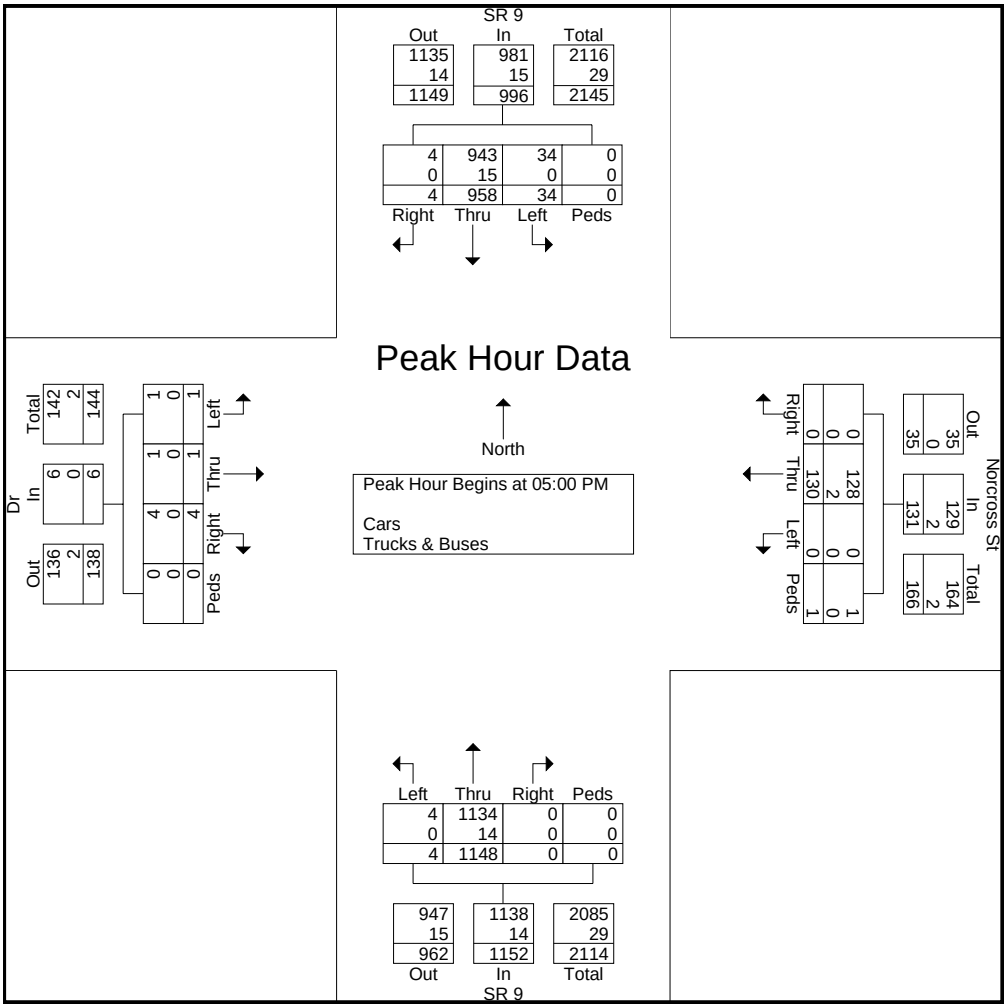
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Cold
Other: LE

File Name : 08501-12
Site Code : 00850112
Start Date : 1/24/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Norcross St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	291	0	0	292	10	232	2	0	244	1	1	2	0	4	0	37	0	0	37	577
05:15 PM	1	311	0	0	312	9	280	0	0	289	0	0	1	0	1	0	35	0	0	35	637
05:30 PM	1	248	0	0	249	4	239	1	0	244	0	0	0	0	0	0	29	0	1	30	523
05:45 PM	1	298	0	0	299	11	207	1	0	219	0	0	1	0	1	0	29	0	0	29	548
Total Volume	4	1148	0	0	1152	34	958	4	0	996	1	1	4	0	6	0	130	0	1	131	2285
% App. Total	0.3	99.7	0	0		3.4	96.2	0.4	0		16.7	16.7	66.7	0		0	99.2	0	0.8		
PHF	1.000																				
Cars	4	1134	0	0	1138	34	943	4	0	981	1	1	4	0	6	0	128	0	1	129	2254
% Cars	100	98.8	0	0	98.8	100	98.4	100	0	98.5	100	100	100	0	100	0	98.5	0	100	98.5	98.6
Trucks & Buses	0	14	0	0	14	0	15	0	0	15	0	0	0	0	0	0	2	0	0	2	31
% Trucks & Buses	0	1.2	0	0	1.2	0	1.6	0	0	1.5	0	0	0	0	0	0	1.5	0	0	1.5	1.4



Traffic Data Collection, Inc.

Atlanta - Hilton Head
www.trafficdatacollection.com

Counter: 1935
Counted By: JRM
Weather: Mild
Other: LE

File Name : 08501-13
Site Code : 00850113
Start Date : 2/5/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Milton Ave Eastbound					Academy St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	9	80	13	0	102	124	202	15	0	341	26	76	12	0	114	30	21	48	0	99	656
07:15 AM	11	129	18	0	158	154	279	10	0	443	27	75	4	0	106	30	31	63	0	124	831
07:30 AM	15	136	31	0	182	142	296	8	0	446	31	87	8	0	126	41	40	54	0	135	889
07:45 AM	13	147	24	0	184	130	308	11	0	449	28	99	9	0	136	31	64	70	0	165	934
Total	48	492	86	0	626	550	1085	44	0	1679	112	337	33	0	482	132	156	235	0	523	3310
08:00 AM	12	179	34	0	225	126	315	16	0	457	36	84	5	0	125	26	49	70	0	145	952
08:15 AM	15	140	22	0	177	120	230	6	0	356	50	110	11	0	171	36	48	73	0	157	861
08:30 AM	13	158	14	0	185	127	250	9	0	386	24	76	5	0	105	28	44	86	0	158	834
08:45 AM	14	153	24	0	191	113	218	6	0	337	41	105	7	0	153	36	51	80	0	167	848
Total	54	630	94	0	778	486	1013	37	0	1536	151	375	28	0	554	126	192	309	0	627	3495
Break																					
11:00 AM	17	140	19	0	176	73	170	11	0	254	16	36	16	0	68	24	39	85	0	148	646
11:15 AM	21	131	16	0	168	80	169	13	0	262	22	57	12	0	91	33	35	102	0	170	691
11:30 AM	13	157	19	0	189	66	154	12	1	233	20	35	18	0	73	29	49	81	3	162	657
11:45 AM	16	190	26	0	232	70	179	20	1	270	23	41	14	0	78	33	35	98	3	169	749
Total	67	618	80	0	765	289	672	56	2	1019	81	169	60	0	310	119	158	366	6	649	2743
12:00 PM	15	180	22	0	217	63	161	22	2	248	25	50	16	0	91	28	45	93	0	166	722
12:15 PM	19	189	25	1	234	68	199	13	0	280	19	38	20	0	77	36	26	90	0	152	743
12:30 PM	20	188	31	0	239	82	210	14	0	306	29	45	14	0	88	29	41	103	0	173	806
12:45 PM	23	218	27	0	268	58	196	21	0	275	17	77	12	0	106	23	66	92	0	181	830
Total	77	775	105	1	958	271	766	70	2	1109	90	210	62	0	362	116	178	378	0	672	3101
Break																					
04:00 PM	15	193	15	0	223	77	209	11	0	297	20	57	9	0	86	20	104	115	0	239	845
04:15 PM	22	217	17	0	256	73	199	30	0	302	21	62	8	0	91	29	92	153	0	274	923
04:30 PM	26	219	19	0	264	74	198	29	0	301	28	42	10	0	80	28	82	128	4	242	887
04:45 PM	27	232	18	0	277	49	167	27	0	243	30	39	7	0	76	30	105	152	0	287	883
Total	90	861	69	0	1020	273	773	97	0	1143	99	200	34	0	333	107	383	548	4	1042	3538
05:00 PM	22	252	24	0	298	50	167	24	0	241	36	50	5	0	91	35	107	170	0	312	942
05:15 PM	24	262	18	0	304	73	200	22	0	295	26	38	10	0	74	21	112	162	0	295	968
05:30 PM	24	191	17	0	232	65	180	29	0	274	40	47	15	0	102	40	117	169	0	326	934
05:45 PM	25	277	19	4	325	59	197	27	0	283	27	43	9	0	79	31	86	150	0	267	954
Total	95	982	78	4	1159	247	744	102	0	1093	129	178	39	0	346	127	422	651	0	1200	3798
Grand Total	431	4358	512	5	5306	2116	5053	406	4	7579	662	1469	256	0	2387	727	1489	2487	10	4713	19985
Apprch %	8.1	82.1	9.6	0.1		27.9	66.7	5.4	0.1		27.7	61.5	10.7	0		15.4	31.6	52.8	0.2		
Total %	2.2	21.8	2.6	0	26.5	10.6	25.3	2	0	37.9	3.3	7.4	1.3	0	11.9	3.6	7.5	12.4	0.1	23.6	
Cars	430	4320	505	5	5260	2110	4996	406	4	7516	661	1463	256	0	2380	718	1480	2468	10	4676	19832
% Cars	99.8	99.1	98.6	100	99.1	99.7	98.9	100	100	99.2	99.8	99.6	100	0	99.7	98.8	99.4	99.2	100	99.2	99.2
Trucks & Buses	1	38	7	0	46	6	57	0	0	63	1	6	0	0	7	9	9	19	0	37	153
% Trucks & Buses	0.2	0.9	1.4	0	0.9	0.3	1.1	0	0	0.8	0.2	0.4	0	0	0.3	1.2	0.6	0.8	0	0.8	0.8

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Weather: Mild
Other: LE

File Name : 08501-13
Site Code : 00850113
Start Date : 2/5/2008
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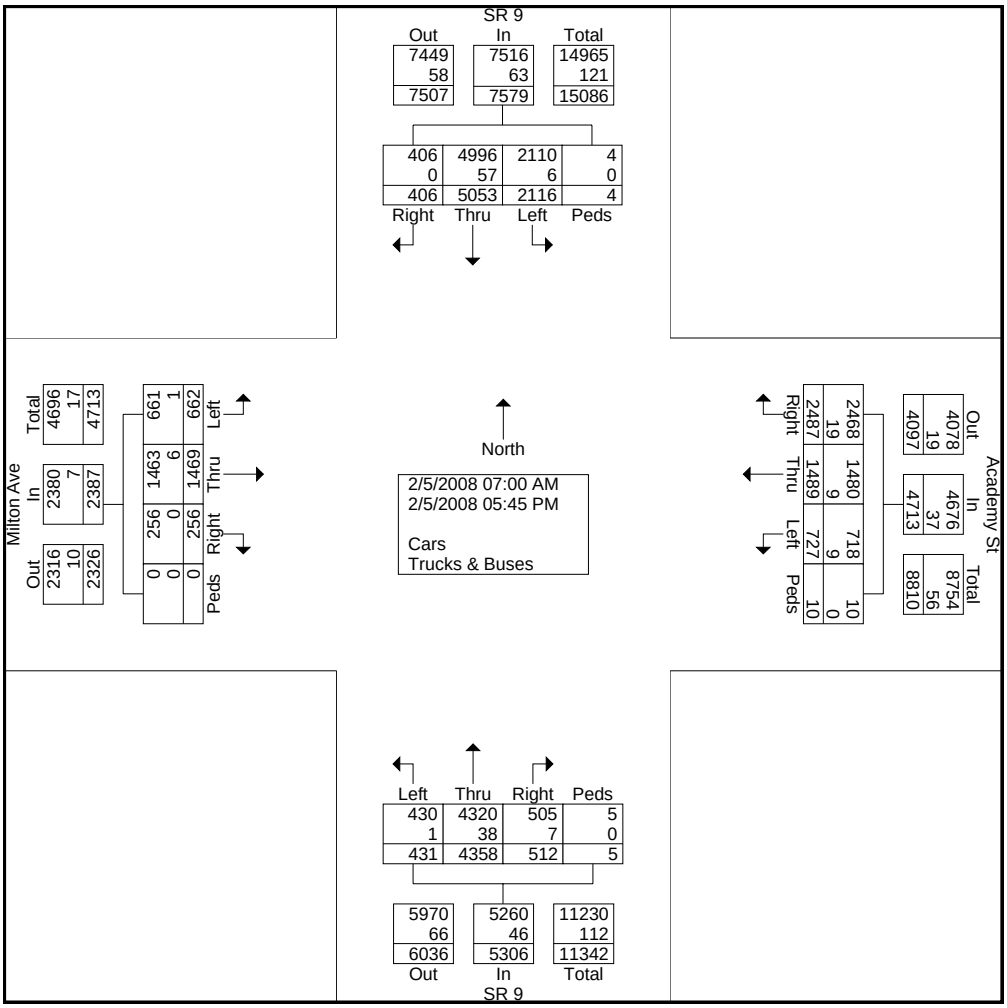

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Counter: 1935
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Weather: Mild
Other: LE

File Name : 08501-13
Site Code : 00850113
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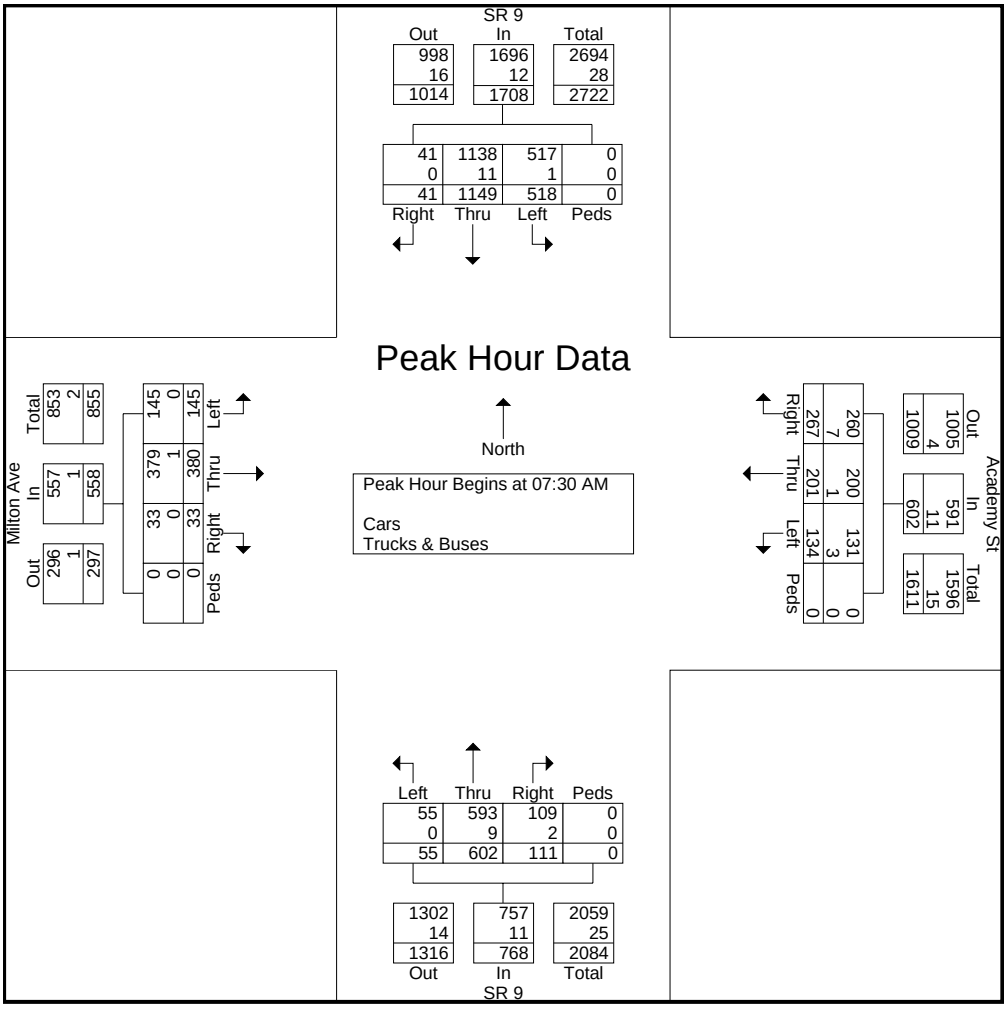
	SR 9 Northbound					SR 9 Southbound					Milton Ave Eastbound					Academy St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	15	136	31	0	182	142	296	8	0	446	31	87	8	0	126	41	40	54	0	135	889
07:45 AM	13	147	24	0	184	130	308	11	0	449	28	99	9	0	136	31	64	70	0	165	934
08:00 AM	12	179	34	0	225	126	315	16	0	457	36	84	5	0	125	26	49	70	0	145	952
08:15 AM	15	140	22	0	177	120	230	6	0	356	50	110	11	0	171	36	48	73	0	157	861
Total Volume	55	602	111	0	768	518	1149	41	0	1708	145	380	33	0	558	134	201	267	0	602	3636
% App. Total	7.2	78.4	14.5	0		30.3	67.3	2.4	0		26	68.1	5.9	0		22.3	33.4	44.4	0		
PHF	.917	.841	.816	.000	.853	.912	.912	.641	.000	.934	.725	.864	.750	.000	.816	.817	.785	.914	.000	.912	.955
Cars	55	593	109	0	757	517	1138														
% Cars	100	98.5	98.2	0	98.6	99.8	99.0	100	0	99.3	100	99.7	100	0	99.8	97.8	99.5	97.4	0	98.2	99.0
Trucks & Buses	0	9	2	0	11	1	11	0	0	12	0	1	0	0	1	3	1	7	0	11	35
% Trucks & Buses	0	1.5	1.8	0	1.4	0.2	1.0	0	0	0.7	0	0.3	0	0	0.2	2.2	0.5	2.6	0	1.8	1.0



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Weather: Mild
Other: LE

File Name : 08501-13
Site Code : 00850113
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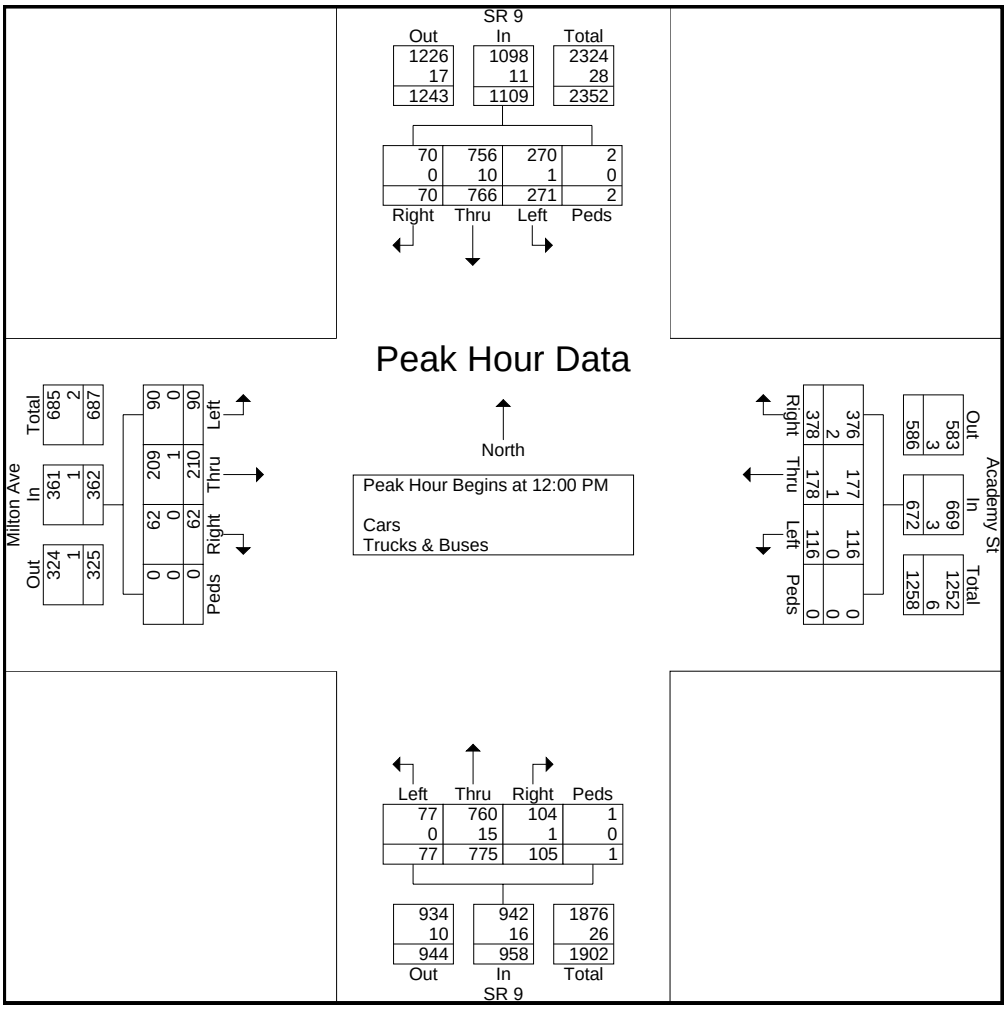
	SR 9 Northbound					SR 9 Southbound					Milton Ave Eastbound					Academy St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	15	180	22	0	217	63	161	22	2	248	25	50	16	0	91	28	45	93	0	166	722
12:15 PM	19	189	25	1	234	68	199	13	0	280	19	38	20	0	77	36	26	90	0	152	743
12:30 PM	20	188	31	0	239	82	210	14	0	306	29	45	14	0	88	29	41	103	0	173	806
12:45 PM	23	218	27	0	268	58	196	21	0	275	17	77	12	0	106	23	66	92	0	181	830
Total Volume	77	775	105	1	958	271	766	70	2	1109	90	210	62	0	362	116	178	378	0	672	3101
% App. Total	8	80.9	11	0.1		24.4	69.1	6.3	0.2		24.9	58	17.1	0		17.3	26.5	56.2	0		
PHF	.837	.889	.847	.250	.894	.826	.912	.795	.250	.906	.776	.682	.775	.000	.854	.806	.674	.917	.000	.928	.934
Cars	77	760	104	1	942	270	756	70	2	1098	90	209	62	0	361	116	177	376	0	669	3070
% Cars	100	98.1	99.0	100	98.3	99.6	98.7	100	100	99.0	100	99.5	100	0	99.7	100	99.4	99.5	0	99.6	99.0
Trucks & Buses																					
% Trucks & Buses	0	1.9	1.0	0	1.7	0.4	1.3	0	0	1.0	0	0.5	0	0	0.3	0	0.6	0.5	0	0.4	1.0



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Weather: Mild
Other: LE

File Name : 08501-13
Site Code : 00850113
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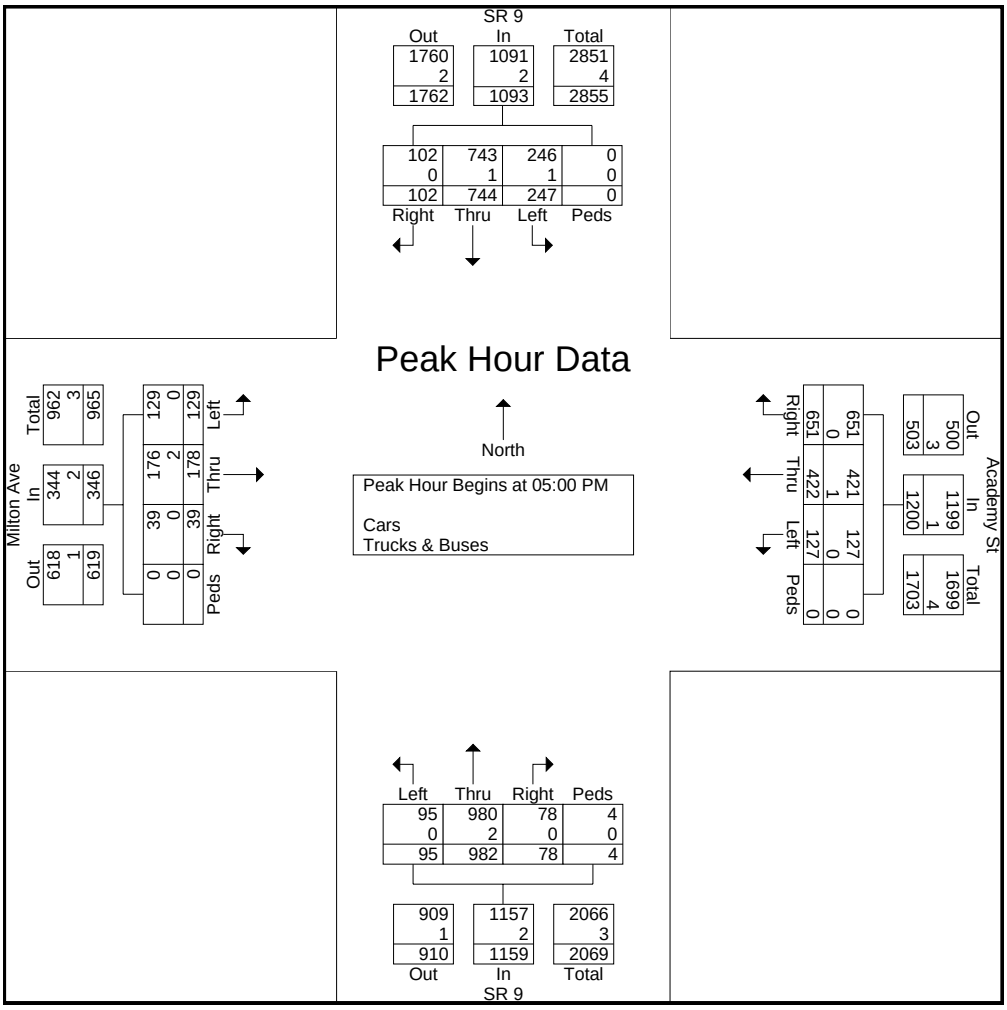
	SR 9 Northbound					SR 9 Southbound					Milton Ave Eastbound					Academy St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	22	252	24	0	298	50	167	24	0	241	36	50	5	0	91	35	107	170	0	312	942
05:15 PM	24	262	18	0	304	73	200	22	0	295	26	38	10	0	74	21	112	162	0	295	968
05:30 PM	24	191	17	0	232	65	180	29	0	274	40	47	15	0	102	40	117	169	0	326	934
05:45 PM	25	277	19	4	325	59	197	27	0	283	27	43	9	0	79	31	86	150	0	267	954
Total Volume	95	982	78	4	1159	247	744	102	0	1093	129	178	39	0	346	127	422	651	0	1200	3798
% App. Total	8.2	84.7	6.7	0.3		22.6	68.1	9.3	0		37.3	51.4	11.3	0		10.6	35.2	54.2	0		
PHF	.950	.886	.813	.250	.892	.846	.930	.879	.000	.926	.806	.890	.650	.000	.848	.794	.902	.957	.000	.920	.981
Cars	95	980	78	4	1157	246	743	102	0	1091	129	176	39	0	344	127	421	651	0	1199	3791
% Cars	100	99.8	100	100	99.8	99.6	99.9	100	0	99.8	100	98.9	100	0	99.4	100	99.8	100	0	99.9	99.8
Trucks & Buses																					
% Trucks & Buses	0	0.2	0	0	0.2	0.4	0.1	0	0	0.2	0	1.1	0	0	0.6	0	0.2	0	0	0.1	0.2



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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Counter: 2446
Counted By: JRM
Weather: Mild
Other: LE

File Name : 08501-14
Site Code : 00850114
Start Date : 3/12/2008
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Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Camp Rd (Bus Facility) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	163	2	0	165	1	239	0	0	240	0	0	0	0	0	0	0	0	0	0	405
07:15 AM	0	222	2	0	224	0	350	0	0	350	0	0	0	0	0	0	0	0	0	0	574
07:30 AM	0	240	1	0	241	0	339	0	0	339	0	0	0	0	0	0	0	0	0	0	580
07:45 AM	0	390	3	0	393	0	397	0	0	397	0	0	0	0	0	0	0	3	0	3	793
Total	0	1015	8	0	1023	1	1325	0	0	1326	0	0	0	0	0	0	0	3	0	3	2352
08:00 AM	0	333	8	0	341	1	428	0	0	429	0	0	0	0	0	0	0	1	0	1	771
08:15 AM	0	345	25	0	370	0	387	0	0	387	0	0	0	0	0	0	0	5	0	5	762
08:30 AM	0	322	24	0	346	0	374	0	0	374	0	0	0	0	0	0	0	15	1	16	736
08:45 AM	0	287	7	0	294	1	369	0	0	370	0	0	0	0	0	0	0	17	1	18	682
Total	0	1287	64	0	1351	2	1558	0	0	1560	0	0	0	0	0	0	0	38	2	40	2951
Break																					
04:00 PM	0	358	6	0	364	1	279	0	0	280	0	0	0	0	0	1	0	0	0	1	645
04:15 PM	0	309	12	0	321	0	300	0	0	300	0	0	0	0	0	0	0	5	0	5	626
04:30 PM	0	341	17	0	358	1	303	0	0	304	0	0	0	0	0	3	0	15	0	18	680
04:45 PM	0	306	1	0	307	1	328	0	0	329	0	0	0	0	0	6	0	19	0	25	661
Total	0	1314	36	0	1350	3	1210	0	0	1213	0	0	0	0	0	10	0	39	0	49	2612
05:00 PM	0	394	3	0	397	0	310	0	0	310	0	0	0	0	0	0	0	8	0	8	715
05:15 PM	0	415	2	0	417	0	397	0	0	397	0	0	0	0	0	0	0	4	0	4	818
05:30 PM	0	379	0	0	379	0	350	0	0	350	0	0	0	0	0	0	0	0	0	0	729
05:45 PM	0	290	0	0	290	0	348	0	0	348	0	0	0	0	0	0	0	0	0	0	638
Total	0	1478	5	0	1483	0	1405	0	0	1405	0	0	0	0	0	0	0	12	0	12	2900
Grand Total	0	5094	113	0	5207	6	5498	0	0	5504	0	0	0	0	0	10	0	92	2	104	10815
Apprch %	0	97.8	2.2	0		0.1	99.9	0	0		0	0	0	0		9.6	0	88.5	1.9		
Total %	0	47.1	1	0	48.1	0.1	50.8	0	0	50.9	0	0	0	0	0	0.1	0	0.9	0	1	
Cars	0	5015	37	0	5052	6	5460	0	0	5466	0	0	0	0	0	10	0	92	2	104	10622
% Cars	0	98.4	32.7	0	97	100	99.3	0	0	99.3	0	0	0	0	0	100	0	100	100	100	98.2
Trucks & Buses	0	79	76	0	155	0	38	0	0	38	0	0	0	0	0	0	0	0	0	0	193
% Trucks & Buses	0	1.6	67.3	0	3	0	0.7	0	0	0.7	0	0	0	0	0	0	0	0	0	0	1.8

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Counter: 2446
Counted By: JRM
Weather: Mild
Other: LE

File Name : 08501-14
Site Code : 00850114
Start Date : 3/12/2008
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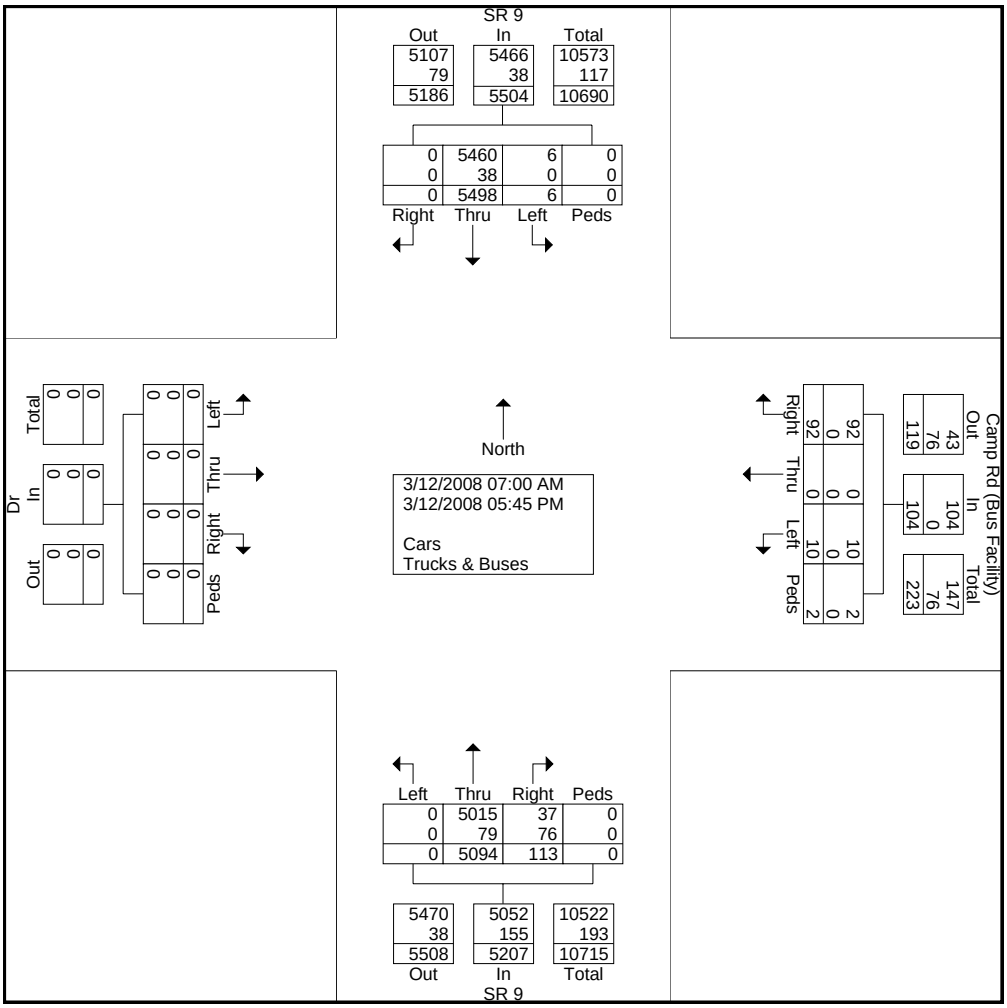

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Other: LE

File Name : 08501-14
Site Code : 00850114
Start Date : 3/12/2008
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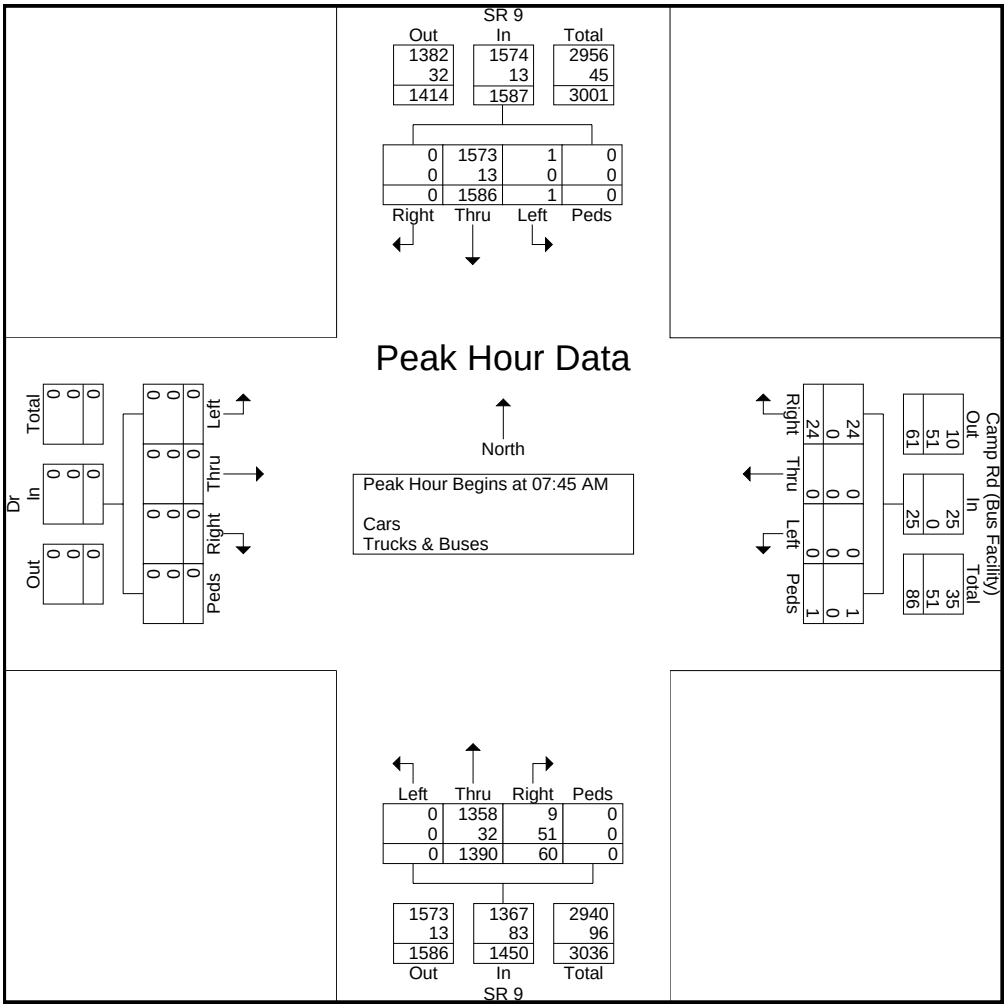
	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Camp Rd (Bus Facility) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	390	3	0	393	0	397	0	0	397	0	0	0	0	0	0	0	3	0	3	793
08:00 AM	0	333	8	0	341	1	428	0	0	429	0	0	0	0	0	0	0	1	0	1	771
08:15 AM	0	345	25	0	370	0	387	0	0	387	0	0	0	0	0	0	0	5	0	5	762
08:30 AM	0	322	24	0	346	0	374	0	0	374	0	0	0	0	0	0	0	15	1	16	736
Total Volume	0	1390	60	0	1450	1	1586	0	0	1587	0	0	0	0	0	0	0	24	1	25	3062
% App. Total	0	95.9	4.1	0		0.1	99.9	0	0		0	0	0	0		0	0	96	4		
PHF	.000	.891	.600	.000	.922	.250	.926	.000	.000	.925	.000	.000	.000	.000	.000	.000	.000	.400	.250	.391	.965
Cars	0	1358					1573														
% Cars	0	97.7	15.0	0	94.3	100	99.2	0	0	99.2	0	0	0	0	0	0	0	100	100	100	96.9
Trucks & Buses	0	32	51	0	83	0	13	0	0	13	0	0	0	0	0	0	0	0	0	0	96
% Trucks & Buses	0	2.3	85.0	0	5.7	0	0.8	0	0	0.8	0	0	0	0	0	0	0	0	0	0	3.1



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Atlanta - Hilton Head

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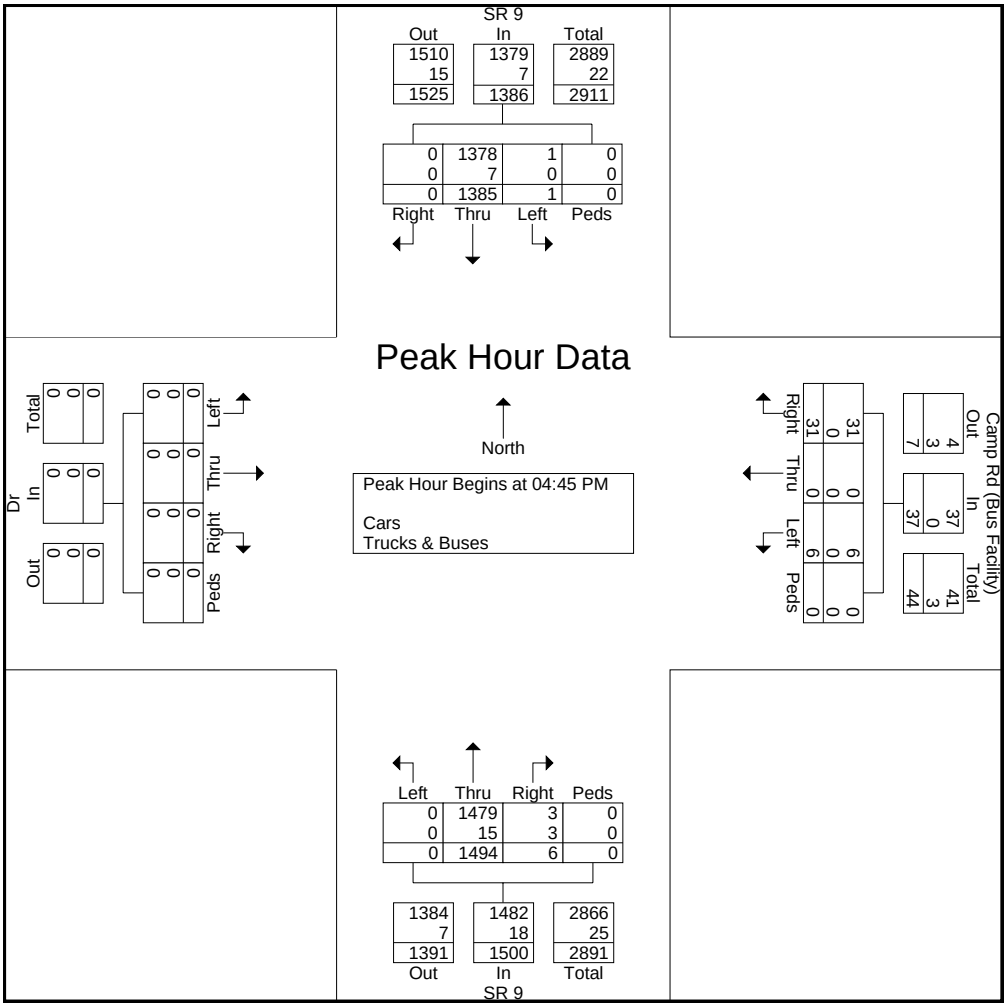
Counter: 2446
Counted By: JRM
Weather: Mild
Other: LE

File Name : 08501-14
Site Code : 00850114
Start Date : 3/12/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Camp Rd (Bus Facility) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	306	1	0	307	1	328	0	0	329	0	0	0	0	0	6	0	19	0	25	661
05:00 PM	0	394	3	0	397	0	310	0	0	310	0	0	0	0	0	0	0	8	0	8	715
05:15 PM	0	415	2	0	417	0	397	0	0	397	0	0	0	0	0	0	0	4	0	4	818
05:30 PM	0	379	0	0	379	0	350	0	0	350	0	0	0	0	0	0	0	0	0	0	729
Total Volume	0	1494	6	0	1500	1	1385	0	0	1386	0	0	0	0	0	6	0	31	0	37	2923
% App. Total	0	99.6	0.4	0		0.1	99.9	0	0		0	0	0	0		16.2	0	83.8	0		
PHF	.000	.900	.500	.000	.899	.250	.872	.000	.000	.873	.000	.000	.000	.000	.000	.250	.000	.408	.000	.370	.893
Cars	0	1479					1378														
% Cars	0	99.0	50.0	0	98.8	100	99.5	0	0	99.5	0	0	0	0	0	100	0	100	0	100	99.1
Trucks & Buses	0	15	3	0	18	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	25
% Trucks & Buses	0	1.0	50.0	0	1.2	0	0.5	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0.9



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Weather: Mild
Other: LE

File Name : 08500-01
Site Code : 00850001
Start Date : 1/29/2008
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Groups Printed- Cars - Trucks & Buses

	SR 9 Southbound					Dr Westbound					SR 9 Northbound					Church St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	401	1	0	402	0	0	0	0	0	0	162	1	0	163	1	2	15	0	18	583
07:15 AM	5	447	1	0	453	0	0	0	0	0	0	218	2	0	220	0	0	8	1	9	682
07:30 AM	0	447	0	0	447	0	0	0	0	0	0	237	8	0	245	0	0	8	0	8	700
07:45 AM	1	503	6	0	510	0	0	0	0	0	0	279	13	0	292	0	0	20	0	20	822
Total	6	1798	8	0	1812	0	0	0	0	0	0	896	24	0	920	1	2	51	1	55	2787
08:00 AM	0	423	0	0	423	0	0	0	0	0	0	278	7	0	285	2	0	17	0	19	727
08:15 AM	2	433	3	0	438	0	0	0	0	0	1	280	9	0	290	2	1	18	0	21	749
08:30 AM	3	358	1	0	362	0	0	0	0	0	2	293	0	0	295	0	0	14	0	14	671
08:45 AM	0	377	5	0	382	1	3	30	0	34	5	311	9	0	325	0	0	18	0	18	759
Total	5	1591	9	0	1605	1	3	30	0	34	8	1162	25	0	1195	4	1	67	0	72	2906
Break																					
11:00 AM	0	229	1	0	230	2	0	0	0	2	3	226	1	0	230	0	0	0	0	0	462
11:15 AM	1	222	3	0	226	1	0	2	0	3	8	244	2	0	254	0	0	1	0	1	484
11:30 AM	0	248	0	0	248	0	0	1	0	1	6	278	2	0	286	0	0	4	0	4	539
11:45 AM	0	241	2	0	243	3	0	14	0	17	5	399	1	0	405	0	0	5	0	5	670
Total	1	940	6	0	947	6	0	17	0	23	22	1147	6	0	1175	0	0	10	0	10	2155
12:00 PM	0	281	1	0	282	2	0	12	0	14	10	350	1	0	361	0	0	13	0	13	670
12:15 PM	1	294	2	0	297	0	0	2	0	2	8	357	2	0	367	0	0	3	0	3	669
12:30 PM	0	306	3	0	309	1	1	1	0	3	4	345	1	0	350	0	0	8	0	8	670
12:45 PM	0	307	1	0	308	0	1	2	0	3	5	358	1	0	364	1	0	5	0	6	681
Total	1	1188	7	0	1196	3	2	17	0	22	27	1410	5	0	1442	1	0	29	0	30	2690
Break																					
04:00 PM	0	290	3	0	293	0	0	0	0	0	8	392	3	0	403	0	1	10	0	11	707
04:15 PM	0	302	6	0	308	0	0	0	0	0	5	382	1	0	388	0	0	4	0	4	700
04:30 PM	0	297	3	0	300	0	0	0	0	0	7	372	1	0	380	0	0	1	0	1	681
04:45 PM	0	241	3	0	244	0	0	1	0	1	1	427	3	0	431	0	0	4	0	4	680
Total	0	1130	15	0	1145	0	0	1	0	1	21	1573	8	0	1602	0	1	19	0	20	2768
05:00 PM	0	283	1	0	284	0	0	0	0	0	3	417	3	0	423	0	1	4	0	5	712
05:15 PM	2	292	3	0	297	0	0	0	0	0	5	514	2	0	521	1	0	0	0	1	819
05:30 PM	0	292	4	0	296	0	0	0	0	0	3	508	2	0	513	0	0	0	0	0	809
05:45 PM	0	277	2	0	279	0	0	0	0	0	7	402	0	0	409	0	0	4	0	4	692
Total	2	1144	10	0	1156	0	0	0	0	0	18	1841	7	0	1866	1	1	8	0	10	3032
Grand Total	15	7791	55	0	7861	10	5	65	0	80	96	8029	75	0	8200	7	5	184	1	197	16338
Apprch %	0.2	99.1	0.7	0		12.5	6.2	81.2	0		1.2	97.9	0.9	0		3.6	2.5	93.4	0.5		
Total %	0.1	47.7	0.3	0	48.1	0.1	0	0.4	0	0.5	0.6	49.1	0.5	0	50.2	0	0	1.1	0	1.2	
Cars	14	7580	51	0	7645	10	5	64	0	79	95	7807	74	0	7976	7	4	181	1	193	15893
% Cars	93.3	97.3	92.7	0	97.3	100	100	98.5	0	98.8	99	97.2	98.7	0	97.3	100	80	98.4	100	98	97.3
Trucks & Buses	1	211	4	0	216	0	0	1	0	1	1	222	1	0	224	0	1	3	0	4	445
% Trucks & Buses	6.7	2.7	7.3	0	2.7	0	0	1.5	0	1.2	1	2.8	1.3	0	2.7	0	20	1.6	0	2	2.7

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Weather: Mild
Other: LE

File Name : 08500-01
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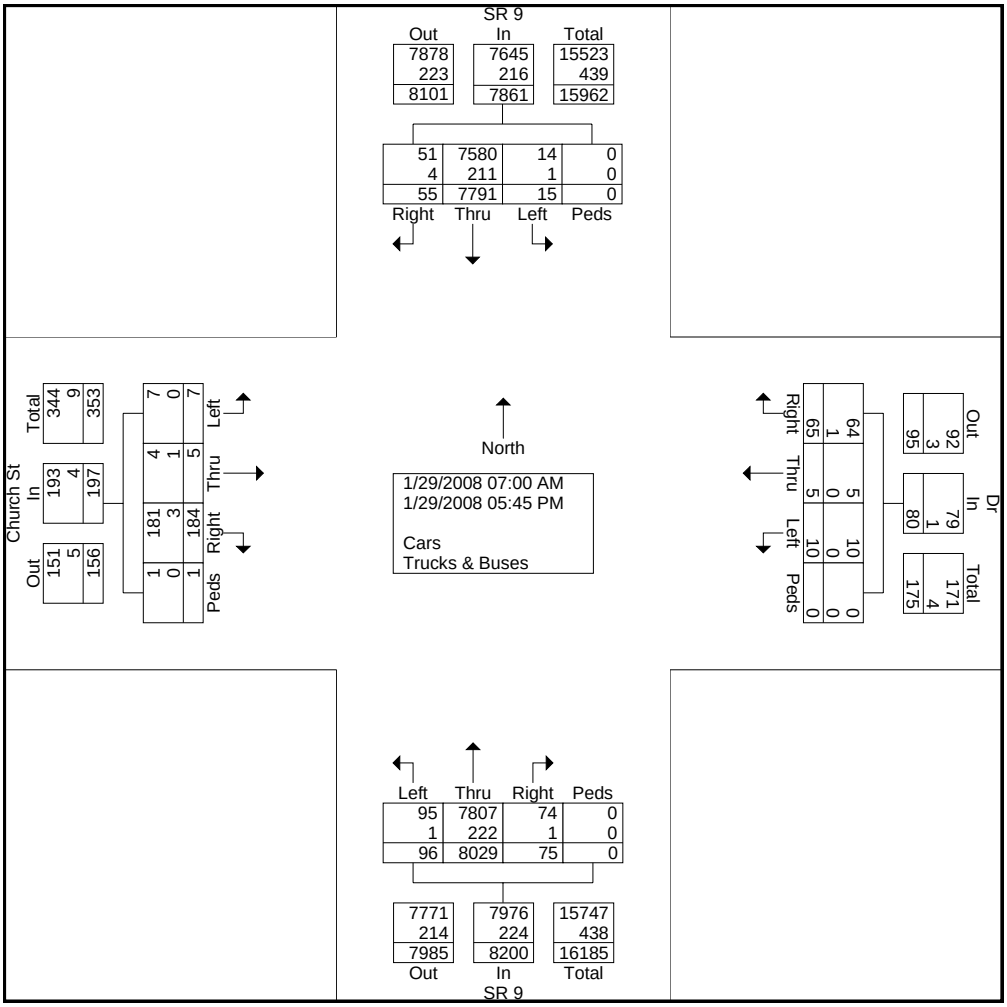

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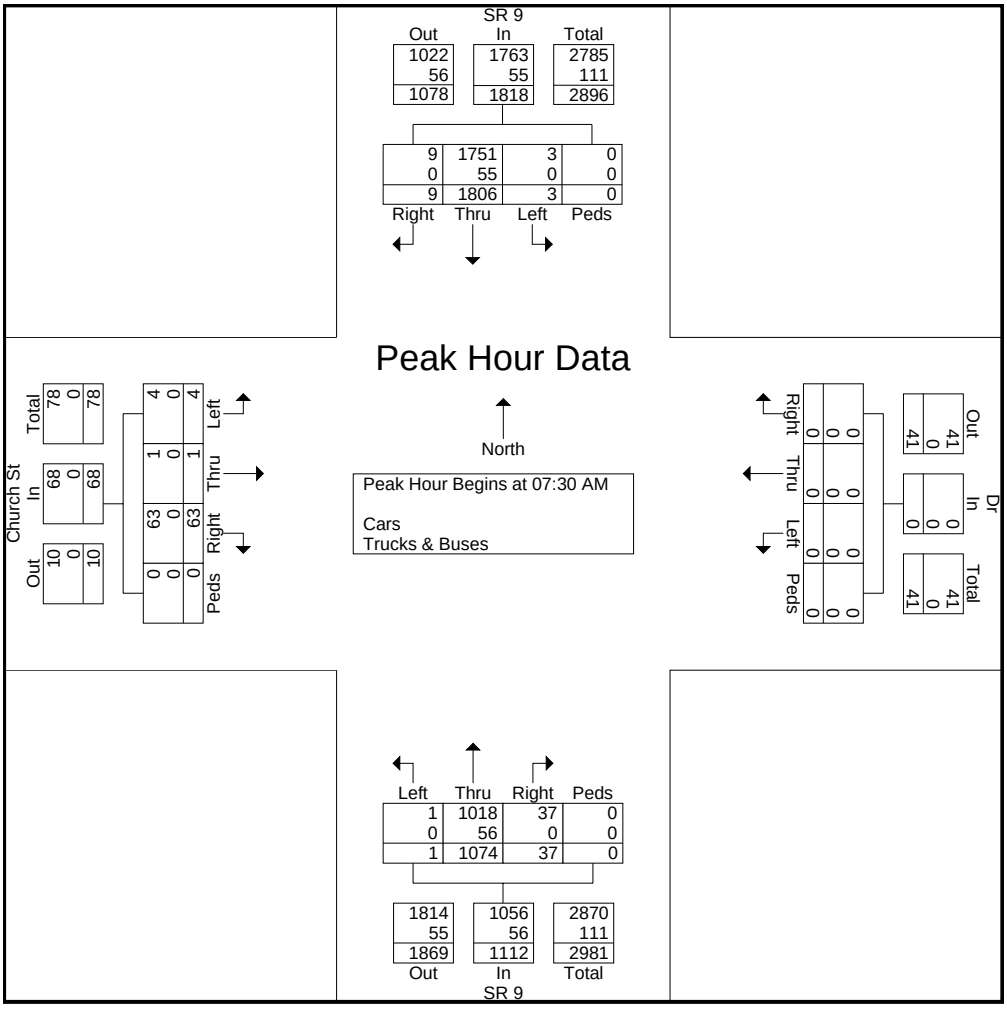
Weather: Mild
Other: LE

File Name : 08500-01
Site Code : 00850001
Start Date : 1/29/2008
Page No : 3

	SR 9 Southbound					Dr Westbound					SR 9 Northbound					Church St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	447	0	0	447	0	0	0	0	0	0	237	8	0	245	0	0	8	0	8	700
07:45 AM	1	503	6	0	510	0	0	0	0	0	0	279	13	0	292	0	0	20	0	20	822
08:00 AM	0	423	0	0	423	0	0	0	0	0	0	278	7	0	285	2	0	17	0	19	727
08:15 AM	2	433	3	0	438	0	0	0	0	0	1	280	9	0	290	2	1	18	0	21	749
Total Volume	3	1806	9	0	1818	0	0	0	0	0	1	1074	37	0	1112	4	1	63	0	68	2998
% App. Total	0.2	99.3	0.5	0		0	0	0	0		0.1	96.6	3.3	0		5.9	1.5	92.6	0		
PHF	.375	.898	.375	.000	.891	.000	.000	.000	.000	.000	.250	.959	.712	.000	.952	.500	.250	.788	.000	.810	.912
Cars	3	1751										1018									
% Cars	100	97.0	100	0	97.0	0	0	0	0	0	100	94.8	100	0	95.0	100	100	100	0	100	96.3
Trucks & Buses	0	55	0	0	55	0	0	0	0	0	0	56	0	0	56	0	0	0	0	0	111
% Trucks & Buses	0	3.0	0	0	3.0	0	0	0	0	0	0	5.2	0	0	5.0	0	0	0	0	0	3.7



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Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-01
Site Code : 00850001
Start Date : 1/29/2008
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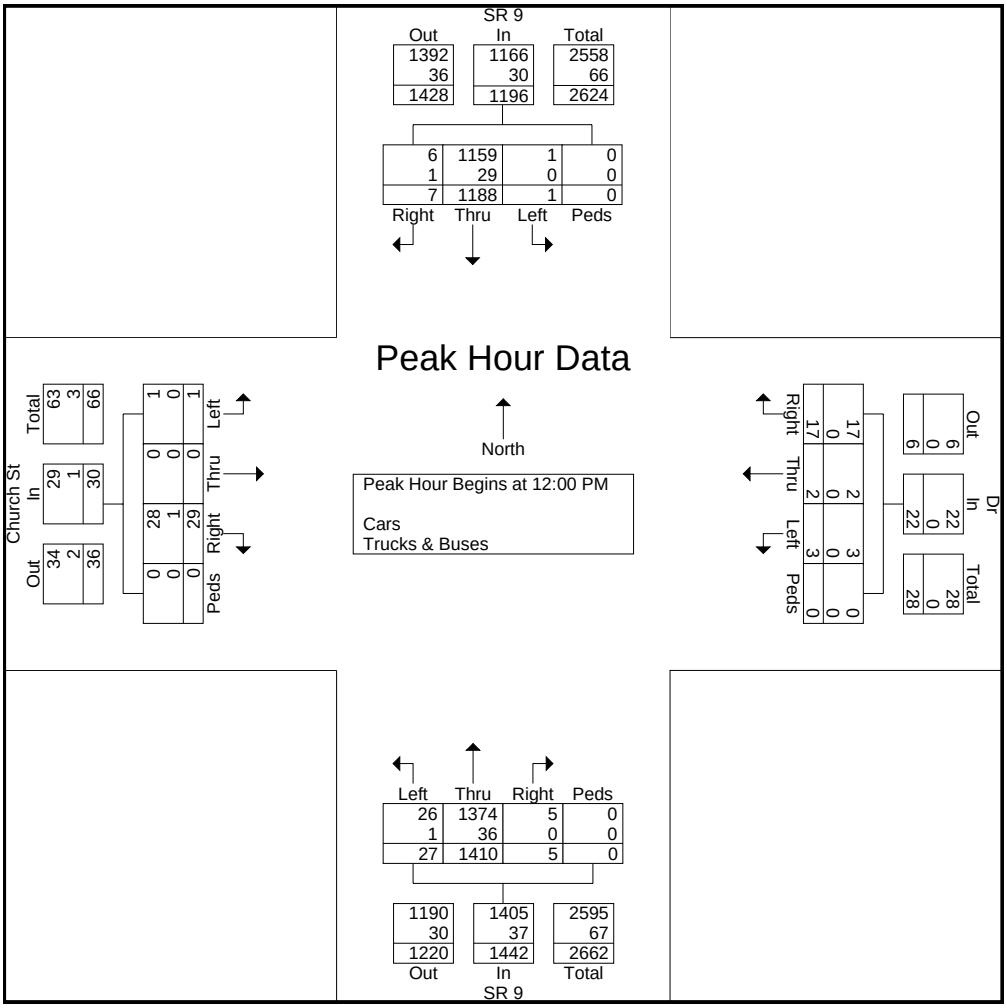
	SR 9 Southbound					Dr Westbound					SR 9 Northbound					Church St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	281	1	0	282	2	0	12	0	14	10	350	1	0	361	0	0	13	0	13	670
12:15 PM	1	294	2	0	297	0	0	2	0	2	8	357	2	0	367	0	0	3	0	3	669
12:30 PM	0	306	3	0	309	1	1	1	0	3	4	345	1	0	350	0	0	8	0	8	670
12:45 PM	0	307	1	0	308	0	1	2	0	3	5	358	1	0	364	1	0	5	0	6	681
Total Volume	1	1188	7	0	1196	3	2	17	0	22	27	1410	5	0	1442	1	0	29	0	30	2690
% App. Total	0.1	99.3	0.6	0		13.6	9.1	77.3	0		1.9	97.8	0.3	0		3.3	0	96.7	0		
PHF	.250	.967	.583	.000	.968	.375	.500	.354	.000	.393	.675	.985	.625	.000	.982	.250	.000	.558	.000	.577	.988
Cars	1	1159										1374									
% Cars	100	97.6	85.7	0	97.5	100	100	100	0	100	96.3	97.4	100	0	97.4	100	0	96.6	0	96.7	97.5
Trucks & Buses	0	29	1	0	30	0	0	0	0	0	1	36	0	0	37	0	0	1	0	1	68
% Trucks & Buses	0	2.4	14.3	0	2.5	0	0	0	0	0	3.7	2.6	0	0	2.6	0	0	3.4	0	3.3	2.5



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Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-01
Site Code : 00850001
Start Date : 1/29/2008
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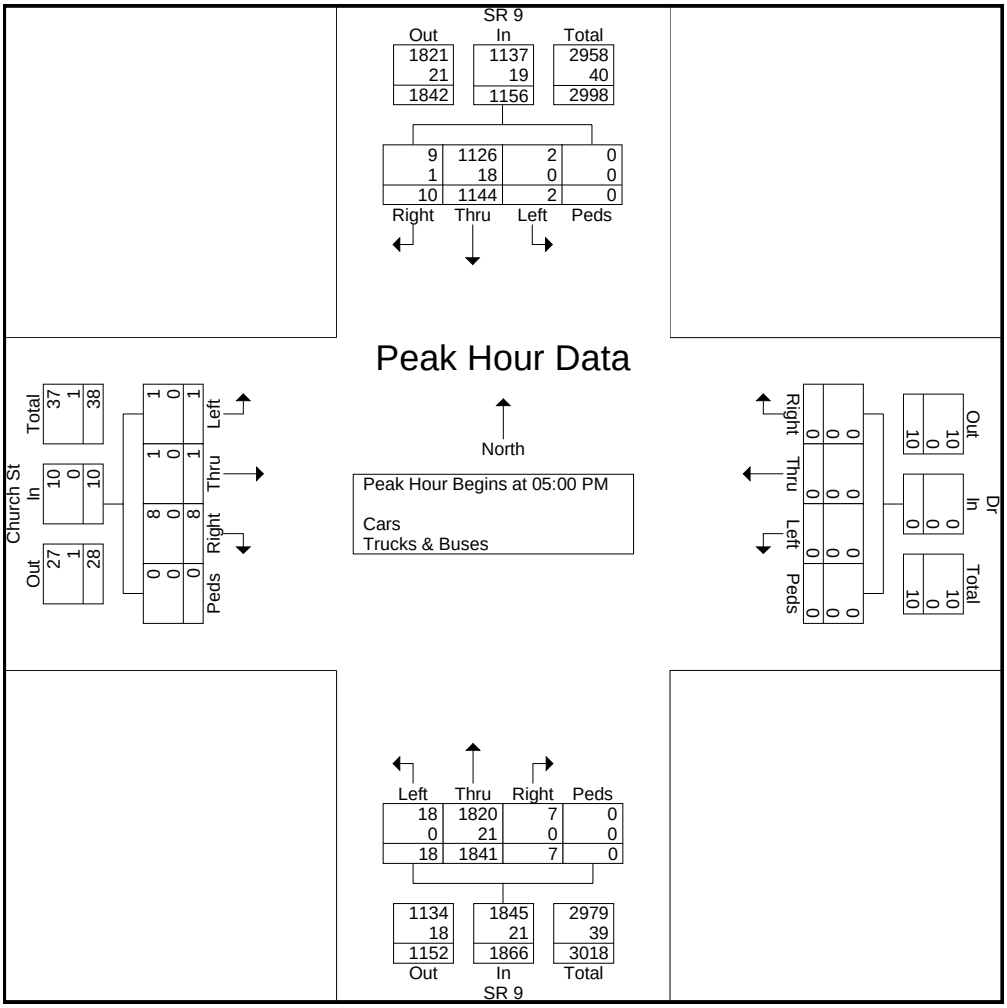
	SR 9 Southbound					Dr Westbound					SR 9 Northbound					Church St Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	283	1	0	284	0	0	0	0	0	3	417	3	0	423	0	1	4	0	5	712
05:15 PM	2	292	3	0	297	0	0	0	0	0	5	514	2	0	521	1	0	0	0	1	819
05:30 PM	0	292	4	0	296	0	0	0	0	0	3	508	2	0	513	0	0	0	0	0	809
05:45 PM	0	277	2	0	279	0	0	0	0	0	7	402	0	0	409	0	0	4	0	4	692
Total Volume	2	1144	10	0	1156	0	0	0	0	0	18	1841	7	0	1866	1	1	8	0	10	3032
% App. Total	0.2	99	0.9	0		0	0	0	0		1	98.7	0.4	0		10	10	80	0		
PHF	.250	.979	.625	.000	.973	.000	.000	.000	.000	.000	.643	.895	.583	.000	.895	.250	.250	.500	.000	.500	.926
Cars	2	1126										1820									
% Cars	100	98.4	90.0	0	98.4	0	0	0	0	0	100	98.9	100	0	98.9	100	100	100	0	100	98.7
Trucks & Buses	0	18	1	0	19	0	0	0	0	0	0	21	0	0	21	0	0	0	0	0	40
% Trucks & Buses	0	1.6	10.0	0	1.6	0	0	0	0	0	0	1.1	0	0	1.1	0	0	0	0	0	1.3



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Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-02
Site Code : 00850002
Start Date : 1/31/2008
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Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Cumming St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	114	51	0	165	24	365	0	0	389	0	0	0	0	0	48	1	15	0	64	618
07:15 AM	0	176	51	0	227	15	343	3	0	361	0	0	1	0	1	57	1	5	0	63	652
07:30 AM	0	153	50	4	207	13	344	4	0	361	0	0	0	0	0	66	1	10	1	78	646
07:45 AM	0	193	52	0	245	21	425	0	0	446	0	1	0	0	1	74	0	8	0	82	774
Total	0	636	204	4	844	73	1477	7	0	1557	0	1	1	0	2	245	3	38	1	287	2690
08:00 AM	0	196	76	0	272	28	282	3	0	313	0	1	0	0	1	59	2	11	0	72	658
08:15 AM	0	170	80	0	250	29	293	0	0	322	0	0	0	0	0	91	0	13	0	104	676
08:30 AM	0	211	84	0	295	26	304	0	0	330	0	0	0	0	0	58	1	4	0	63	688
08:45 AM	0	210	126	0	336	39	252	0	0	291	0	0	0	0	0	72	2	12	0	86	713
Total	0	787	366	0	1153	122	1131	3	0	1256	0	1	0	0	1	280	5	40	0	325	2735
Break																					
11:00 AM	0	206	28	0	234	7	209	0	0	216	0	0	0	0	0	32	0	8	2	42	492
11:15 AM	0	226	36	0	262	7	231	0	0	238	0	0	0	0	0	32	0	3	5	40	540
11:30 AM	0	229	34	0	263	14	194	0	0	208	0	0	0	0	0	37	0	8	0	45	516
11:45 AM	0	275	51	0	326	8	177	0	0	185	0	0	0	0	0	50	0	9	0	59	570
Total	0	936	149	0	1085	36	811	0	0	847	0	0	0	0	0	151	0	28	7	186	2118
12:00 PM	0	210	48	2	260	9	213	0	0	222	0	0	0	0	0	43	0	12	0	55	537
12:15 PM	0	271	48	0	319	13	215	0	0	228	0	0	0	0	0	47	0	6	1	54	601
12:30 PM	0	287	56	0	343	15	282	0	0	297	0	0	0	0	0	42	0	10	0	52	692
12:45 PM	0	296	82	0	378	30	252	0	0	282	0	0	0	0	0	50	0	11	0	61	721
Total	0	1064	234	2	1300	67	962	0	0	1029	0	0	0	0	0	182	0	39	1	222	2551
Break																					
04:00 PM	0	325	48	0	373	7	193	0	0	200	0	0	0	0	0	72	0	20	0	92	665
04:15 PM	1	278	76	0	355	6	205	1	0	212	0	0	0	0	0	66	2	19	1	88	655
04:30 PM	0	331	50	0	381	8	162	0	0	170	0	0	0	0	0	73	1	23	0	97	648
04:45 PM	0	393	57	0	450	15	194	0	0	209	0	0	0	0	0	47	5	16	1	69	728
Total	1	1327	231	0	1559	36	754	1	0	791	0	0	0	0	0	258	8	78	2	346	2696
05:00 PM	1	303	55	0	359	4	207	0	0	211	0	0	0	0	0	86	3	25	0	114	684
05:15 PM	0	403	50	0	453	10	221	0	0	231	0	0	0	0	0	88	2	21	0	111	795
05:30 PM	0	400	77	0	477	11	221	0	0	232	0	0	0	0	0	68	0	20	0	88	797
05:45 PM	0	378	44	0	422	9	187	0	0	196	0	0	0	0	0	80	0	23	1	104	722
Total	1	1484	226	0	1711	34	836	0	0	870	0	0	0	0	0	322	5	89	1	417	2998
Grand Total	2	6234	1410	6	7652	368	5971	11	0	6350	0	2	1	0	3	1438	21	312	12	1783	15788
Apprch %	0	81.5	18.4	0.1		5.8	94	0.2	0		0	66.7	33.3	0		80.7	1.2	17.5	0.7		
Total %	0	39.5	8.9	0	48.5	2.3	37.8	0.1	0	40.2	0	0	0	0	0	9.1	0.1	2	0.1	11.3	
Cars	1	6030	1393	6	7430	354	5766	11	0	6131	0	2	1	0	3	1412	21	302	12	1747	15311
% Cars	50	96.7	98.8	100	97.1	96.2	96.6	100	0	96.6	0	100	100	0	100	98.2	100	96.8	100	98	97
Trucks & Buses	1	204	17	0	222	14	205	0	0	219	0	0	0	0	0	26	0	10	0	36	477
% Trucks & Buses	50	3.3	1.2	0	2.9	3.8	3.4	0	0	3.4	0	0	0	0	0	1.8	0	3.2	0	2	3

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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Atlanta - Hilton Head

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Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-02
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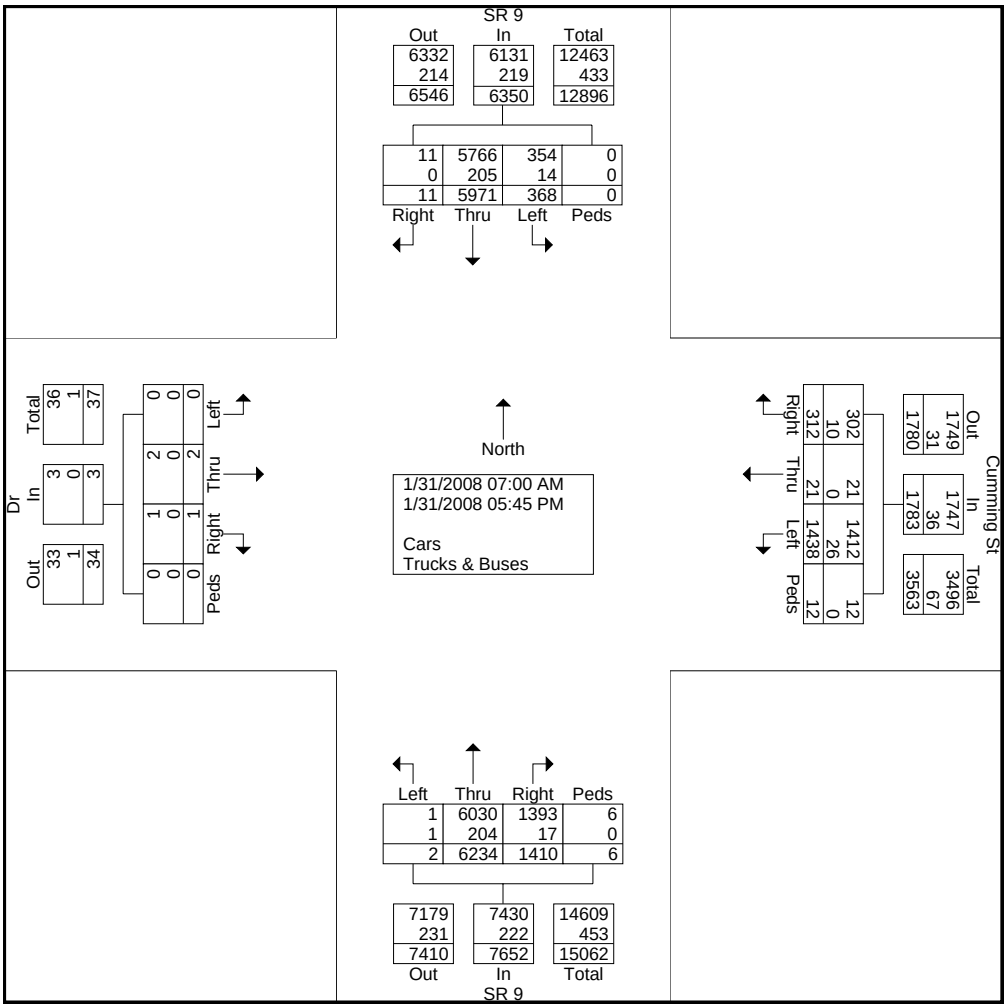

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Atlanta - Hilton Head

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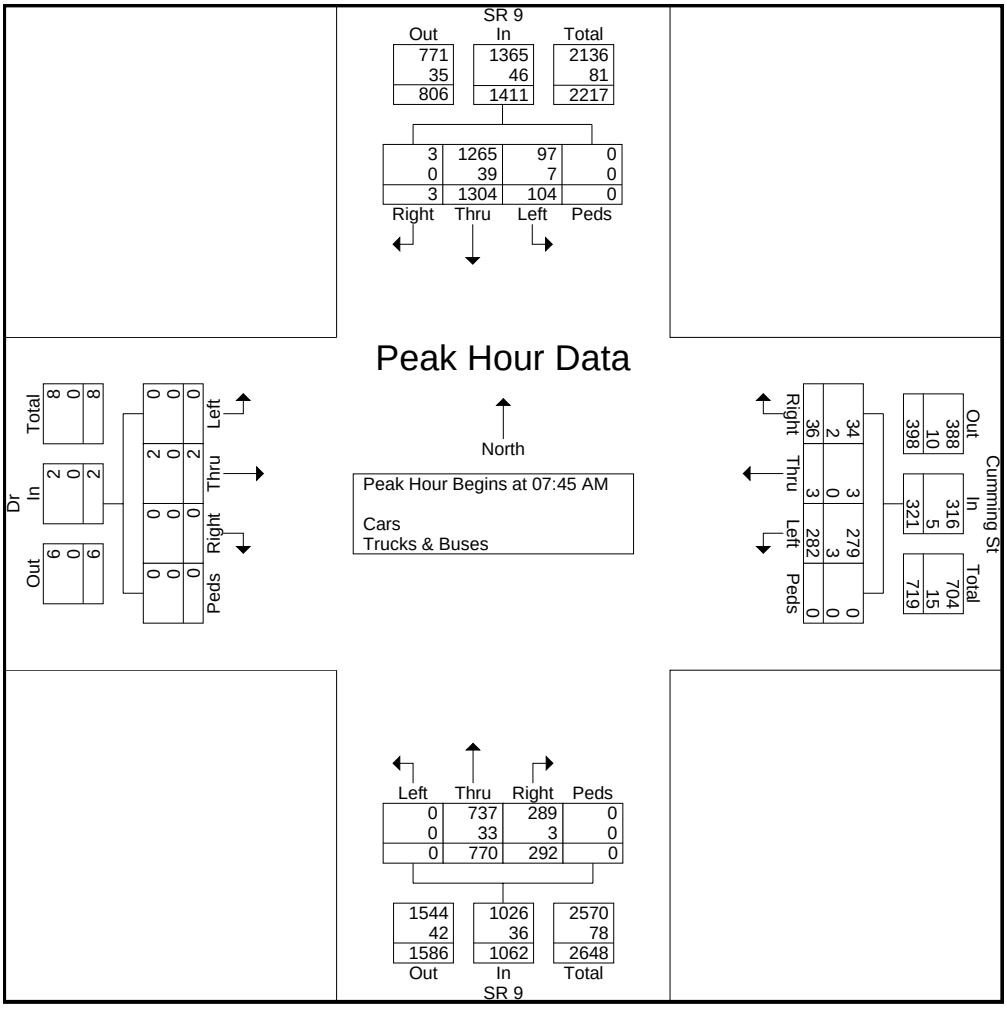
Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-02
Site Code : 00850002
Start Date : 1/31/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Cumming St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	193	52	0	245	21	425	0	0	446	0	1	0	0	1	74	0	8	0	82	774
08:00 AM	0	196	76	0	272	28	282	3	0	313	0	1	0	0	1	59	2	11	0	72	658
08:15 AM	0	170	80	0	250	29	293	0	0	322	0	0	0	0	0	91	0	13	0	104	676
08:30 AM	0	211	84	0	295	26	304	0	0	330	0	0	0	0	0	58	1	4	0	63	688
Total Volume	0	770	292	0	1062	104	1304	3	0	1411	0	2	0	0	2	282	3	36	0	321	2796
% App. Total	0	72.5	27.5	0		7.4	92.4	0.2	0		0	100	0	0		87.9	0.9	11.2	0		
PHF	.000	.912	.869	.000	.900	.897	.767	.250	.000	.791	.000	.500	.000	.000	.500	.775	.375	.692	.000	.772	.903
Cars	0	737	289	0	1026	97	1265														
% Cars	0	95.7	99.0	0	96.6	93.3	97.0	100	0	96.7	0	100	0	0	100	98.9	100	94.4	0	98.4	96.9
Trucks & Buses	0	33	3	0	36	7	39	0	0	46	0	0	0	0	0	3	0	2	0	5	87
% Trucks & Buses	0	4.3	1.0	0	3.4	6.7	3.0	0	0	3.3	0	0	0	0	0	1.1	0	5.6	0	1.6	3.1



Traffic Data Collection, Inc.

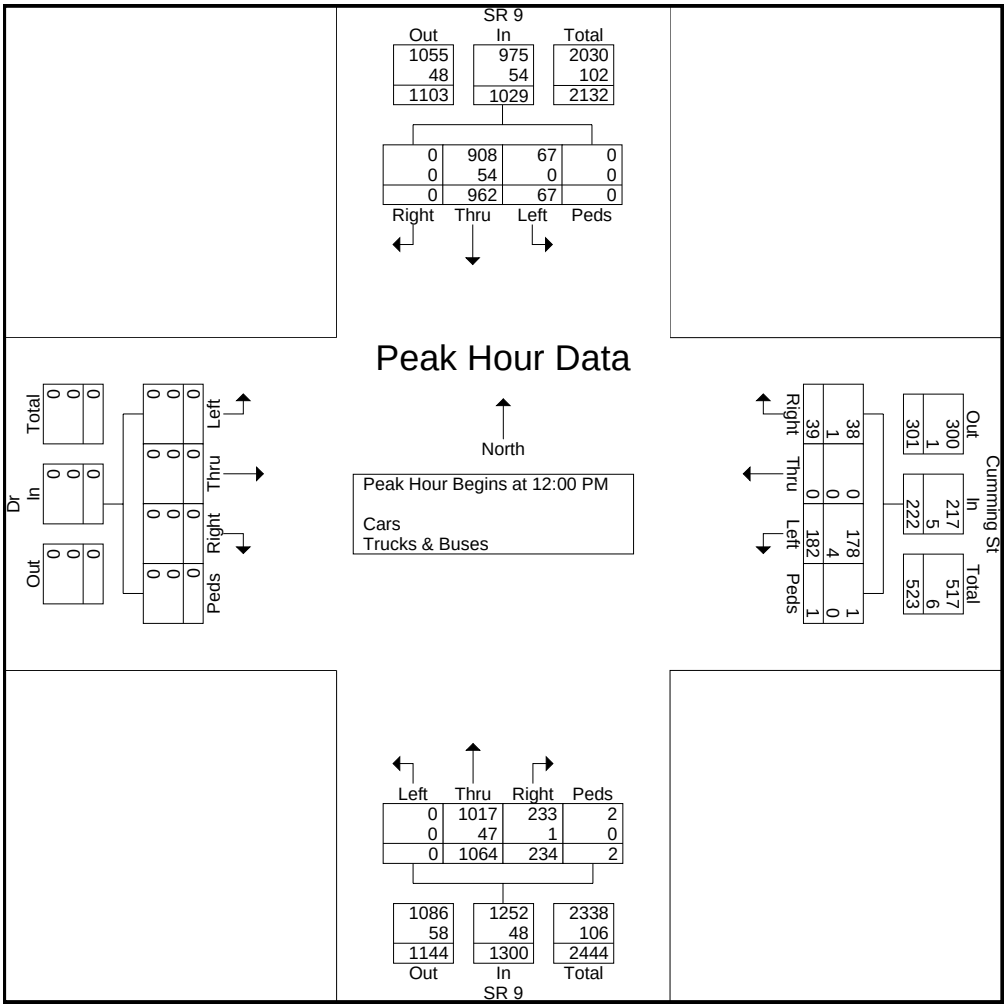
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-02
Site Code : 00850002
Start Date : 1/31/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Cumming St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	210	48	2	260	9	213	0	0	222	0	0	0	0	0	43	0	12	0	55	537
12:15 PM	0	271	48	0	319	13	215	0	0	228	0	0	0	0	0	47	0	6	1	54	601
12:30 PM	0	287	56	0	343	15	282	0	0	297	0	0	0	0	0	42	0	10	0	52	692
12:45 PM	0	296	82	0	378	30	252	0	0	282	0	0	0	0	0	50	0	11	0	61	721
Total Volume	0	1064	234	2	1300	67	962	0	0	1029	0	0	0	0	0	182	0	39	1	222	2551
% App. Total	0	81.8	18	0.2		6.5	93.5	0	0		0	0	0	0		82	0	17.6	0.5		
PHF	.000	.899	.713	.250	.860	.558	.853	.000	.000	.866	.000	.000	.000	.000	.000	.910	.000	.813	.250	.910	.885
Cars	0	1017																			
% Cars	0	95.6	99.6	100	96.3	100	94.4	0	0	94.8	0	0	0	0	0	97.8	0	97.4	100	97.7	95.8
Trucks & Buses	0	47	1	0	48	0	54	0	0	54	0	0	0	0	0	4	0	1	0	5	107
% Trucks & Buses	0	4.4	0.4	0	3.7	0	5.6	0	0	5.2	0	0	0	0	0	2.2	0	2.6	0	2.3	4.2



Traffic Data Collection, Inc.

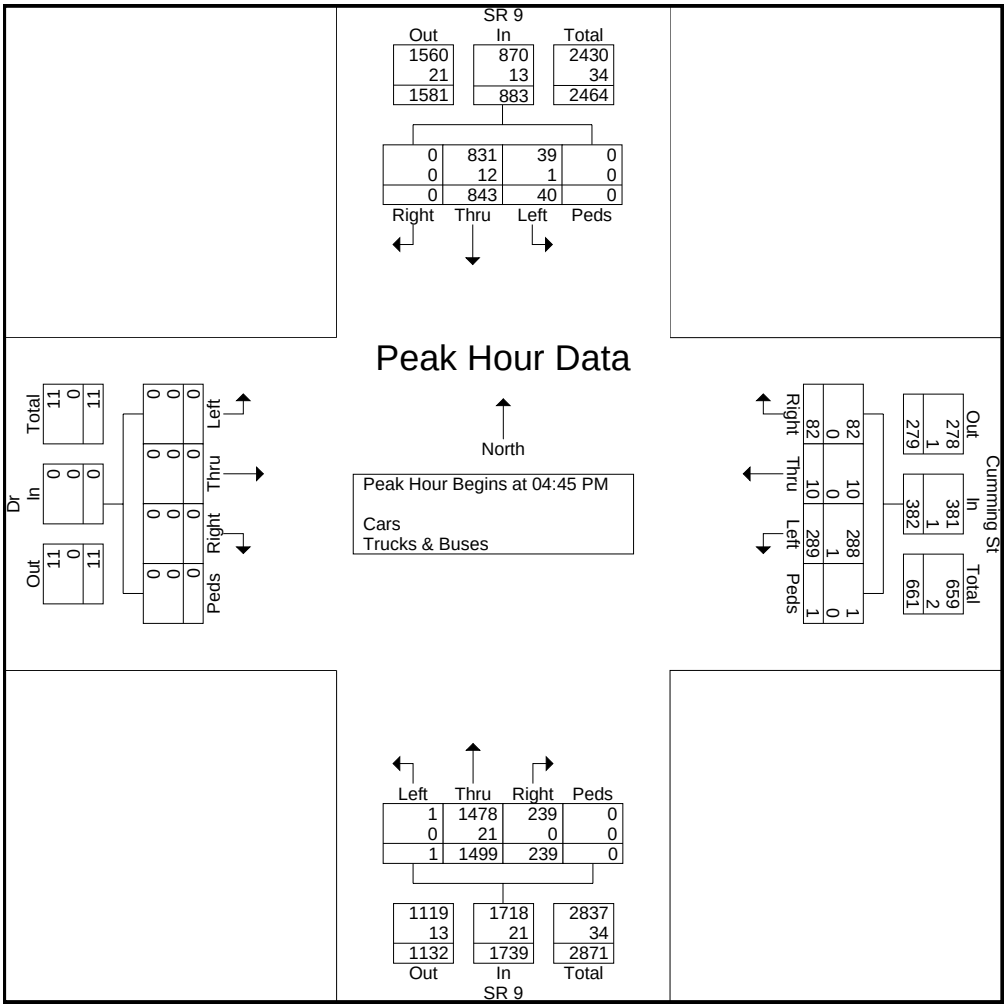
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-02
Site Code : 00850002
Start Date : 1/31/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Dr Eastbound					Cumming St Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	393	57	0	450	15	194	0	0	209	0	0	0	0	0	47	5	16	1	69	728
05:00 PM	1	303	55	0	359	4	207	0	0	211	0	0	0	0	0	86	3	25	0	114	684
05:15 PM	0	403	50	0	453	10	221	0	0	231	0	0	0	0	0	88	2	21	0	111	795
05:30 PM	0	400	77	0	477	11	221	0	0	232	0	0	0	0	0	68	0	20	0	88	797
Total Volume	1	1499	239	0	1739	40	843	0	0	883	0	0	0	0	0	289	10	82	1	382	3004
% App. Total	0.1	86.2	13.7	0		4.5	95.5	0	0		0	0	0	0		75.7	2.6	21.5	0.3		
PHF	.250	.930	.776	.000	.911	.667	.954	.000	.000	.952	.000	.000	.000	.000	.000	.821	.500	.820	.250	.838	.942
Cars	1	1478																			
% Cars	100	98.6	100	0	98.8	97.5	98.6	0	0	98.5	0	0	0	0	0	99.7	100	100	100	99.7	98.8
Trucks & Buses	0	21	0	0	21	1	12	0	0	13	0	0	0	0	0	1	0	0	0	1	35
% Trucks & Buses	0	1.4	0	0	1.2	2.5	1.4	0	0	1.5	0	0	0	0	0	0.3	0	0	0	0.3	1.2



Traffic Data Collection, Inc.

Atlanta - Hilton Head
www.trafficdatacollection.com

Counter: 1934
Counted By: BLR
Weather: Mild
Other: LE

File Name : 08500-03
Site Code : 00850003
Start Date : 2/5/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Mayfield Rd Eastbound					Dr (Const) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	36	69	1	0	106	0	257	20	1	278	58	4	77	0	139	0	0	1	0	1	524
07:15 AM	27	117	0	0	144	0	283	28	0	311	39	0	97	1	137	0	0	0	0	0	592
07:30 AM	30	155	0	0	185	0	328	27	0	355	50	0	72	0	122	0	0	1	0	1	663
07:45 AM	44	112	0	0	156	0	309	29	0	338	62	0	104	0	166	0	0	0	0	0	660
Total	137	453	1	0	591	0	1177	104	1	1282	209	4	350	1	564	0	0	2	0	2	2439
08:00 AM	23	159	1	2	185	0	346	36	0	382	57	6	87	1	151	0	0	0	2	2	720
08:15 AM	49	138	0	0	187	0	235	18	0	253	74	0	91	0	165	0	0	0	2	2	607
08:30 AM	41	147	0	0	188	0	267	30	0	297	50	0	98	1	149	0	0	0	4	4	638
08:45 AM	44	144	0	0	188	1	257	31	0	289	62	0	109	0	171	0	0	0	1	1	649
Total	157	588	1	2	748	1	1105	115	0	1221	243	6	385	2	636	0	0	0	9	9	2614
Break																					
11:00 AM	53	138	0	0	191	2	167	36	0	205	34	0	60	0	94	0	0	1	1	2	492
11:15 AM	51	151	0	3	205	0	164	21	0	185	36	4	65	0	105	2	0	0	1	3	498
11:30 AM	35	165	0	4	204	0	153	25	0	178	51	0	57	0	108	0	0	0	2	2	492
11:45 AM	51	184	0	1	236	0	172	30	0	202	49	0	47	1	97	0	0	0	0	0	535
Total	190	638	0	8	836	2	656	112	0	770	170	4	229	1	404	2	0	1	4	7	2017
12:00 PM	54	187	0	0	241	0	171	35	0	206	39	2	42	0	83	0	0	0	0	0	530
12:15 PM	47	179	0	0	226	0	168	39	0	207	48	0	47	0	95	0	0	0	0	0	528
12:30 PM	66	205	0	0	271	0	228	34	0	262	38	0	53	0	91	0	0	0	0	0	624
12:45 PM	88	211	0	0	299	0	220	48	3	271	53	1	51	0	105	0	0	0	2	2	677
Total	255	782	0	0	1037	0	787	156	3	946	178	3	193	0	374	0	0	0	2	2	2359
Break																					
04:00 PM	81	186	0	1	268	0	184	48	0	232	54	0	61	3	118	0	0	1	0	1	619
04:15 PM	99	229	0	0	328	0	165	60	0	225	50	0	47	1	98	0	0	1	0	1	652
04:30 PM	108	213	0	0	321	0	162	57	2	221	29	0	48	0	77	0	0	0	2	2	621
04:45 PM	111	234	0	0	345	0	133	54	0	187	47	0	32	1	80	1	1	0	0	2	614
Total	399	862	0	1	1262	0	644	219	2	865	180	0	188	5	373	1	1	2	2	6	2506
05:00 PM	111	245	0	0	356	0	154	65	0	219	42	0	51	0	93	1	0	1	0	2	670
05:15 PM	100	283	0	0	383	0	209	79	0	288	26	0	37	0	63	0	0	0	0	0	734
05:30 PM	115	245	0	0	360	0	173	55	0	228	56	0	36	0	92	0	0	0	1	1	681
05:45 PM	117	271	0	0	388	0	180	71	0	251	38	0	53	3	94	0	0	0	0	0	733
Total	443	1044	0	0	1487	0	716	270	0	986	162	0	177	3	342	1	0	1	1	3	2818
Grand Total	1581	4367	2	11	5961	3	5085	976	6	6070	1142	17	1522	12	2693	4	1	6	18	29	14753
Apprch %	26.5	73.3	0	0.2		0	83.8	16.1	0.1		42.4	0.6	56.5	0.4		13.8	3.4	20.7	62.1		
Total %	10.7	29.6	0	0.1	40.4	0	34.5	6.6	0	41.1	7.7	0.1	10.3	0.1	18.3	0	0	0	0.1	0.2	
Cars	1551	4246	2	11	5810	3	4959	948	6	5916	1104	16	1498	12	2630	4	1	6	18	29	14385
% Cars	98.1	97.2	100	100	97.5	100	97.5	97.1	100	97.5	96.7	94.1	98.4	100	97.7	100	100	100	100	100	97.5
Trucks & Buses	30	121	0	0	151	0	126	28	0	154	38	1	24	0	63	0	0	0	0	0	368
% Trucks & Buses	1.9	2.8	0	0	2.5	0	2.5	2.9	0	2.5	3.3	5.9	1.6	0	2.3	0	0	0	0	0	2.5

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

Traffic Data Collection, Inc.

Atlanta - Hilton Head

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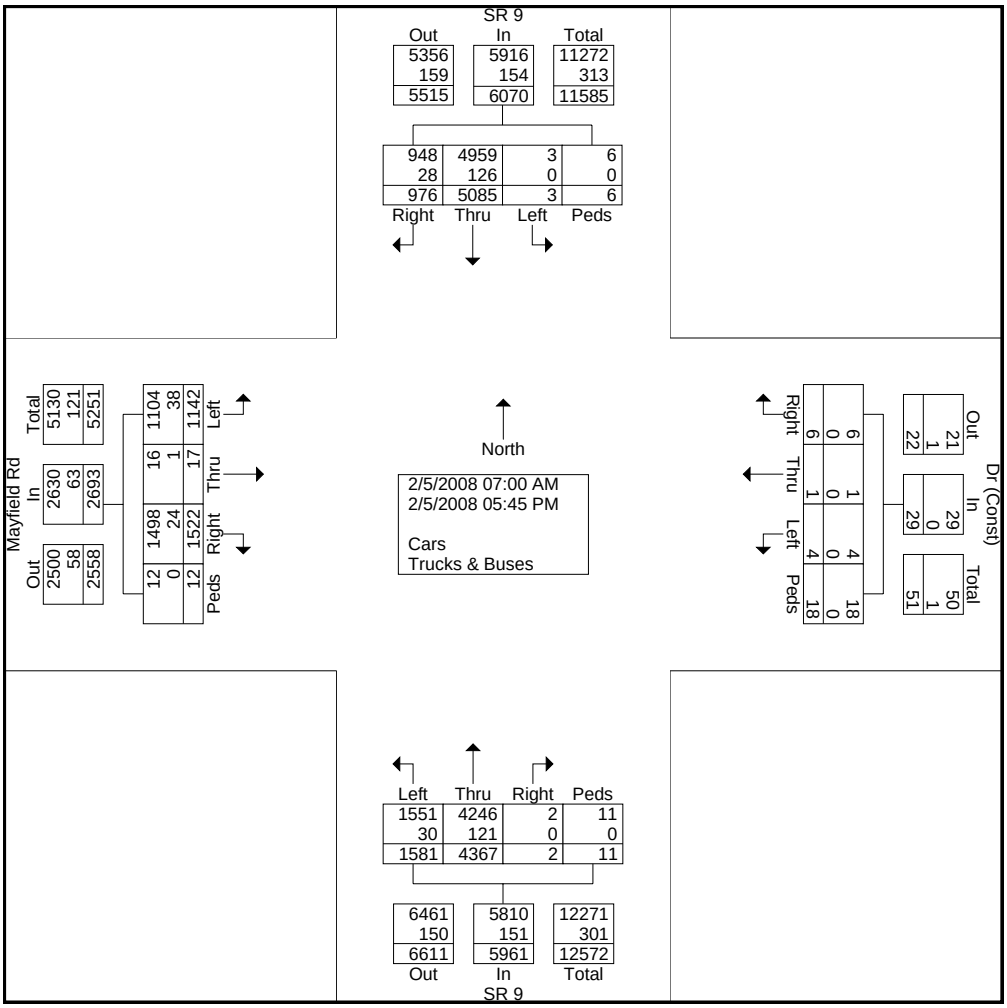
Counter: 1934
Counted By: BLR
Weather: Mild
Other: LE

File Name : 08500-03
Site Code : 00850003
Start Date : 2/5/2008
Page No : 2



Traffic Data Collection, Inc.

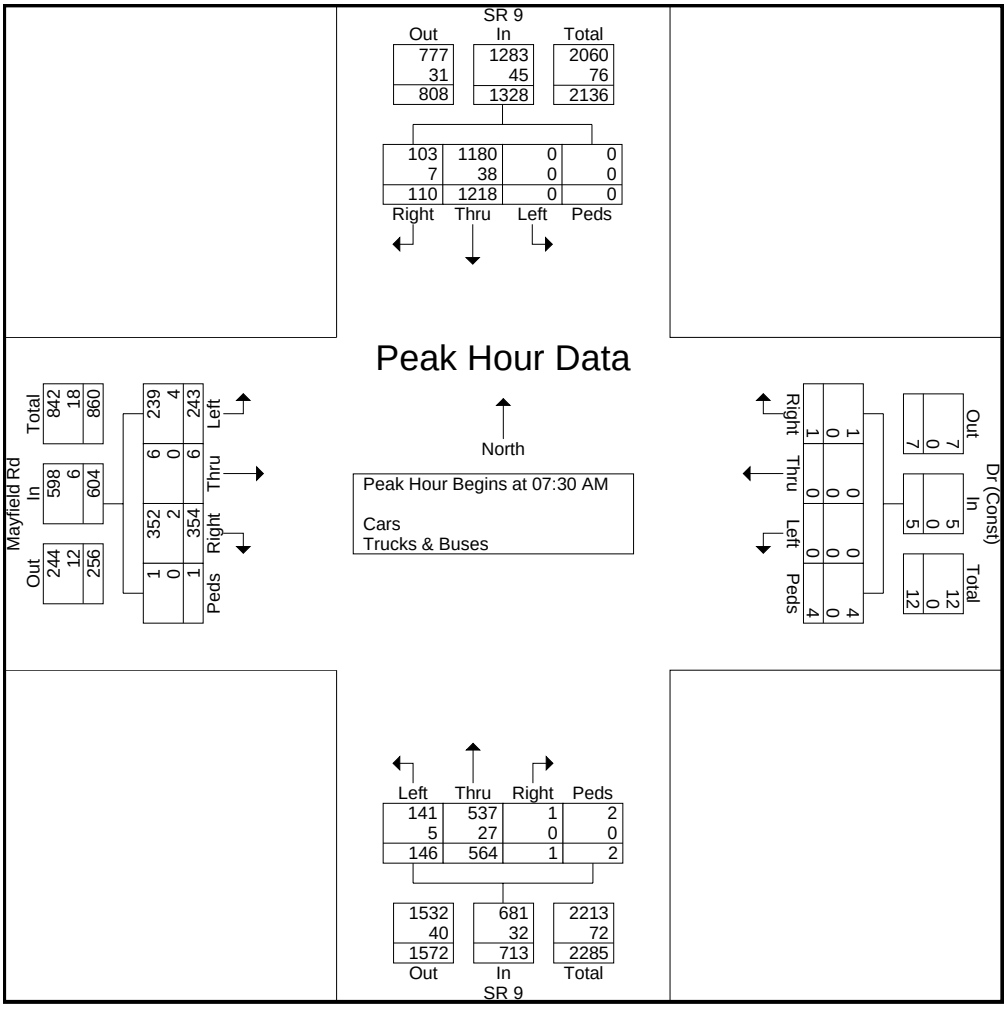
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: BLR
Weather: Mild
Other: LE

File Name : 08500-03
Site Code : 00850003
Start Date : 2/5/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Mayfield Rd Eastbound					Dr (Const) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	30	155	0	0	185	0	328	27	0	355	50	0	72	0	122	0	0	1	0	1	663
07:45 AM	44	112	0	0	156	0	309	29	0	338	62	0	104	0	166	0	0	0	0	0	660
08:00 AM	23	159	1	2	185	0	346	36	0	382	57	6	87	1	151	0	0	0	2	2	720
08:15 AM	49	138	0	0	187	0	235	18	0	253	74	0	91	0	165	0	0	0	2	2	607
Total Volume	146	564	1	2	713	0	1218	110	0	1328	243	6	354	1	604	0	0	1	4	5	2650
% App. Total	20.5	79.1	0.1	0.3		0	91.7	8.3	0		40.2	1	58.6	0.2		0	0	20	80		
PHF	.745	.887	.250	.250	.953	.000	.880	.764	.000	.869	.821	.250	.851	.250	.910	.000	.000	.250	.500	.625	.920
Cars	141	537	1	2	681	0	1180														
% Cars	96.6	95.2	100	100	95.5	0	96.9	93.6	0	96.6	98.4	100	99.4	100	99.0	0	0	100	100	100	96.9
Trucks & Buses	5	27	0	0	32	0	38	7	0	45	4	0	2	0	6	0	0	0	0	0	83
% Trucks & Buses	3.4	4.8	0	0	4.5	0	3.1	6.4	0	3.4	1.6	0	0.6	0	1.0	0	0	0	0	0	3.1



Traffic Data Collection, Inc.

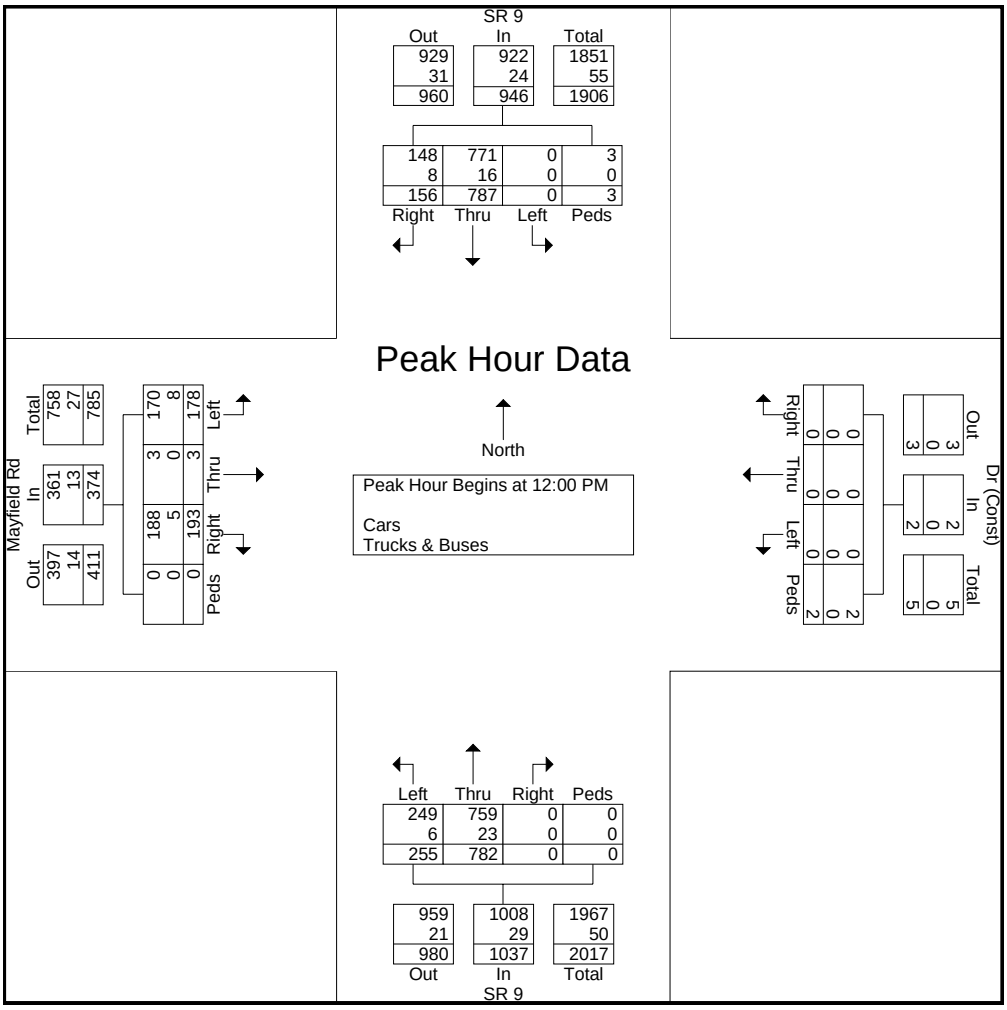
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: BLR
Weather: Mild
Other: LE

File Name : 08500-03
Site Code : 00850003
Start Date : 2/5/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Mayfield Rd Eastbound					Dr (Const) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	54	187	0	0	241	0	171	35	0	206	39	2	42	0	83	0	0	0	0	0	530
12:15 PM	47	179	0	0	226	0	168	39	0	207	48	0	47	0	95	0	0	0	0	0	528
12:30 PM	66	205	0	0	271	0	228	34	0	262	38	0	53	0	91	0	0	0	0	0	624
12:45 PM	88	211	0	0	299	0	220	48	3	271	53	1	51	0	105	0	0	0	2	2	677
Total Volume	255	782	0	0	1037	0	787	156	3	946	178	3	193	0	374	0	0	0	2	2	2359
% App. Total	24.6	75.4	0	0		0	83.2	16.5	0.3		47.6	0.8	51.6	0		0	0	0	100		
PHF	.724	.927	.000	.000	.867	.000	.863	.813	.250	.873	.840	.375	.910	.000	.890	.000	.000	.000	.250	.250	.871
Cars	249	759	0	0	1008	0	771	148	3	922	170	3	188	0	361	0	0	0	2	2	2293
% Cars	97.6	97.1	0	0	97.2	0	98.0	94.9	100	97.5	95.5	100	97.4	0	96.5	0	0	0	100	100	97.2
Trucks & Buses																					
% Trucks & Buses	2.4	2.9	0	0	2.8	0	2.0	5.1	0	2.5	4.5	0	2.6	0	3.5	0	0	0	0	0	2.8



Traffic Data Collection, Inc.

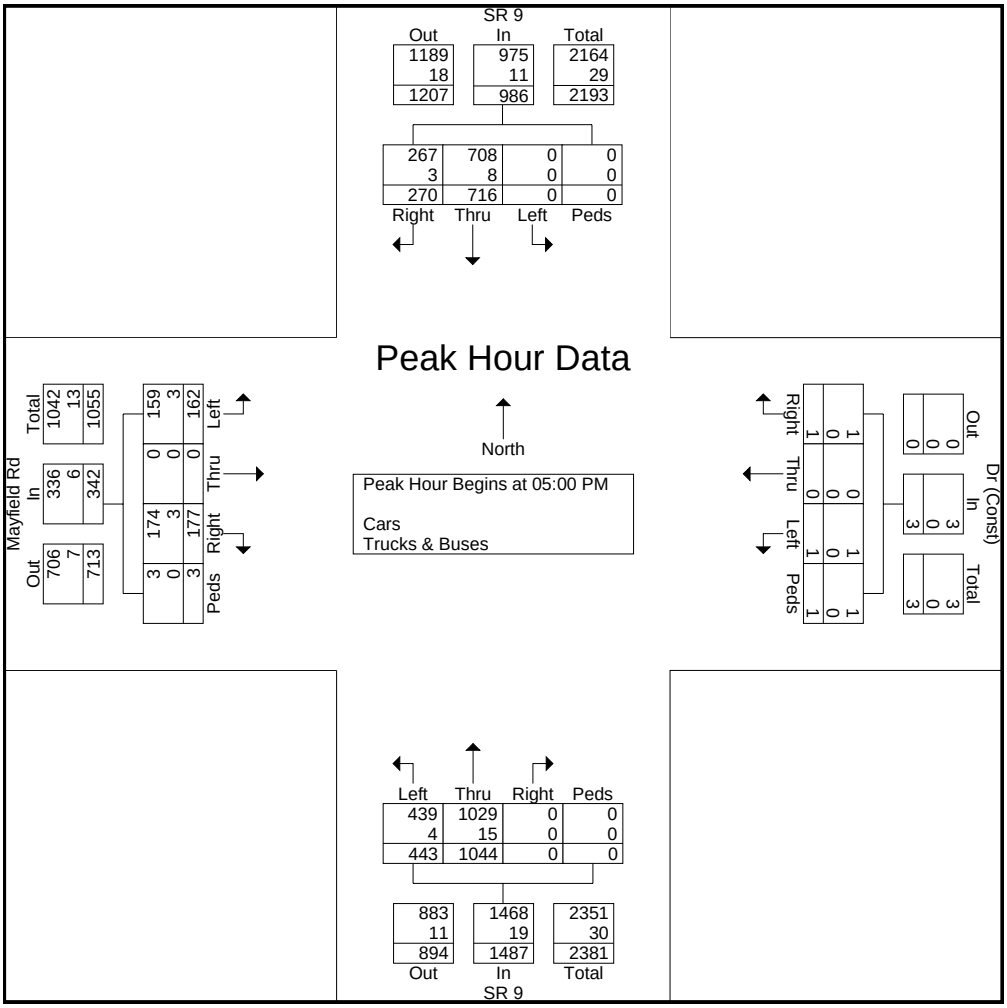
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: BLR
Weather: Mild
Other: LE

File Name : 08500-03
Site Code : 00850003
Start Date : 2/5/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Mayfield Rd Eastbound					Dr (Const) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	111	245	0	0	356	0	154	65	0	219	42	0	51	0	93	1	0	1	0	2	670
05:15 PM	100	283	0	0	383	0	209	79	0	288	26	0	37	0	63	0	0	0	0	0	734
05:30 PM	115	245	0	0	360	0	173	55	0	228	56	0	36	0	92	0	0	0	1	1	681
05:45 PM	117	271	0	0	388	0	180	71	0	251	38	0	53	3	94	0	0	0	0	0	733
Total Volume	443	1044	0	0	1487	0	716	270	0	986	162	0	177	3	342	1	0	1	1	3	2818
% App. Total	29.8	70.2	0	0		0	72.6	27.4	0		47.4	0	51.8	0.9		33.3	0	33.3	33.3		
PHF	.947	.922	.000	.000	.958	.000	.856	.854	.000	.856	.723	.000	.835	.250	.910	.250	.000	.250	.250	.375	.960
Cars	439	1029																			
% Cars	99.1	98.6	0	0	98.7	0	98.9	98.9	0	98.9	98.1	0	98.3	100	98.2	100	0	100	100	100	98.7
Trucks & Buses	4	15	0	0	19	0	8	3	0	11	3	0	3	0	6	0	0	0	0	0	36
% Trucks & Buses	0.9	1.4	0	0	1.3	0	1.1	1.1	0	1.1	1.9	0	1.7	0	1.8	0	0	0	0	0	1.3



Traffic Data Collection, Inc.

Atlanta - Hilton Head
www.trafficdatacollection.com

Counter: 2447
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-04
Site Code : 0850004
Start Date : 1/15/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Eastbound					Pine Grove Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	132	0	0	132	3	317	0	0	320	0	0	0	0	0	13	0	4	0	17	469
07:15 AM	0	200	0	0	200	2	332	0	0	334	0	0	0	0	0	18	0	4	0	22	556
07:30 AM	0	187	2	0	189	3	330	0	0	333	0	0	0	0	0	13	0	6	1	20	542
07:45 AM	1	231	1	1	234	0	349	0	0	349	0	1	0	0	1	18	0	3	0	21	605
Total	1	750	3	1	755	8	1328	0	0	1336	0	1	0	0	1	62	0	17	1	80	2172
08:00 AM	1	214	2	2	219	2	270	0	0	272	0	1	0	0	1	10	0	3	1	14	506
08:15 AM	0	211	4	0	215	2	232	0	0	234	0	0	0	0	0	8	0	4	0	12	461
08:30 AM	0	215	3	0	218	1	259	0	0	260	0	0	0	0	0	9	0	2	0	11	489
08:45 AM	0	205	3	0	208	3	223	0	0	226	0	0	0	0	0	5	0	4	0	9	443
Total	1	845	12	2	860	8	984	0	0	992	0	1	0	0	1	32	0	13	1	46	1899
Break																					
11:00 AM	0	204	3	1	208	0	191	0	0	191	0	0	0	0	0	5	0	2	0	7	406
11:15 AM	0	208	4	1	213	0	201	0	0	201	0	0	0	0	0	3	0	1	0	4	418
11:30 AM	0	229	4	0	233	1	184	0	0	185	0	0	0	0	0	4	0	4	0	8	426
11:45 AM	0	248	4	0	252	2	223	0	0	225	0	0	0	0	0	6	0	2	0	8	485
Total	0	889	15	2	906	3	799	0	0	802	0	0	0	0	0	18	0	9	0	27	1735
12:00 PM	0	228	8	0	236	1	202	0	0	203	0	0	0	0	0	5	0	2	0	7	446
12:15 PM	0	241	8	2	251	1	189	0	0	190	0	0	0	0	0	4	0	1	0	5	446
12:30 PM	0	231	5	0	236	3	233	1	0	237	0	0	0	0	0	4	0	2	0	6	479
12:45 PM	0	222	7	0	229	3	232	1	0	236	0	0	0	0	0	3	0	5	1	9	474
Total	0	922	28	2	952	8	856	2	0	866	0	0	0	0	0	16	0	10	1	27	1845
Break																					
04:00 PM	0	334	5	0	339	4	225	0	0	229	0	0	0	0	0	4	0	0	0	4	572
04:15 PM	0	302	8	2	312	2	236	0	0	238	0	0	0	0	0	7	0	1	0	8	558
04:30 PM	0	324	8	1	333	3	237	0	1	241	0	0	0	0	0	3	0	1	0	4	578
04:45 PM	0	341	15	0	356	2	249	0	0	251	0	0	0	0	0	6	0	1	0	7	614
Total	0	1301	36	3	1340	11	947	0	1	959	0	0	0	0	0	20	0	3	0	23	2322
05:00 PM	0	295	6	0	301	8	262	0	1	271	0	0	0	0	0	4	0	2	0	6	578
05:15 PM	0	328	5	4	337	3	266	0	0	269	0	0	0	0	0	4	0	7	0	11	617
05:30 PM	0	349	12	2	363	3	266	0	1	270	0	0	0	0	0	6	0	4	0	10	643
05:45 PM	0	322	11	2	335	9	237	0	0	246	0	0	0	0	0	0	0	5	0	5	586
Total	0	1294	34	8	1336	23	1031	0	2	1056	0	0	0	0	0	14	0	18	0	32	2424
Grand Total	2	6001	128	18	6149	61	5945	2	3	6011	0	2	0	0	2	162	0	70	3	235	12397
Apprch %	0	97.6	2.1	0.3		1	98.9	0	0		0	100	0	0		68.9	0	29.8	1.3		
Total %	0	48.4	1	0.1	49.6	0.5	48	0	0	48.5	0	0	0	0	0	1.3	0	0.6	0	1.9	
Cars	2	5748	123	18	5891	56	5672	2	3	5733	0	2	0	0	2	155	0	67	3	225	11851
% Cars	100	95.8	96.1	100	95.8	91.8	95.4	100	100	95.4	0	100	0	0	100	95.7	0	95.7	100	95.7	95.6
Trucks & Buses	0	253	5	0	258	5	273	0	0	278	0	0	0	0	0	7	0	3	0	10	546
% Trucks & Buses	0	4.2	3.9	0	4.2	8.2	4.6	0	0	4.6	0	0	0	0	0	4.3	0	4.3	0	4.3	4.4

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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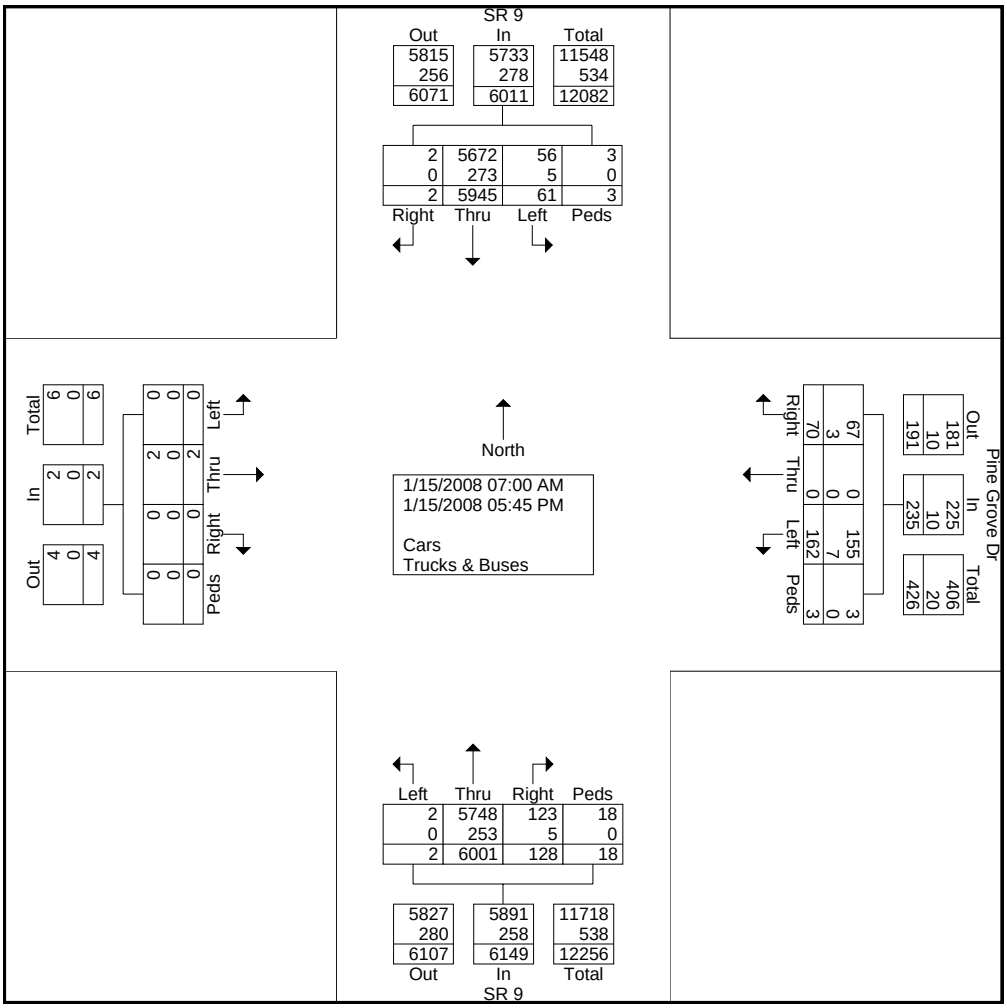

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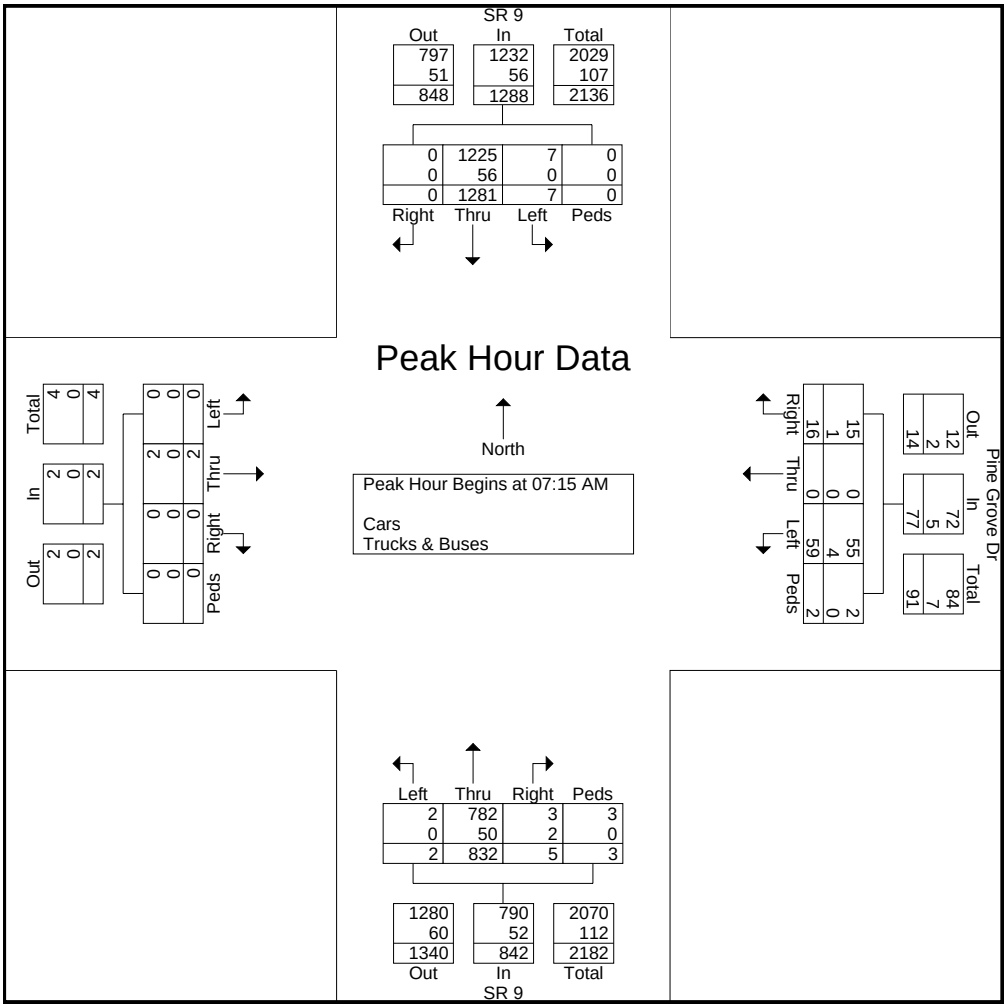
	SR 9 Northbound					SR 9 Southbound					Eastbound					Pine Grove Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	200	0	0	200	2	332	0	0	334	0	0	0	0	0	18	0	4	0	22	556
07:30 AM	0	187	2	0	189	3	330	0	0	333	0	0	0	0	0	13	0	6	1	20	542
07:45 AM	1	231	1	1	234	0	349	0	0	349	0	1	0	0	1	18	0	3	0	21	605
08:00 AM	1	214	2	2	219	2	270	0	0	272	0	1	0	0	1	10	0	3	1	14	506
Total Volume	2	832	5	3	842	7	1281	0	0	1288	0	2	0	0	2	59	0	16	2	77	2209
% App. Total	0.2	98.8	0.6	0.4		0.5	99.5	0	0		0	100	0	0		76.6	0	20.8	2.6		
PHF	.500	.900	.625	.375	.900	.583	.918	.000	.000	.923	.000	.500	.000	.000	.500	.819	.000	.667	.500	.875	.913
Cars	2	782	3	3	790	7	1225														
% Cars	100	94.0	60.0	100	93.8	100	95.6	0	0	95.7	0	100	0	0	100	93.2	0	93.8	100	93.5	94.9
Trucks & Buses	0	50	2	0	52	0	56	0	0	56	0	0	0	0	0	4	0	1	0	5	113
% Trucks & Buses	0	6.0	40.0	0	6.2	0	4.4	0	0	4.3	0	0	0	0	0	6.8	0	6.3	0	6.5	5.1



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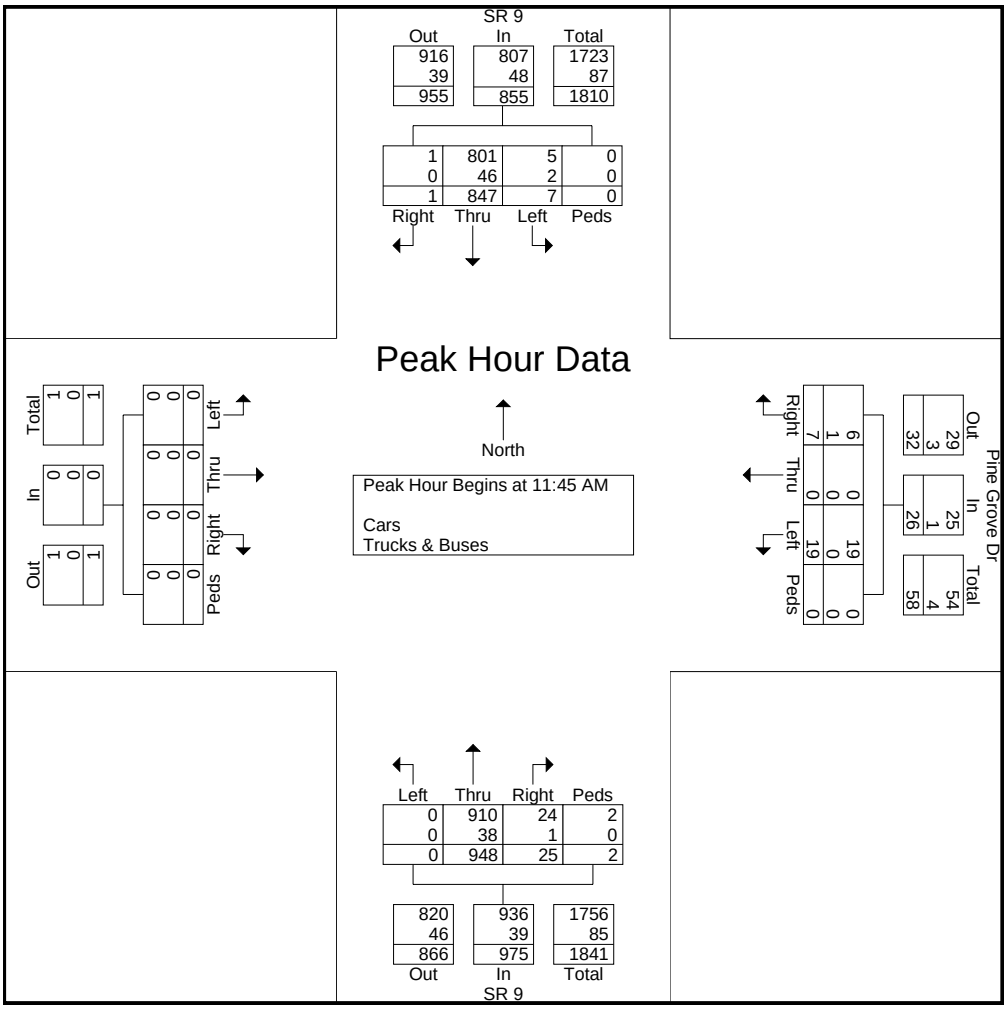
	SR 9 Northbound					SR 9 Southbound					Eastbound					Pine Grove Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	0	248	4	0	252	2	223	0	0	225	0	0	0	0	0	6	0	2	0	8	485
12:00 PM	0	228	8	0	236	1	202	0	0	203	0	0	0	0	0	5	0	2	0	7	446
12:15 PM	0	241	8	2	251	1	189	0	0	190	0	0	0	0	0	4	0	1	0	5	446
12:30 PM	0	231	5	0	236	3	233	1	0	237	0	0	0	0	0	4	0	2	0	6	479
Total Volume	0	948	25	2	975	7	847	1	0	855	0	0	0	0	0	19	0	7	0	26	1856
% App. Total	0	97.2	2.6	0.2		0.8	99.1	0.1	0		0	0	0	0		73.1	0	26.9	0		
PHF	.000	.956	.781	.250	.967	.583	.909	.250	.000	.902	.000	.000	.000	.000	.000	.792	.000	.875	.000	.813	.957
Cars	0	910	24	2	936	5	801	1	0	807	0	0	0	0	0	19	0	6	0	25	1768
% Cars	0	96.0	96.0	100	96.0	71.4	94.6	100	0	94.4	0	0	0	0	0	100	0	85.7	0	96.2	95.3
Trucks & Buses																					
% Trucks & Buses	0	4.0	4.0	0	4.0	28.6	5.4	0	0	5.6	0	0	0	0	0	0	0	14.3	0	3.8	4.7



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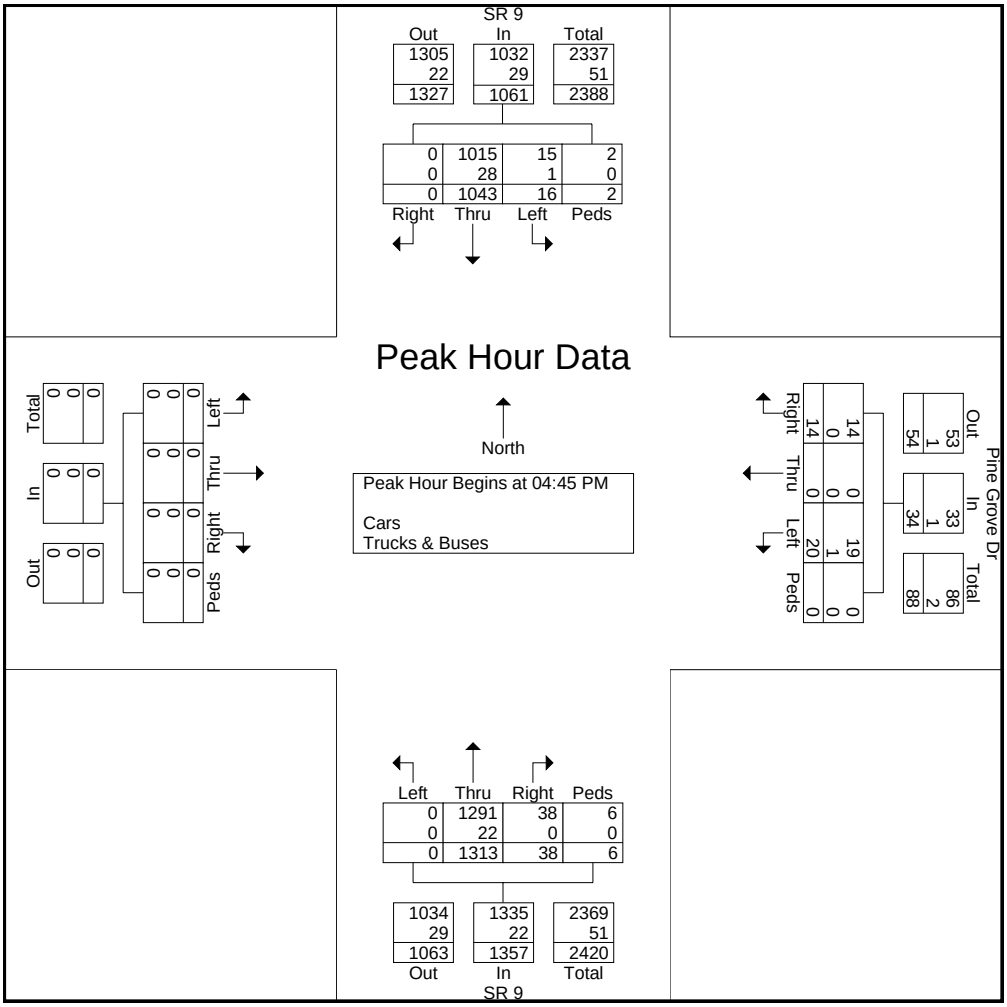
	SR 9 Northbound					SR 9 Southbound					Eastbound					Pine Grove Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	341	15	0	356	2	249	0	0	251	0	0	0	0	0	6	0	1	0	7	614
05:00 PM	0	295	6	0	301	8	262	0	1	271	0	0	0	0	0	4	0	2	0	6	578
05:15 PM	0	328	5	4	337	3	266	0	0	269	0	0	0	0	0	4	0	7	0	11	617
05:30 PM	0	349	12	2	363	3	266	0	1	270	0	0	0	0	0	6	0	4	0	10	643
Total Volume	0	1313	38	6	1357	16	1043	0	2	1061	0	0	0	0	0	20	0	14	0	34	2452
% App. Total	0	96.8	2.8	0.4		1.5	98.3	0	0.2		0	0	0	0		58.8	0	41.2	0		
PHF	.000	.941	.633	.375	.935	.500	.980	.000	.500	.979	.000	.000	.000	.000	.000	.833	.000	.500	.000	.773	.953
Cars	0	1291					1015														
% Cars	0	98.3	100	100	98.4	93.8	97.3	0	100	97.3	0	0	0	0	0	95.0	0	100	0	97.1	97.9
Trucks & Buses	0	22	0	0	22	1	28	0	0	29	0	0	0	0	0	1	0	0	0	1	52
% Trucks & Buses	0	1.7	0	0	1.6	6.3	2.7	0	0	2.7	0	0	0	0	0	5.0	0	0	0	2.9	2.1



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Counter: 1934
Counted By: JRM
Weather: Mild
Other: LE

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Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Canton Rd Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	6	171	0	0	177	0	298	5	0	303	1	0	80	0	81	0	0	0	0	0	561
07:15 AM	7	160	0	0	167	0	294	5	0	299	4	0	74	0	78	0	0	0	0	0	544
07:30 AM	4	249	0	0	253	0	307	3	0	310	6	0	74	0	80	0	0	0	0	0	643
07:45 AM	5	229	0	0	234	0	246	8	0	254	8	0	61	0	69	0	0	0	0	0	557
Total	22	809	0	0	831	0	1145	21	0	1166	19	0	289	0	308	0	0	0	0	0	2305
08:00 AM	5	197	0	0	202	0	211	7	0	218	5	0	29	0	34	0	0	0	0	0	454
08:15 AM	11	213	0	0	224	0	212	7	0	219	5	0	36	0	41	0	0	0	0	0	484
08:30 AM	15	227	0	0	242	0	225	9	0	234	2	0	25	0	27	0	0	0	0	0	503
08:45 AM	6	200	0	0	206	0	228	7	0	235	6	0	31	0	37	0	0	0	0	0	478
Total	37	837	0	0	874	0	876	30	0	906	18	0	121	0	139	0	0	0	0	0	1919
Break																					
11:00 AM	9	220	0	0	229	0	225	13	0	238	5	0	6	0	11	0	0	0	0	0	478
11:15 AM	13	223	0	0	236	0	240	7	0	247	4	0	13	0	17	0	0	0	0	0	500
11:30 AM	35	230	0	0	265	0	218	8	0	226	3	0	14	0	17	0	0	0	0	0	508
11:45 AM	13	252	0	0	265	0	250	9	0	259	8	0	11	0	19	0	0	0	0	0	543
Total	70	925	0	0	995	0	933	37	0	970	20	0	44	0	64	0	0	0	0	0	2029
12:00 PM	15	254	0	0	269	0	264	11	0	275	6	0	15	0	21	0	0	0	0	0	565
12:15 PM	15	260	0	0	275	0	269	13	0	282	1	0	6	0	7	0	0	0	0	0	564
12:30 PM	13	240	0	1	254	0	297	7	0	304	9	0	11	0	20	0	0	0	0	0	578
12:45 PM	12	264	0	0	276	0	322	14	0	336	3	0	26	0	29	0	0	0	0	0	641
Total	55	1018	0	1	1074	0	1152	45	0	1197	19	0	58	0	77	0	0	0	0	0	2348
Break																					
04:00 PM	24	271	0	0	295	0	283	14	0	297	5	0	5	0	10	0	0	0	0	0	602
04:15 PM	23	323	0	0	346	0	303	20	0	323	2	0	4	0	6	0	0	0	0	0	675
04:30 PM	31	273	0	0	304	0	299	12	0	311	2	0	6	1	9	0	0	0	0	0	624
04:45 PM	34	273	0	0	307	0	278	16	0	294	0	0	4	0	4	0	0	0	0	0	605
Total	112	1140	0	0	1252	0	1163	62	0	1225	9	0	19	1	29	0	0	0	0	0	2506
05:00 PM	38	284	0	0	322	0	280	22	0	302	2	0	9	0	11	0	0	0	0	0	635
05:15 PM	42	232	0	0	274	0	288	32	0	320	1	0	5	0	6	0	0	0	0	0	600
05:30 PM	43	266	0	0	309	0	316	20	1	337	4	0	7	0	11	0	0	0	0	0	657
05:45 PM	33	292	0	0	325	0	314	20	0	334	3	0	6	0	9	0	0	0	0	0	668
Total	156	1074	0	0	1230	0	1198	94	1	1293	10	0	27	0	37	0	0	0	0	0	2560
Grand Total	452	5803	0	1	6256	0	6467	289	1	6757	95	0	558	1	654	0	0	0	0	0	13667
Apprch %	7.2	92.8	0	0		0	95.7	4.3	0		14.5	0	85.3	0.2		0	0	0	0		
Total %	3.3	42.5	0	0	45.8	0	47.3	2.1	0	49.4	0.7	0	4.1	0	4.8	0	0	0	0	0	
Cars	444	5637	0	1	6082	0	6203	282	1	6486	95	0	556	1	652	0	0	0	0	0	13220
% Cars	98.2	97.1	0	100	97.2	0	95.9	97.6	100	96	100	0	99.6	100	99.7	0	0	0	0	0	96.7
Trucks & Buses	8	166	0	0	174	0	264	7	0	271	0	0	2	0	2	0	0	0	0	0	447
% Trucks & Buses	1.8	2.9	0	0	2.8	0	4.1	2.4	0	4	0	0	0.4	0	0.3	0	0	0	0	0	3.3

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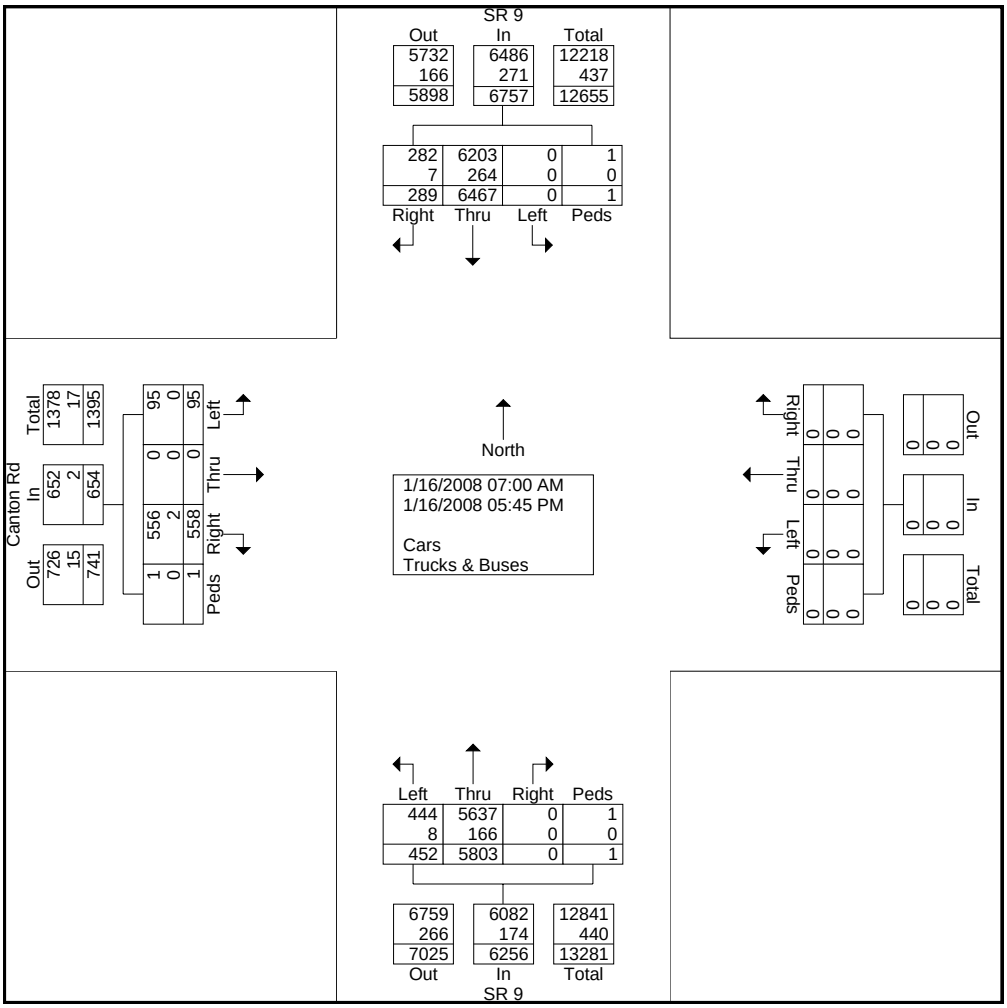

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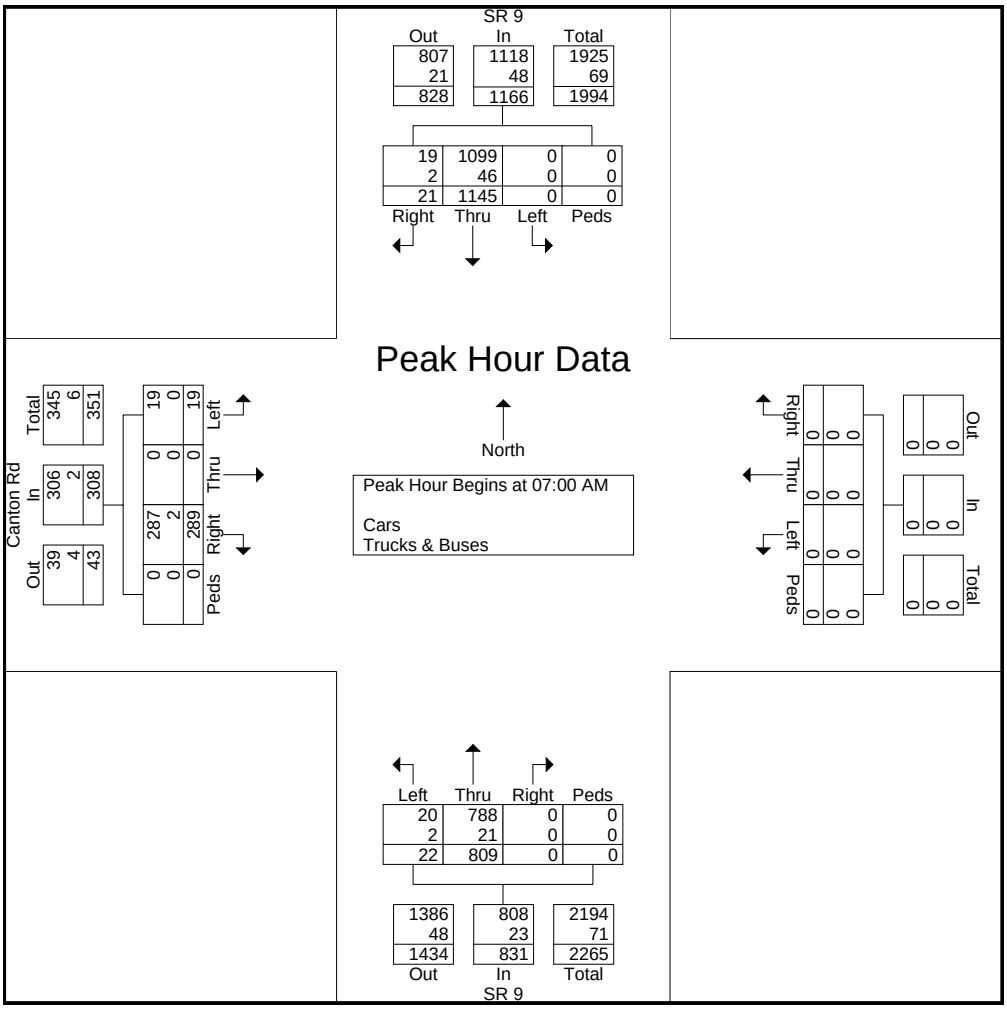
	SR 9 Northbound					SR 9 Southbound					Canton Rd Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	6	171	0	0	177	0	298	5	0	303	1	0	80	0	81	0	0	0	0	0	561
07:15 AM	7	160	0	0	167	0	294	5	0	299	4	0	74	0	78	0	0	0	0	0	544
07:30 AM	4	249	0	0	253	0	307	3	0	310	6	0	74	0	80	0	0	0	0	0	643
07:45 AM	5	229	0	0	234	0	246	8	0	254	8	0	61	0	69	0	0	0	0	0	557
Total Volume	22	809	0	0	831	0	1145	21	0	1166	19	0	289	0	308	0	0	0	0	0	2305
% App. Total	2.6	97.4	0	0		0	98.2	1.8	0		6.2	0	93.8	0		0	0	0	0		
PHF	.786	.812	.000	.000	.821	.000	.932	.656	.000	.940	.594	.000	.903	.000	.951	.000	.000	.000	.000	.000	.896
Cars	20	788	0	0	808	0	1099														
% Cars	90.9	97.4	0	0	97.2	0	96.0	90.5	0	95.9	100	0	99.3	0	99.4	0	0	0	0	0	96.8
Trucks & Buses	2	21	0	0	23	0	46	2	0	48	0	0	2	0	2	0	0	0	0	0	73
% Trucks & Buses	9.1	2.6	0	0	2.8	0	4.0	9.5	0	4.1	0	0	0.7	0	0.6	0	0	0	0	0	3.2



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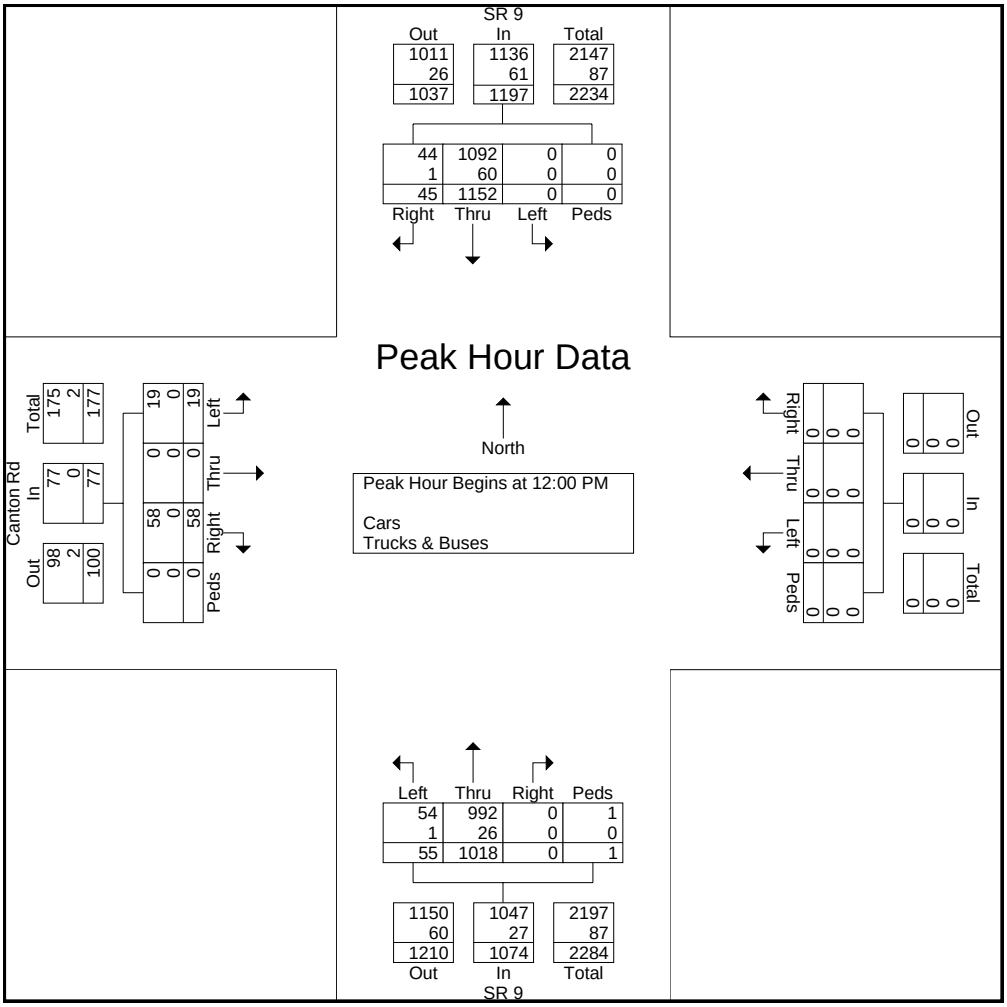
	SR 9 Northbound					SR 9 Southbound					Canton Rd Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	15	254	0	0	269	0	264	11	0	275	6	0	15	0	21	0	0	0	0	0	565
12:15 PM	15	260	0	0	275	0	269	13	0	282	1	0	6	0	7	0	0	0	0	0	564
12:30 PM	13	240	0	1	254	0	297	7	0	304	9	0	11	0	20	0	0	0	0	0	578
12:45 PM	12	264	0	0	276	0	322	14	0	336	3	0	26	0	29	0	0	0	0	0	641
Total Volume	55	1018	0	1	1074	0	1152	45	0	1197	19	0	58	0	77	0	0	0	0	0	2348
% App. Total	5.1	94.8	0	0.1		0	96.2	3.8	0		24.7	0	75.3	0		0	0	0	0		
PHF	.917	.964	.000	.250	.973	.000	.894	.804	.000	.891	.528	.000	.558	.000	.664	.000	.000	.000	.000	.000	.916
Cars	54	992	0	1	1047	0	1092														
% Cars	98.2	97.4	0	100	97.5	0	94.8	97.8	0	94.9	100	0	100	0	100	0	0	0	0	0	96.3
Trucks & Buses	1	26	0	0	27	0	60	1	0	61	0	0	0	0	0	0	0	0	0	0	88
% Trucks & Buses	1.8	2.6	0	0	2.5	0	5.2	2.2	0	5.1	0	0	0	0	0	0	0	0	0	0	3.7



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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File Name : 08500-05
Site Code : 00850005
Start Date : 1/16/2008
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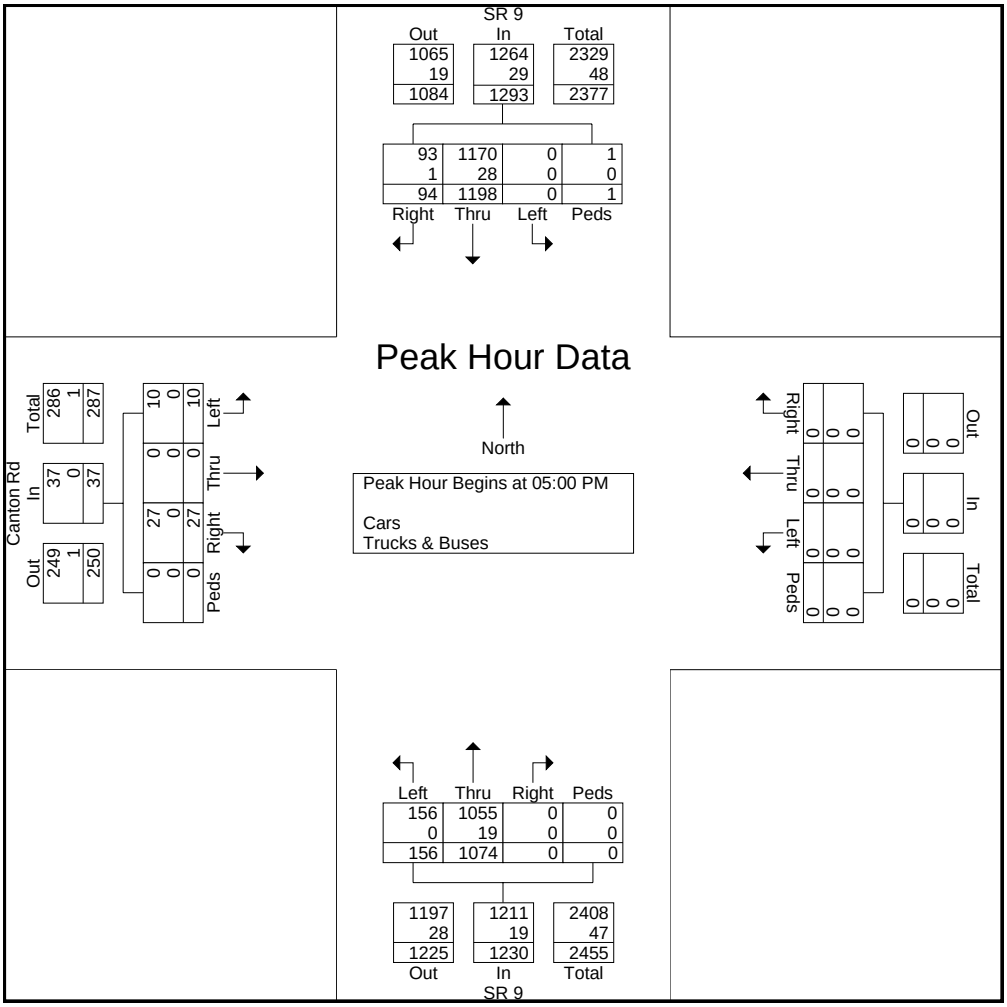
	SR 9 Northbound					SR 9 Southbound					Canton Rd Eastbound					Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	38	284	0	0	322	0	280	22	0	302	2	0	9	0	11	0	0	0	0	0	635
05:15 PM	42	232	0	0	274	0	288	32	0	320	1	0	5	0	6	0	0	0	0	0	600
05:30 PM	43	266	0	0	309	0	316	20	1	337	4	0	7	0	11	0	0	0	0	0	657
05:45 PM	33	292	0	0	325	0	314	20	0	334	3	0	6	0	9	0	0	0	0	0	668
Total Volume	156	1074	0	0	1230	0	1198	94	1	1293	10	0	27	0	37	0	0	0	0	0	2560
% App. Total	12.7	87.3	0	0		0	92.7	7.3	0.1		27	0	73	0		0	0	0	0		
PHF	.907	.920	.000	.000	.946	.000	.948	.734	.250	.959	.625	.000	.750	.000	.841	.000	.000	.000	.000	.000	.958
Cars	156	1055					1170														
% Cars	100	98.2	0	0	98.5	0	97.7	98.9	100	97.8	100	0	100	0	100	0	0	0	0	0	98.1
Trucks & Buses	0	19	0	0	19	0	28	1	0	29	0	0	0	0	0	0	0	0	0	0	48
% Trucks & Buses	0	1.8	0	0	1.5	0	2.3	1.1	0	2.2	0	0	0	0	0	0	0	0	0	0	1.9



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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Counter: 2447
Counted By: JU
Weather: Mild
Other: LE

File Name : 08500-06
Site Code : 00850006
Start Date : 1/16/2008
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Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Eastbound					Winthrop Chase Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	167	0	0	167	0	296	0	0	296	0	0	0	0	0	7	0	5	0	12	475
07:15 AM	0	175	3	0	178	0	295	0	0	295	0	0	0	0	0	6	0	4	0	10	483
07:30 AM	0	266	0	0	266	1	303	0	0	304	0	0	0	0	0	5	0	4	0	9	579
07:45 AM	0	242	0	0	242	2	259	0	0	261	0	0	0	0	0	3	0	8	0	11	514
Total	0	850	3	0	853	3	1153	0	0	1156	0	0	0	0	0	21	0	21	0	42	2051
08:00 AM	0	196	1	1	198	1	208	0	0	209	0	0	0	0	0	3	0	5	0	8	415
08:15 AM	0	218	0	0	218	1	224	0	0	225	0	0	0	0	0	5	0	4	0	9	452
08:30 AM	0	233	2	0	235	0	231	0	0	231	0	0	0	0	0	8	0	4	0	12	478
08:45 AM	0	203	0	0	203	1	214	0	0	215	0	0	0	0	0	2	0	3	0	5	423
Total	0	850	3	1	854	3	877	0	0	880	0	0	0	0	0	18	0	16	0	34	1768
Break																					
11:00 AM	0	220	2	0	222	0	231	0	0	231	0	0	0	0	0	1	0	4	0	5	458
11:15 AM	0	220	1	0	221	1	248	0	0	249	0	0	0	0	0	1	0	1	0	2	472
11:30 AM	0	223	0	0	223	1	218	0	0	219	0	0	0	0	0	2	0	0	1	3	445
11:45 AM	0	259	1	0	260	4	244	0	0	248	0	0	0	0	0	1	0	1	1	3	511
Total	0	922	4	0	926	6	941	0	0	947	0	0	0	0	0	5	0	6	2	13	1886
12:00 PM	0	268	3	0	271	1	283	0	0	284	0	0	0	0	0	5	1	3	0	9	564
12:15 PM	0	281	3	1	285	2	270	0	0	272	0	0	0	0	0	1	0	2	1	4	561
12:30 PM	0	259	0	0	259	2	305	0	0	307	0	0	0	0	0	4	0	2	1	7	573
12:45 PM	0	261	3	1	265	4	283	0	0	287	0	0	0	0	0	1	0	3	1	5	557
Total	0	1069	9	2	1080	9	1141	0	0	1150	0	0	0	0	0	11	1	10	3	25	2255
Break																					
04:00 PM	0	280	2	0	282	1	308	0	0	309	0	0	0	0	0	2	0	4	0	6	597
04:15 PM	0	312	3	0	315	26	305	0	0	331	0	0	0	0	0	1	0	5	0	6	652
04:30 PM	1	281	7	0	289	7	318	0	0	325	0	0	0	0	0	3	0	2	0	5	619
04:45 PM	0	288	1	0	289	10	304	0	0	314	0	0	0	0	0	3	0	4	0	7	610
Total	1	1161	13	0	1175	44	1235	0	0	1279	0	0	0	0	0	9	0	15	0	24	2478
05:00 PM	0	283	2	0	285	6	334	0	0	340	0	0	0	0	0	1	0	2	0	3	628
05:15 PM	0	250	5	0	255	3	327	0	0	330	0	0	0	0	0	1	0	1	0	2	587
05:30 PM	0	241	5	0	246	11	328	0	0	339	0	0	0	0	0	0	0	2	0	2	587
05:45 PM	0	286	0	0	286	18	315	0	0	333	0	0	0	0	0	2	0	1	0	3	622
Total	0	1060	12	0	1072	38	1304	0	0	1342	0	0	0	0	0	4	0	6	0	10	2424
Grand Total	1	5912	44	3	5960	103	6651	0	0	6754	0	0	0	0	0	68	1	74	5	148	12862
Apprch %	0	99.2	0.7	0.1		1.5	98.5	0	0		0	0	0	0		45.9	0.7	50	3.4		
Total %	0	46	0.3	0	46.3	0.8	51.7	0	0	52.5	0	0	0	0	0	0.5	0	0.6	0	1.2	
Cars	0	5747	44	3	5794	101	6542	0	0	6643	0	0	0	0	0	68	0	74	5	147	12584
% Cars	0	97.2	100	100	97.2	98.1	98.4	0	0	98.4	0	0	0	0	0	100	0	100	100	99.3	97.8
Trucks & Buses	1	165	0	0	166	2	109	0	0	111	0	0	0	0	0	0	1	0	0	1	278
% Trucks & Buses	100	2.8	0	0	2.8	1.9	1.6	0	0	1.6	0	0	0	0	0	0	100	0	0	0.7	2.2

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Atlanta - Hilton Head

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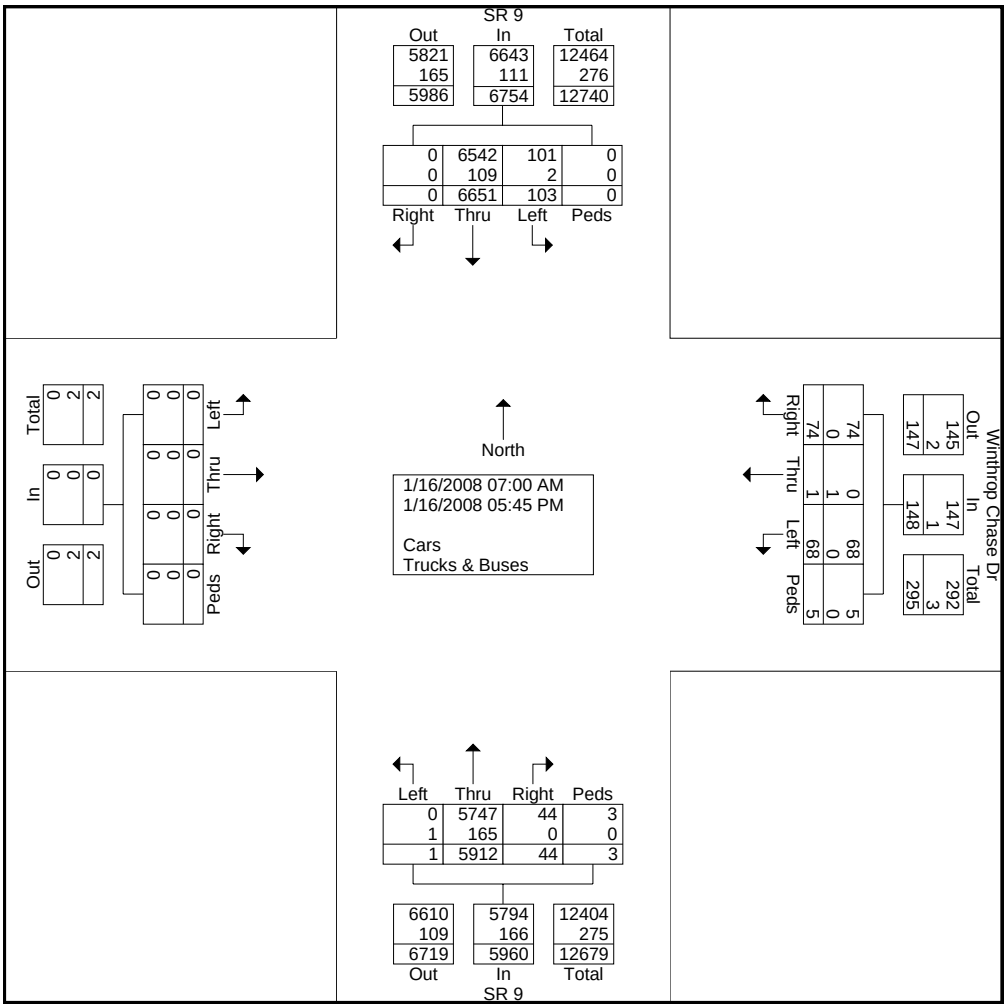


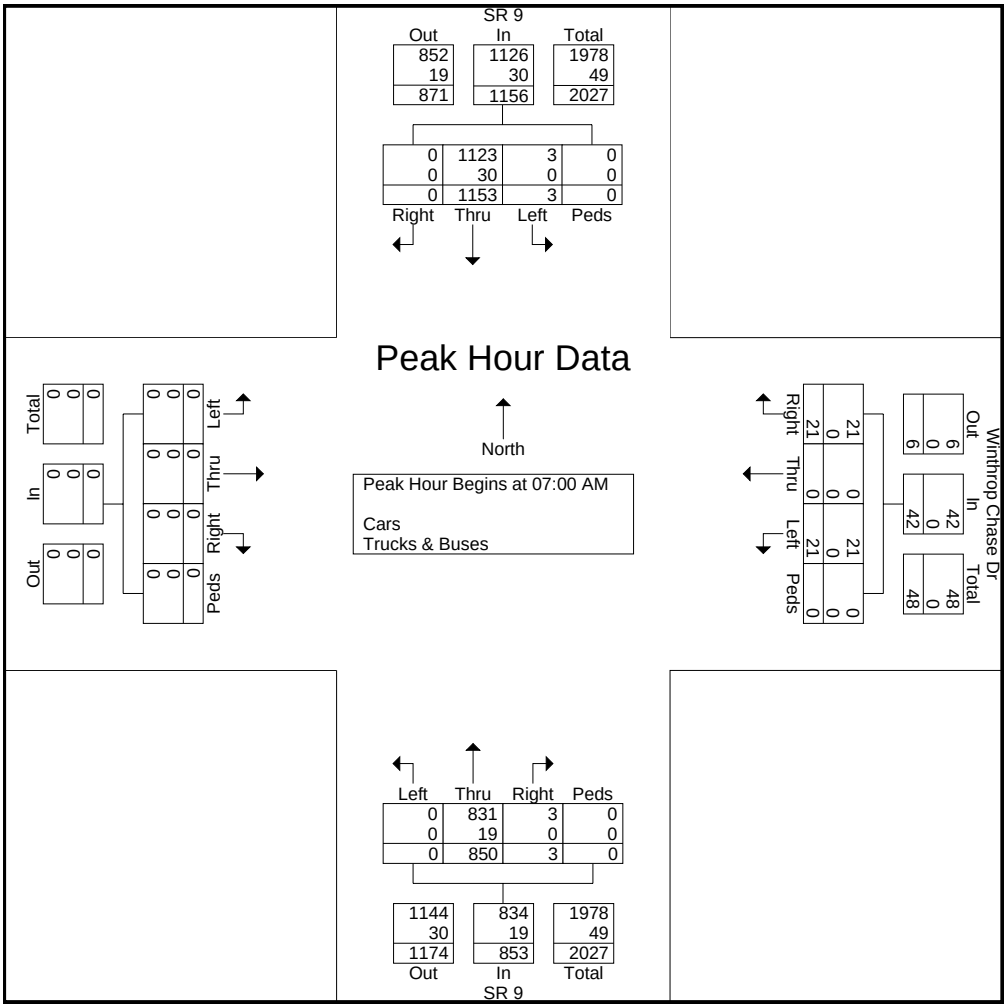
Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

File Name : 08500-06
Site Code : 00850006
Start Date : 1/16/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Eastbound					Winthrop Chase Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	167	0	0	167	0	296	0	0	296	0	0	0	0	0	7	0	5	0	12	475
07:15 AM	0	175	3	0	178	0	295	0	0	295	0	0	0	0	0	6	0	4	0	10	483
07:30 AM	0	266	0	0	266	1	303	0	0	304	0	0	0	0	0	5	0	4	0	9	579
07:45 AM	0	242	0	0	242	2	259	0	0	261	0	0	0	0	0	3	0	8	0	11	514
Total Volume	0	850	3	0	853	3	1153	0	0	1156	0	0	0	0	0	21	0	21	0	42	2051
% App. Total	0	99.6	0.4	0		0.3	99.7	0	0		0	0	0	0		50	0	50	0		
PHF	.000	.799	.250	.000	.802	.375	.951	.000	.000	.951	.000	.000	.000	.000	.000	.750	.000	.656	.000	.875	.886
Cars	0	831	3	0	834	3	1123														
% Cars	0	97.8	100	0	97.8	100	97.4	0	0	97.4	0	0	0	0	0	100	0	100	0	100	97.6
Trucks & Buses	0	19	0	0	19	0	30	0	0	30	0	0	0	0	0	0	0	0	0	0	49
% Trucks & Buses	0	2.2	0	0	2.2	0	2.6	0	0	2.6	0	0	0	0	0	0	0	0	0	0	2.4



Traffic Data Collection, Inc.

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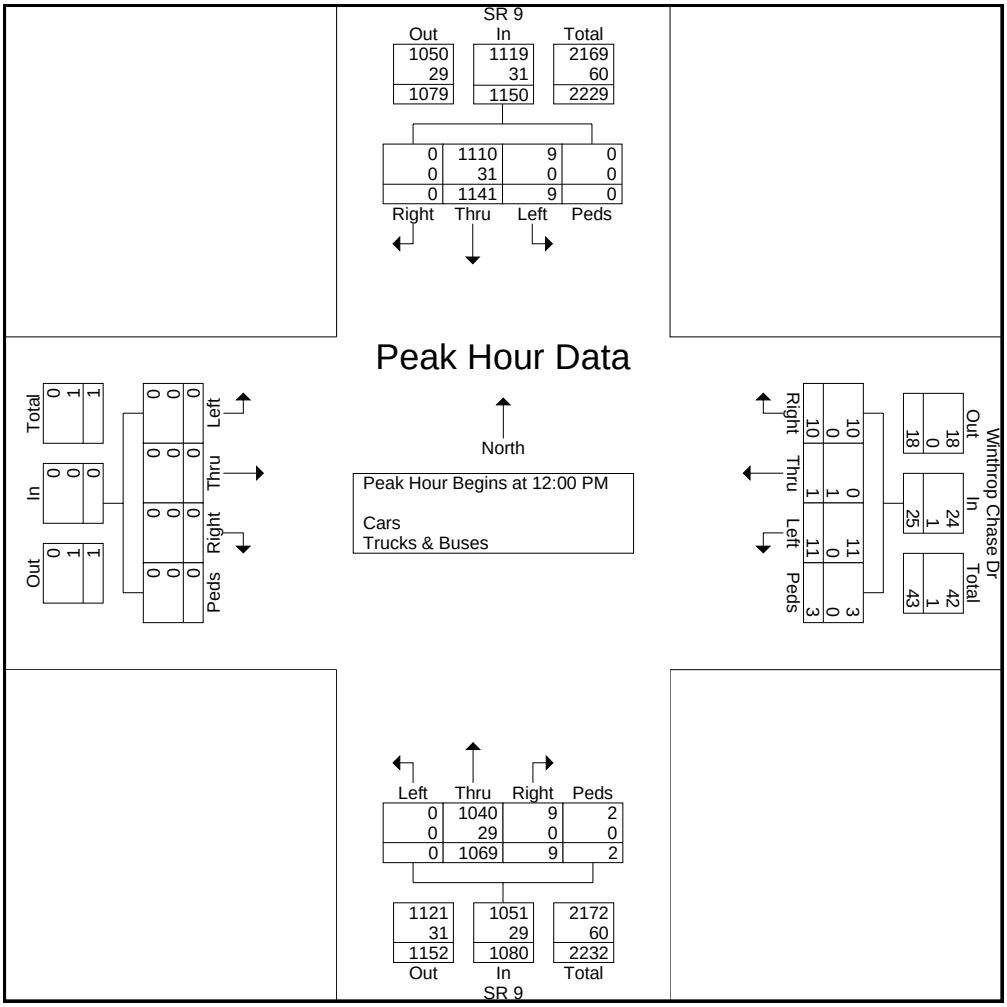
File Name : 08500-06
Site Code : 00850006
Start Date : 1/16/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Eastbound					Winthrop Chase Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	268	3	0	271	1	283	0	0	284	0	0	0	0	0	5	1	3	0	9	564
12:15 PM	0	281	3	1	285	2	270	0	0	272	0	0	0	0	0	1	0	2	1	4	561
12:30 PM	0	259	0	0	259	2	305	0	0	307	0	0	0	0	0	4	0	2	1	7	573
12:45 PM	0	261	3	1	265	4	283	0	0	287	0	0	0	0	0	1	0	3	1	5	557
Total Volume	0	1069	9	2	1080	9	1141	0	0	1150	0	0	0	0	0	11	1	10	3	25	2255
% App. Total	0	99	0.8	0.2		0.8	99.2	0	0		0	0	0	0		44	4	40	12		
PHF	.000	.951	.750	.500	.947	.563	.935	.000	.000	.936	.000	.000	.000	.000	.000	.550	.250	.833	.750	.694	.984
Cars	0	1040					1110														
% Cars	0	97.3	100	100	97.3	100	97.3	0	0	97.3	0	0	0	0	0	100	0	100	100	96.0	97.3
Trucks & Buses	0	29	0	0	29	0	31	0	0	31	0	0	0	0	0	0	1	0	0	1	61
% Trucks & Buses	0	2.7	0	0	2.7	0	2.7	0	0	2.7	0	0	0	0	0	0	100	0	0	4.0	2.7



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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File Name : 08500-06
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Start Date : 1/16/2008
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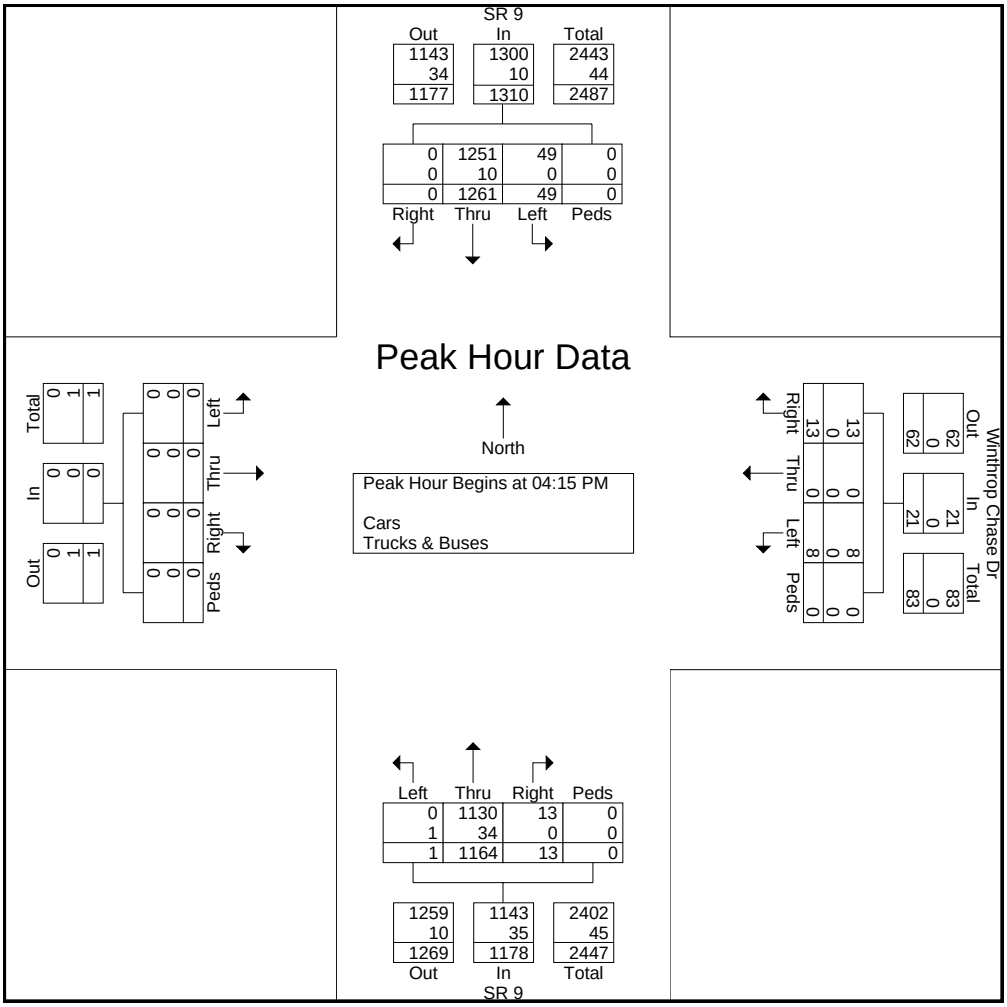
	SR 9 Northbound					SR 9 Southbound					Eastbound					Winthrop Chase Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	312	3	0	315	26	305	0	0	331	0	0	0	0	0	1	0	5	0	6	652
04:30 PM	1	281	7	0	289	7	318	0	0	325	0	0	0	0	0	3	0	2	0	5	619
04:45 PM	0	288	1	0	289	10	304	0	0	314	0	0	0	0	0	3	0	4	0	7	610
05:00 PM	0	283	2	0	285	6	334	0	0	340	0	0	0	0	0	1	0	2	0	3	628
Total Volume	1	1164	13	0	1178	49	1261	0	0	1310	0	0	0	0	0	8	0	13	0	21	2509
% App. Total	0.1	98.8	1.1	0		3.7	96.3	0	0		0	0	0	0		38.1	0	61.9	0		
PHF	.250	.933	.464	.000	.935	.471	.944	.000	.000	.963	.000	.000	.000	.000	.000	.667	.000	.650	.000	.750	.962
Cars	0	1130					1251														
% Cars	0	97.1	100	0	97.0	100	99.2	0	0	99.2	0	0	0	0	0	100	0	100	0	100	98.2
Trucks & Buses	1	34	0	0	35	0	10	0	0	10	0	0	0	0	0	0	0	0	0	0	45
% Trucks & Buses	100	2.9	0	0	3.0	0	0.8	0	0	0.8	0	0	0	0	0	0	0	0	0	0	1.8



Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1842
Counted By: BLR
Weather: Mild
Other: LE

File Name : 08500-07
Site Code : 00850007
Start Date : 1/16/2008
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Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Vaughn Rd Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	5	169	0	0	174	0	316	9	0	325	5	0	6	0	11	0	0	0	0	0	510
07:15 AM	2	184	0	0	186	0	270	11	0	281	8	0	5	0	13	0	0	0	0	0	480
07:30 AM	0	243	0	0	243	0	302	12	0	314	7	0	5	2	14	0	0	0	0	0	571
07:45 AM	4	238	0	0	242	0	244	16	0	260	14	0	5	0	19	0	0	0	0	0	521
Total	11	834	0	0	845	0	1132	48	0	1180	34	0	21	2	57	0	0	0	0	0	2082
08:00 AM	4	202	0	1	207	0	206	15	0	221	9	0	10	0	19	0	0	1	0	1	448
08:15 AM	6	195	0	0	201	0	214	14	0	228	9	0	4	0	13	0	0	0	0	0	442
08:30 AM	8	225	0	0	233	0	239	7	0	246	11	0	4	0	15	0	0	0	0	0	494
08:45 AM	5	196	0	0	201	0	207	11	0	218	15	0	1	0	16	0	0	0	0	0	435
Total	23	818	0	1	842	0	866	47	0	913	44	0	19	0	63	0	0	1	0	1	1819
Break																					
11:00 AM	6	207	1	0	214	1	234	6	1	242	4	0	2	0	6	1	0	1	0	2	464
11:15 AM	9	226	1	0	236	0	236	13	0	249	6	0	2	0	8	0	0	1	0	1	494
11:30 AM	12	212	1	0	225	0	218	19	0	237	10	0	0	0	10	0	0	0	0	0	472
11:45 AM	8	251	0	0	259	1	254	11	0	266	11	0	4	0	15	2	0	1	0	3	543
Total	35	896	3	0	934	2	942	49	1	994	31	0	8	0	39	3	0	3	0	6	1973
12:00 PM	4	241	0	0	245	0	265	16	0	281	13	0	7	0	20	0	0	0	0	0	546
12:15 PM	2	259	0	0	261	0	267	15	1	283	12	0	10	0	22	0	0	0	0	0	566
12:30 PM	3	246	0	0	249	0	299	13	0	312	6	0	8	1	15	0	0	0	0	0	576
12:45 PM	5	248	0	0	253	1	317	16	3	337	6	0	5	1	12	0	0	1	0	1	603
Total	14	994	0	0	1008	1	1148	60	4	1213	37	0	30	2	69	0	0	1	0	1	2291
Break																					
04:00 PM	4	268	0	0	272	0	296	13	0	309	4	0	4	0	8	0	0	0	0	0	589
04:15 PM	7	301	1	0	309	0	309	19	0	328	9	0	4	0	13	0	1	0	0	1	651
04:30 PM	4	271	0	0	275	1	303	16	0	320	6	0	3	0	9	0	0	0	0	0	604
04:45 PM	4	260	0	0	264	0	288	28	0	316	4	0	2	1	7	0	0	1	0	1	588
Total	19	1100	1	0	1120	1	1196	76	0	1273	23	0	13	1	37	0	1	1	0	2	2432
05:00 PM	5	278	1	0	284	0	299	30	0	329	3	0	3	0	6	0	0	0	0	0	619
05:15 PM	12	239	0	0	251	0	314	22	0	336	3	0	7	0	10	0	0	0	0	0	597
05:30 PM	5	265	1	0	271	1	333	23	0	357	6	0	5	0	11	0	0	1	0	1	640
05:45 PM	9	280	0	0	289	0	314	27	0	341	6	0	3	0	9	0	0	0	0	0	639
Total	31	1062	2	0	1095	1	1260	102	0	1363	18	0	18	0	36	0	0	1	0	1	2495
Grand Total	133	5704	6	1	5844	5	6544	382	5	6936	187	0	109	5	301	3	1	7	0	11	13092
Apprch %	2.3	97.6	0.1	0		0.1	94.3	5.5	0.1		62.1	0	36.2	1.7		27.3	9.1	63.6	0		
Total %	1	43.6	0	0	44.6	0	50	2.9	0	53	1.4	0	0.8	0	2.3	0	0	0.1	0	0.1	
Cars	124	5417	6	1	5548	4	6168	363	5	6540	179	0	99	5	283	2	1	7	0	10	12381
% Cars	93.2	95	100	100	94.9	80	94.3	95	100	94.3	95.7	0	90.8	100	94	66.7	100	100	0	90.9	94.6
Trucks & Buses	9	287	0	0	296	1	376	19	0	396	8	0	10	0	18	1	0	0	0	1	711
% Trucks & Buses	6.8	5	0	0	5.1	20	5.7	5	0	5.7	4.3	0	9.2	0	6	33.3	0	0	0	9.1	5.4

Traffic Data Collection, Inc.

Atlanta - Hilton Head

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Site Code : 00850007
Start Date : 1/16/2008
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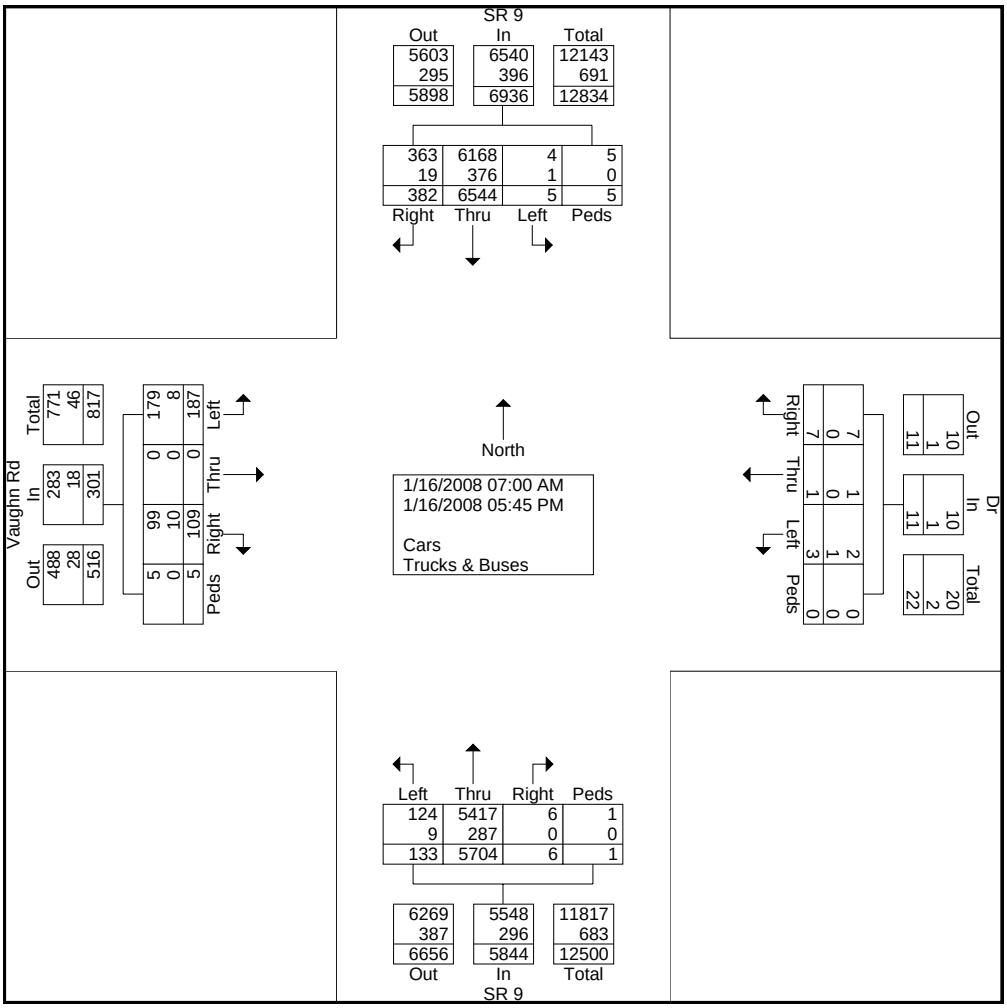

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Atlanta - Hilton Head

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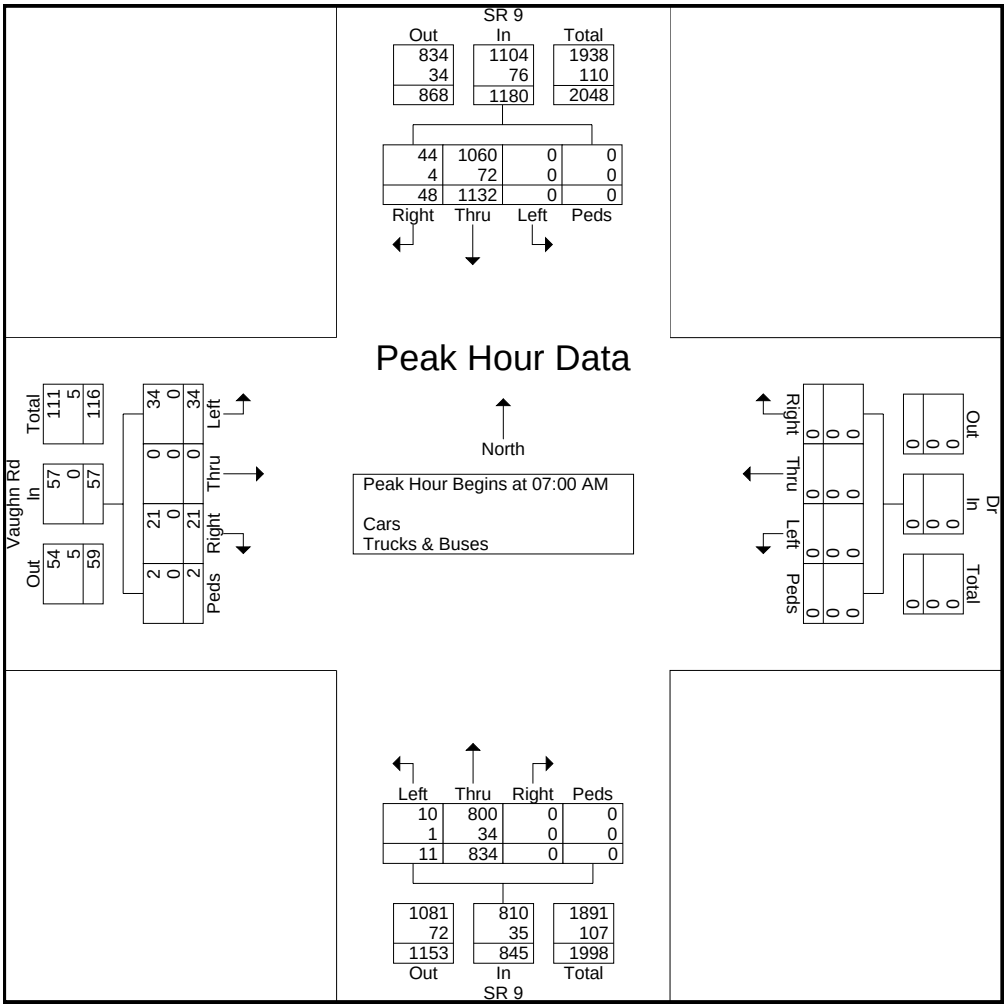
File Name : 08500-07
Site Code : 00850007
Start Date : 1/16/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Vaughn Rd Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	5	169	0	0	174	0	316	9	0	325	5	0	6	0	11	0	0	0	0	0	510
07:15 AM	2	184	0	0	186	0	270	11	0	281	8	0	5	0	13	0	0	0	0	0	480
07:30 AM	0	243	0	0	243	0	302	12	0	314	7	0	5	2	14	0	0	0	0	0	571
07:45 AM	4	238	0	0	242	0	244	16	0	260	14	0	5	0	19	0	0	0	0	0	521
Total Volume	11	834	0	0	845	0	1132	48	0	1180	34	0	21	2	57	0	0	0	0	0	2082
% App. Total	1.3	98.7	0	0		0	95.9	4.1	0		59.6	0	36.8	3.5		0	0	0	0		
PHF	.550	.858	.000	.000	.869	.000	.896	.750	.000	.908	.607	.000	.875	.250	.750	.000	.000	.000	.000	.000	.912
Cars	10	800	0	0	810	0	1060														
% Cars	90.9	95.9	0	0	95.9	0	93.6	91.7	0	93.6	100	0	100	100	100	0	0	0	0	0	94.7
Trucks & Buses	1	34	0	0	35	0	72	4	0	76	0	0	0	0	0	0	0	0	0	0	111
% Trucks & Buses	9.1	4.1	0	0	4.1	0	6.4	8.3	0	6.4	0	0	0	0	0	0	0	0	0	0	5.3



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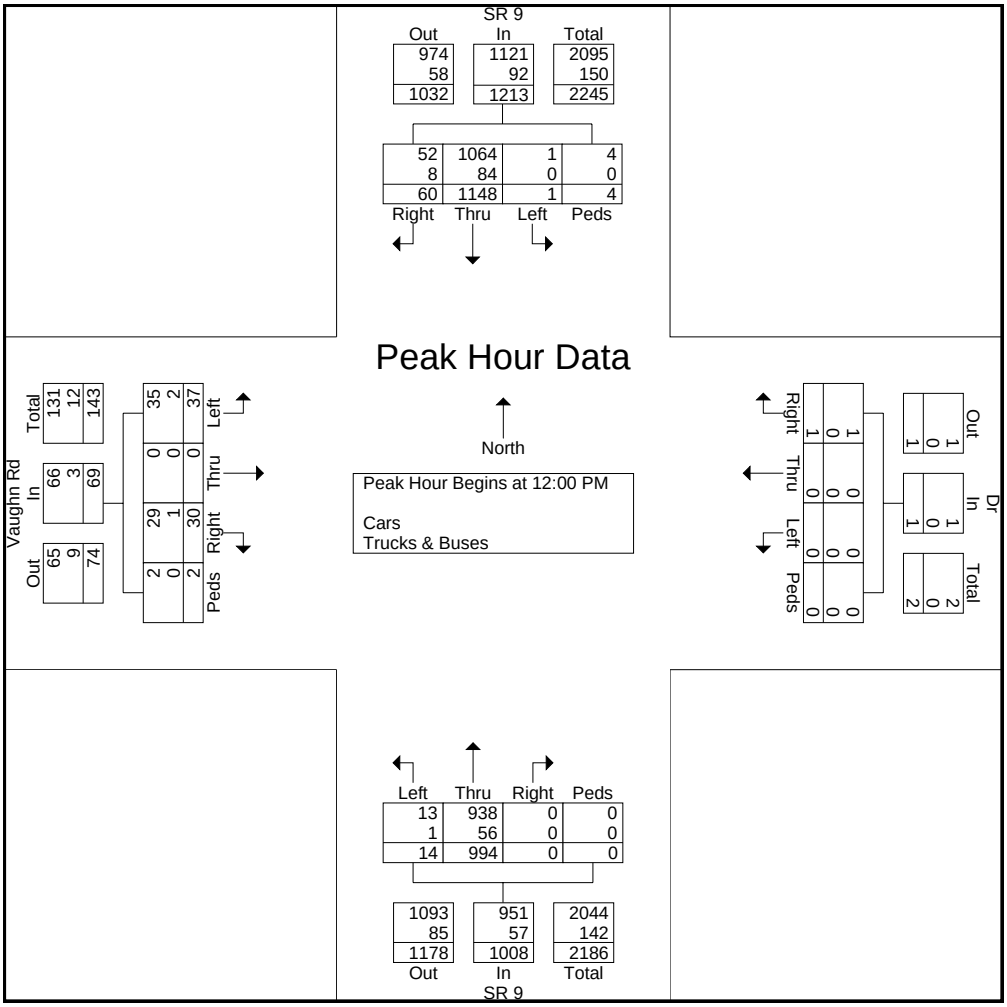
File Name : 08500-07
Site Code : 00850007
Start Date : 1/16/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Vaughn Rd Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	4	241	0	0	245	0	265	16	0	281	13	0	7	0	20	0	0	0	0	0	546
12:15 PM	2	259	0	0	261	0	267	15	1	283	12	0	10	0	22	0	0	0	0	0	566
12:30 PM	3	246	0	0	249	0	299	13	0	312	6	0	8	1	15	0	0	0	0	0	576
12:45 PM	5	248	0	0	253	1	317	16	3	337	6	0	5	1	12	0	0	1	0	1	603
Total Volume	14	994	0	0	1008	1	1148	60	4	1213	37	0	30	2	69	0	0	1	0	1	2291
% App. Total	1.4	98.6	0	0		0.1	94.6	4.9	0.3		53.6	0	43.5	2.9		0	0	100	0		
PHF	.700	.959	.000	.000	.966	.250	.905	.938	.333	.900	.712	.000	.750	.500	.784	.000	.000	.250	.000	.250	.950
Cars	13	938	0	0	951	1	1064														
% Cars	92.9	94.4	0	0	94.3	100	92.7	86.7	100	92.4	94.6	0	96.7	100	95.7	0	0	100	0	100	93.4
Trucks & Buses	1	56	0	0	57	0	84	8	0	92	2	0	1	0	3	0	0	0	0	0	152
% Trucks & Buses	7.1	5.6	0	0	5.7	0	7.3	13.3	0	7.6	5.4	0	3.3	0	4.3	0	0	0	0	0	6.6



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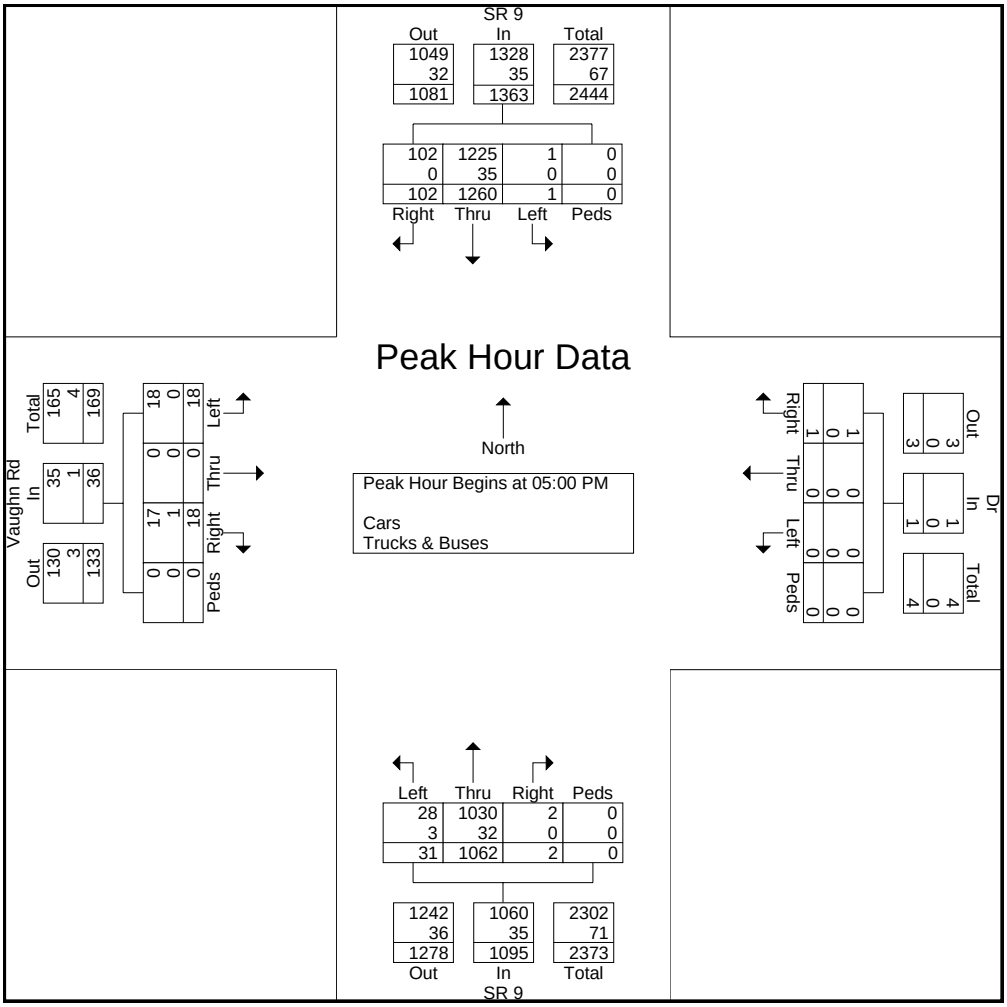
File Name : 08500-07
Site Code : 00850007
Start Date : 1/16/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Vaughn Rd Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	5	278	1	0	284	0	299	30	0	329	3	0	3	0	6	0	0	0	0	0	619
05:15 PM	12	239	0	0	251	0	314	22	0	336	3	0	7	0	10	0	0	0	0	0	597
05:30 PM	5	265	1	0	271	1	333	23	0	357	6	0	5	0	11	0	0	1	0	1	640
05:45 PM	9	280	0	0	289	0	314	27	0	341	6	0	3	0	9	0	0	0	0	0	639
Total Volume	31	1062	2	0	1095	1	1260	102	0	1363	18	0	18	0	36	0	0	1	0	1	2495
% App. Total	2.8	97	0.2	0		0.1	92.4	7.5	0		50	0	50	0		0	0	100	0		
PHF	.646	.948	.500	.000	.947	.250	.946	.850	.000	.954	.750	.000	.643	.000	.818	.000	.000	.250	.000	.250	.975
Cars	28	1030					1225														
% Cars	90.3	97.0	100	0	96.8	100	97.2	100	0	97.4	100	0	94.4	0	97.2	0	0	100	0	100	97.2
Trucks & Buses	3	32	0	0	35	0	35	0	0	35	0	0	1	0	1	0	0	0	0	0	71
% Trucks & Buses	9.7	3.0	0	0	3.2	0	2.8	0	0	2.6	0	0	5.6	0	2.8	0	0	0	0	0	2.8



Traffic Data Collection, Inc.

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Counter: 1842
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-08
Site Code : 00850008
Start Date : 2/6/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Eastbound					Winthrope Chase Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	134	1	0	135	2	193	0	0	195	0	0	0	0	0	6	0	2	0	8	338
07:15 AM	0	155	1	0	156	0	231	0	0	231	0	0	0	0	0	4	0	4	0	8	395
07:30 AM	0	172	0	0	172	4	306	0	0	310	0	0	0	0	0	4	0	6	0	10	492
07:45 AM	0	180	0	0	180	2	282	0	0	284	0	0	0	0	0	2	0	10	0	12	476
Total	0	641	2	0	643	8	1012	0	0	1020	0	0	0	0	0	16	0	22	0	38	1701
08:00 AM	0	117	1	0	118	2	143	0	0	145	0	0	0	0	0	2	0	0	0	2	265
08:15 AM	0	111	1	0	112	1	118	0	0	119	0	0	0	0	0	2	0	3	0	5	236
08:30 AM	0	184	1	0	185	0	259	0	0	259	0	0	0	0	0	5	0	3	0	8	452
08:45 AM	0	187	0	0	187	0	229	0	0	229	0	0	0	0	0	6	0	5	0	11	427
Total	0	599	3	0	602	3	749	0	0	752	0	0	0	0	0	15	0	11	0	26	1380
Break																					
11:00 AM	0	160	3	0	163	0	139	0	0	139	0	0	0	0	0	0	0	1	0	1	303
11:15 AM	0	135	4	0	139	0	122	0	0	122	0	0	0	0	0	1	0	2	0	3	264
11:30 AM	0	189	1	0	190	1	164	0	0	165	0	0	0	0	0	1	0	1	0	2	357
11:45 AM	0	206	1	0	207	3	151	0	0	154	0	0	0	0	0	0	0	0	0	0	361
Total	0	690	9	0	699	4	576	0	0	580	0	0	0	0	0	2	0	4	0	6	1285
12:00 PM	0	183	3	0	186	1	172	0	0	173	0	0	0	0	0	4	0	0	0	4	363
12:15 PM	0	189	3	0	192	0	167	0	0	167	0	0	0	0	0	0	0	4	2	6	365
12:30 PM	0	189	0	0	189	2	235	0	0	237	0	0	0	0	0	4	0	3	0	7	433
12:45 PM	0	202	2	0	204	2	218	0	0	220	0	0	0	0	0	1	0	3	0	4	428
Total	0	763	8	0	771	5	792	0	0	797	0	0	0	0	0	9	0	10	2	21	1589
Break																					
04:00 PM	0	209	2	0	211	3	235	1	0	239	0	0	0	0	0	1	0	2	0	3	453
04:15 PM	0	207	2	0	209	0	238	0	0	238	0	0	0	0	0	2	0	2	0	4	451
04:30 PM	0	202	5	0	207	2	214	0	0	216	0	0	0	0	0	0	0	3	0	3	426
04:45 PM	0	220	5	0	225	4	216	0	0	220	0	0	0	0	0	1	0	4	0	5	450
Total	0	838	14	0	852	9	903	1	0	913	0	0	0	0	0	4	0	11	0	15	1780
05:00 PM	0	222	6	0	228	3	310	0	0	313	0	0	0	0	0	2	0	3	0	5	546
05:15 PM	0	192	4	0	196	0	286	0	0	286	0	0	0	0	0	2	0	1	0	3	485
05:30 PM	0	250	5	0	255	5	267	0	0	272	0	0	0	0	0	1	0	3	0	4	531
05:45 PM	0	239	6	0	245	6	261	0	0	267	0	0	0	0	0	1	0	5	0	6	518
Total	0	903	21	0	924	14	1124	0	0	1138	0	0	0	0	0	6	0	12	0	18	2080
Grand Total	0	4434	57	0	4491	43	5156	1	0	5200	0	0	0	0	0	52	0	70	2	124	9815
Apprch %	0	98.7	1.3	0		0.8	99.2	0	0		0	0	0	0		41.9	0	56.5	1.6		
Total %	0	45.2	0.6	0	45.8	0.4	52.5	0	0	53	0	0	0	0	0	0.5	0	0.7	0	1.3	
Cars	0	4311	53	0	4364	42	5001	0	0	5043	0	0	0	0	0	50	0	68	2	120	9527
% Cars	0	97.2	93	0	97.2	97.7	97	0	0	97	0	0	0	0	0	96.2	0	97.1	100	96.8	97.1
Trucks & Buses	0	123	4	0	127	1	155	1	0	157	0	0	0	0	0	2	0	2	0	4	288
% Trucks & Buses	0	2.8	7	0	2.8	2.3	3	100	0	3	0	0	0	0	0	3.8	0	2.9	0	3.2	2.9

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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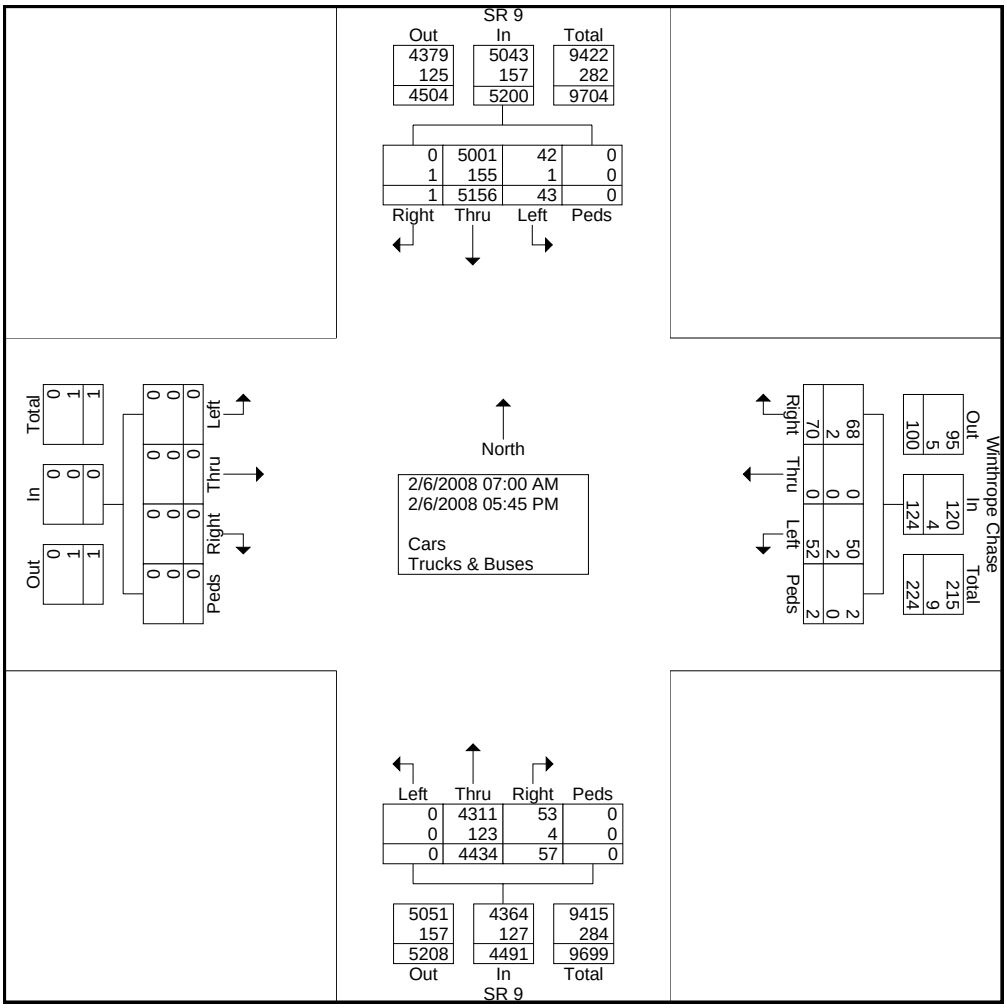
Counter: 1842
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-08
Site Code : 00850008
Start Date : 2/6/2008
Page No : 2



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Atlanta - Hilton Head

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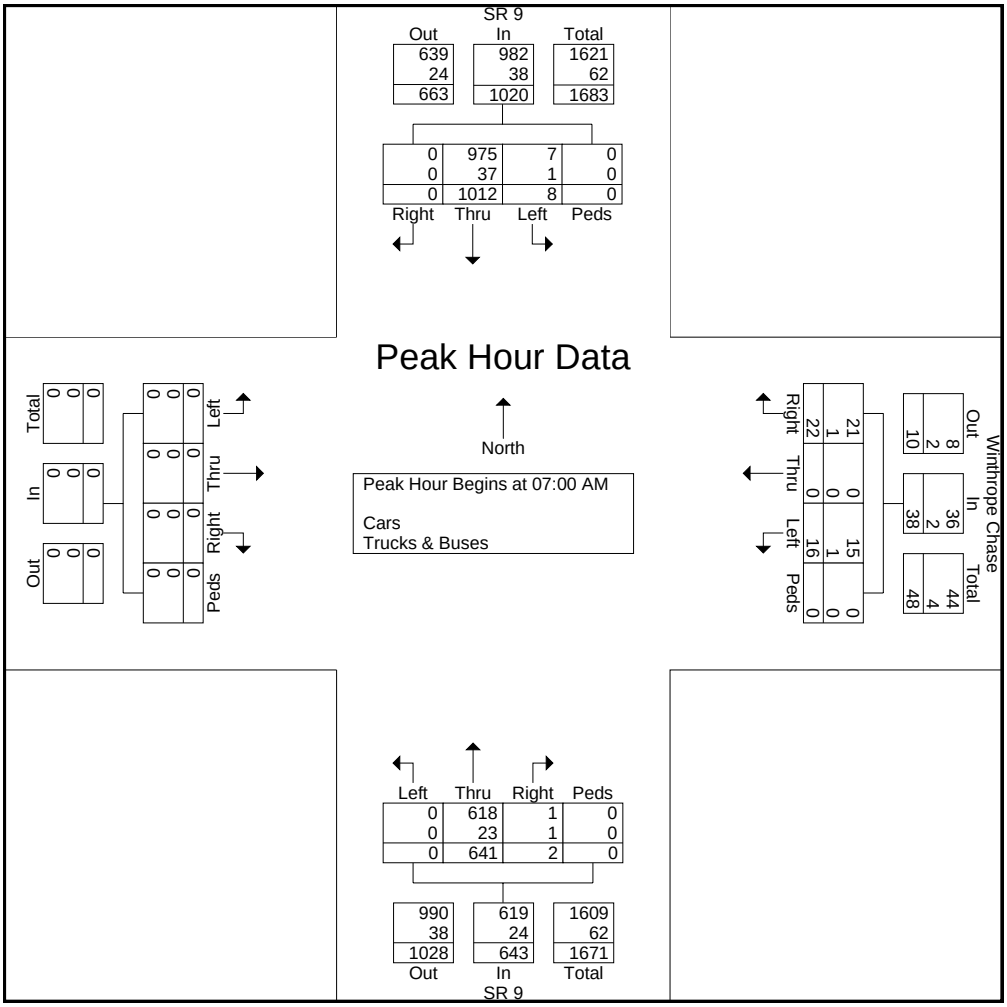
Counter: 1842
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-08
Site Code : 00850008
Start Date : 2/6/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Eastbound					Winthrope Chase Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	134	1	0	135	2	193	0	0	195	0	0	0	0	0	6	0	2	0	8	338
07:15 AM	0	155	1	0	156	0	231	0	0	231	0	0	0	0	0	4	0	4	0	8	395
07:30 AM	0	172	0	0	172	4	306	0	0	310	0	0	0	0	0	4	0	6	0	10	492
07:45 AM	0	180	0	0	180	2	282	0	0	284	0	0	0	0	0	2	0	10	0	12	476
Total Volume	0	641	2	0	643	8	1012	0	0	1020	0	0	0	0	0	16	0	22	0	38	1701
% App. Total	0	99.7	0.3	0		0.8	99.2	0	0		0	0	0	0		42.1	0	57.9	0		
PHF	.000	.890	.500	.000	.893	.500	.827	.000	.000	.823	.000	.000	.000	.000	.000	.667	.000	.550	.000	.792	.864
Cars	0	618	1	0	619	7	975	0	0	982	0	0	0	0	0	15	0	21	0	36	1637
% Cars	0	96.4	50.0	0	96.3	87.5	96.3	0	0	96.3	0	0	0	0	0	93.8	0	95.5	0	94.7	96.2
Trucks & Buses																					
% Trucks & Buses	0	3.6	50.0	0	3.7	12.5	3.7	0	0	3.7	0	0	0	0	0	6.3	0	4.5	0	5.3	3.8



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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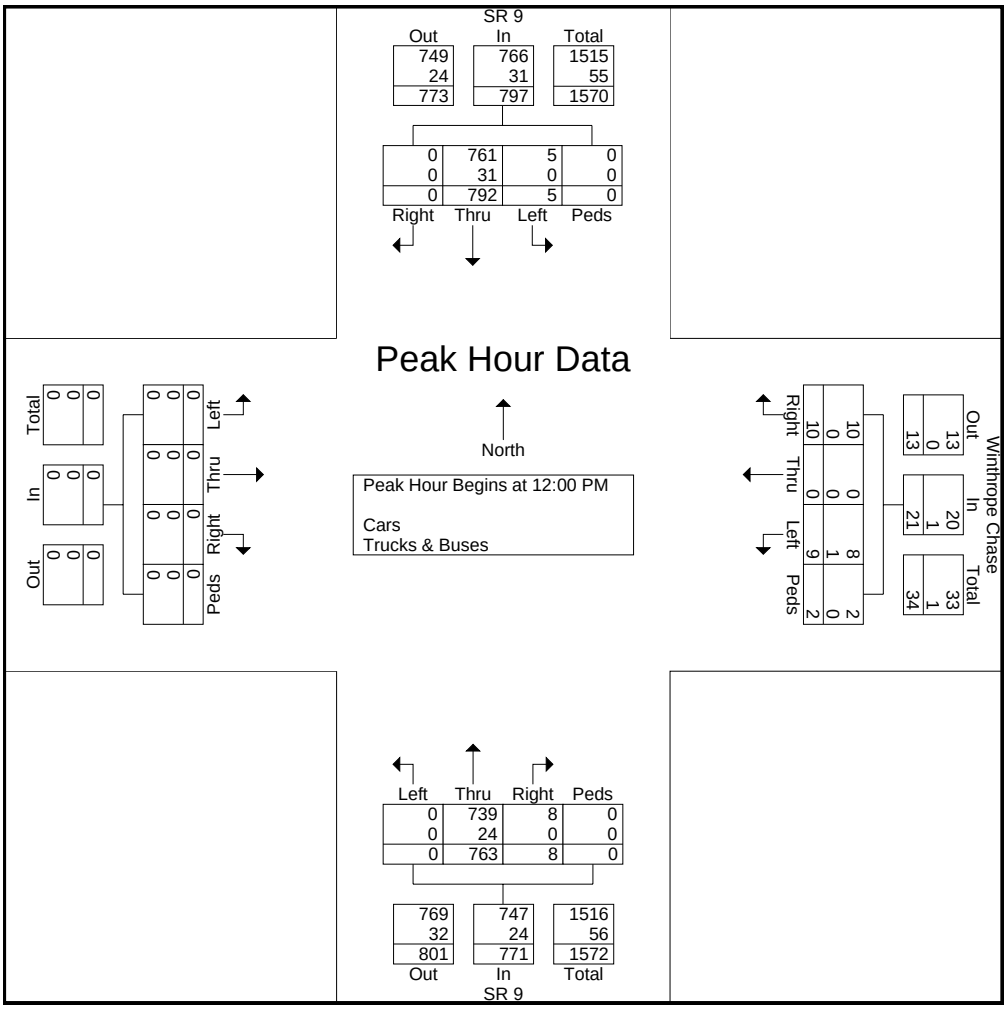
Counter: 1842
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-08
Site Code : 00850008
Start Date : 2/6/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Eastbound					Winthrope Chase Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	183	3	0	186	1	172	0	0	173	0	0	0	0	0	4	0	0	0	4	363
12:15 PM	0	189	3	0	192	0	167	0	0	167	0	0	0	0	0	0	0	4	2	6	365
12:30 PM	0	189	0	0	189	2	235	0	0	237	0	0	0	0	0	4	0	3	0	7	433
12:45 PM	0	202	2	0	204	2	218	0	0	220	0	0	0	0	0	1	0	3	0	4	428
Total Volume	0	763	8	0	771	5	792	0	0	797	0	0	0	0	0	9	0	10	2	21	1589
% App. Total	0	99	1	0		0.6	99.4	0	0		0	0	0	0		42.9	0	47.6	9.5		
PHF	.000	.944	.667	.000	.945	.625	.843	.000	.000	.841	.000	.000	.000	.000	.000	.563	.000	.625	.250	.750	.917
Cars	0	739	8	0	747	5	761	0	0	766	0	0	0	0	0	8	0	10	2	20	1533
% Cars	0	96.9	100	0	96.9	100	96.1	0	0	96.1	0	0	0	0	0	88.9	0	100	100	95.2	96.5
Trucks & Buses																					
% Trucks & Buses	0	3.1	0	0	3.1	0	3.9	0	0	3.9	0	0	0	0	0	11.1	0	0	0	4.8	3.5



Traffic Data Collection, Inc.

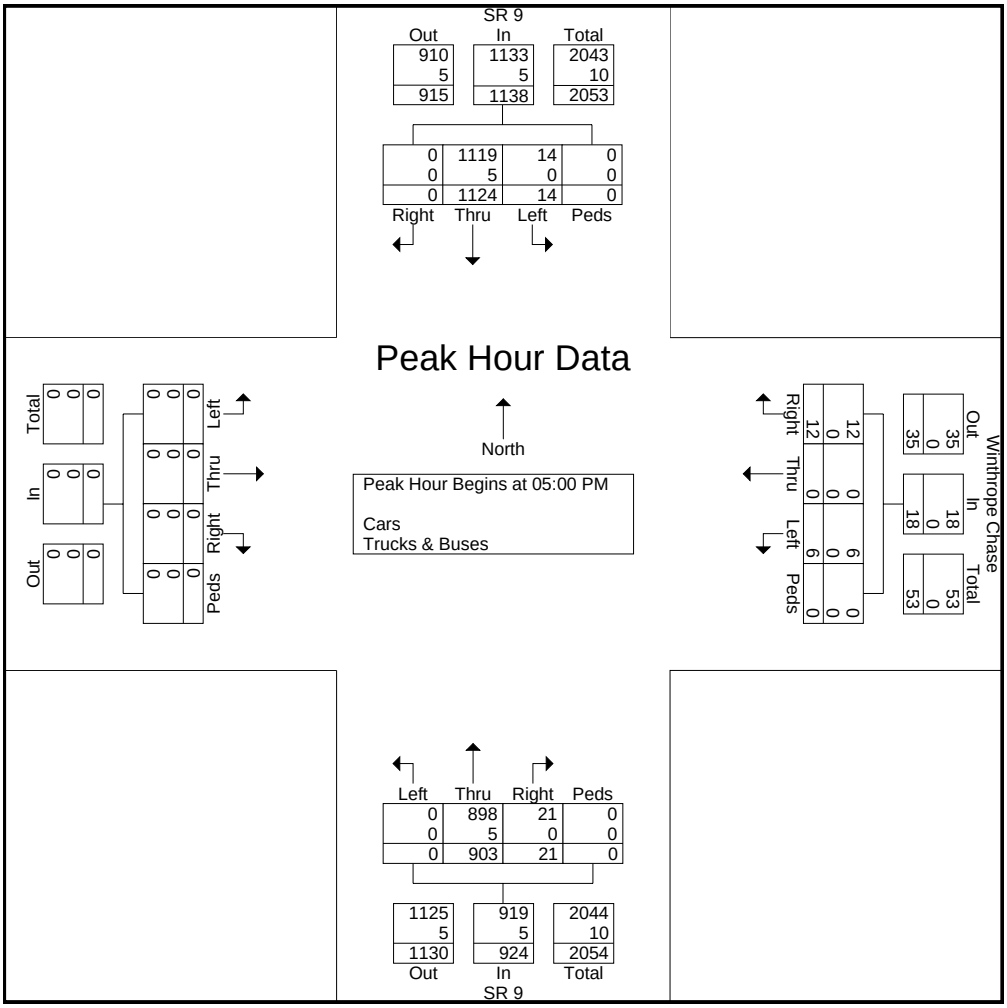
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1842
Counted By: JFU
Weather: Mild
Other: LE

File Name : 08500-08
Site Code : 00850008
Start Date : 2/6/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Eastbound					Winthrope Chase Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	222	6	0	228	3	310	0	0	313	0	0	0	0	0	2	0	3	0	5	546
05:15 PM	0	192	4	0	196	0	286	0	0	286	0	0	0	0	0	2	0	1	0	3	485
05:30 PM	0	250	5	0	255	5	267	0	0	272	0	0	0	0	0	1	0	3	0	4	531
05:45 PM	0	239	6	0	245	6	261	0	0	267	0	0	0	0	0	1	0	5	0	6	518
Total Volume	0	903	21	0	924	14	1124	0	0	1138	0	0	0	0	0	6	0	12	0	18	2080
% App. Total	0	97.7	2.3	0		1.2	98.8	0	0		0	0	0	0		33.3	0	66.7	0		
PHF	.000	.903	.875	.000	.906	.583	.906	.000	.000	.909	.000	.000	.000	.000	.000	.750	.000	.600	.000	.750	.952
Cars	0	898	21	0	919	14	1119														
% Cars	0	99.4	100	0	99.5	100	99.6	0	0	99.6	0	0	0	0	0	100	0	100	0	100	99.5
Trucks & Buses	0	5	0	0	5	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	10
% Trucks & Buses	0	0.6	0	0	0.5	0	0.4	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0.5



Traffic Data Collection, Inc.

Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1934
Counted By: BLR
Weather: Mild
Other: LE

File Name : 08500-09
Site Code : 00850009
Start Date : 2/6/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Cogburn Rd Eastbound					Henderson Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	16	102	6	0	124	7	145	0	0	152	8	4	47	0	59	9	3	10	0	22	357
07:15 AM	28	123	11	0	162	11	155	1	0	167	2	8	57	0	67	4	7	15	0	26	422
07:30 AM	28	140	7	0	175	21	193	3	0	217	3	8	79	0	90	22	16	16	0	54	536
07:45 AM	30	130	7	1	168	6	169	4	0	179	5	7	65	0	77	21	11	18	0	50	474
Total	102	495	31	1	629	45	662	8	0	715	18	27	248	0	293	56	37	59	0	152	1789
08:00 AM	48	150	4	0	202	4	140	3	0	147	5	13	62	0	80	5	6	5	0	16	445
08:15 AM	29	161	7	0	197	4	170	2	0	176	4	12	61	1	78	5	7	7	1	20	471
08:30 AM	25	145	8	0	178	2	174	2	0	178	5	8	46	0	59	6	3	4	1	14	429
08:45 AM	12	185	3	2	202	4	158	4	0	166	6	11	54	0	71	7	2	9	0	18	457
Total	114	641	22	2	779	14	642	11	0	667	20	44	223	1	288	23	18	25	2	68	1802
Break																					
11:00 AM	14	146	2	0	162	3	123	0	0	126	3	1	13	0	17	3	2	6	0	11	316
11:15 AM	11	154	2	0	167	2	123	6	0	131	4	2	21	0	27	2	1	5	0	8	333
11:30 AM	17	169	2	0	188	5	137	6	0	148	5	2	21	0	28	6	6	10	0	22	386
11:45 AM	23	174	2	0	199	5	126	7	0	138	6	1	20	0	27	3	5	6	0	14	378
Total	65	643	8	0	716	15	509	19	0	543	18	6	75	0	99	14	14	27	0	55	1413
12:00 PM	20	172	5	0	197	3	155	5	0	163	7	2	22	0	31	2	2	9	0	13	404
12:15 PM	22	180	6	1	209	3	140	2	0	145	10	3	20	0	33	10	5	7	0	22	409
12:30 PM	15	193	6	0	214	6	165	4	0	175	9	4	21	0	34	11	2	9	0	22	445
12:45 PM	13	190	1	0	204	4	180	6	1	191	4	3	20	0	27	9	2	10	0	21	443
Total	70	735	18	1	824	16	640	17	1	674	30	12	83	0	125	32	11	35	0	78	1701
Break																					
04:00 PM	23	178	2	0	203	8	192	1	2	203	2	9	25	2	38	8	5	7	0	20	464
04:15 PM	23	165	10	1	199	6	179	3	0	188	4	4	29	0	37	11	2	8	0	21	445
04:30 PM	24	165	5	0	194	12	171	1	0	184	4	6	29	1	40	14	8	21	0	43	461
04:45 PM	32	187	10	0	229	14	171	6	0	191	5	6	32	0	43	12	7	15	2	36	499
Total	102	695	27	1	825	40	713	11	2	766	15	25	115	3	158	45	22	51	2	120	1869
05:00 PM	36	169	8	2	215	11	220	5	0	236	3	7	35	0	45	26	11	11	4	52	548
05:15 PM	30	200	6	0	236	5	230	5	0	240	8	7	39	0	54	19	3	18	1	41	571
05:30 PM	37	194	7	2	240	11	164	7	0	182	7	5	36	2	50	14	4	4	0	22	494
05:45 PM	37	198	5	0	240	4	192	5	0	201	4	4	35	1	44	17	8	22	0	47	532
Total	140	761	26	4	931	31	806	22	0	859	22	23	145	3	193	76	26	55	5	162	2145
Grand Total	593	3970	132	9	4704	161	3972	88	3	4224	123	137	889	7	1156	246	128	252	9	635	10719
Apprch %	12.6	84.4	2.8	0.2		3.8	94	2.1	0.1		10.6	11.9	76.9	0.6		38.7	20.2	39.7	1.4		
Total %	5.5	37	1.2	0.1	43.9	1.5	37.1	0.8	0	39.4	1.1	1.3	8.3	0.1	10.8	2.3	1.2	2.4	0.1	5.9	
Cars	576	3864	129	9	4578	161	3838	87	3	4089	122	137	853	6	1118	245	126	252	9	632	10417
% Cars	97.1	97.3	97.7	100	97.3	100	96.6	98.9	100	96.8	99.2	100	96	85.7	96.7	99.6	98.4	100	100	99.5	97.2
Trucks & Buses	17	106	3	0	126	0	134	1	0	135	1	0	36	1	38	1	2	0	0	3	302
% Trucks & Buses	2.9	2.7	2.3	0	2.7	0	3.4	1.1	0	3.2	0.8	0	4	14.3	3.3	0.4	1.6	0	0	0.5	2.8

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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File Name : 08500-09
Site Code : 00850009
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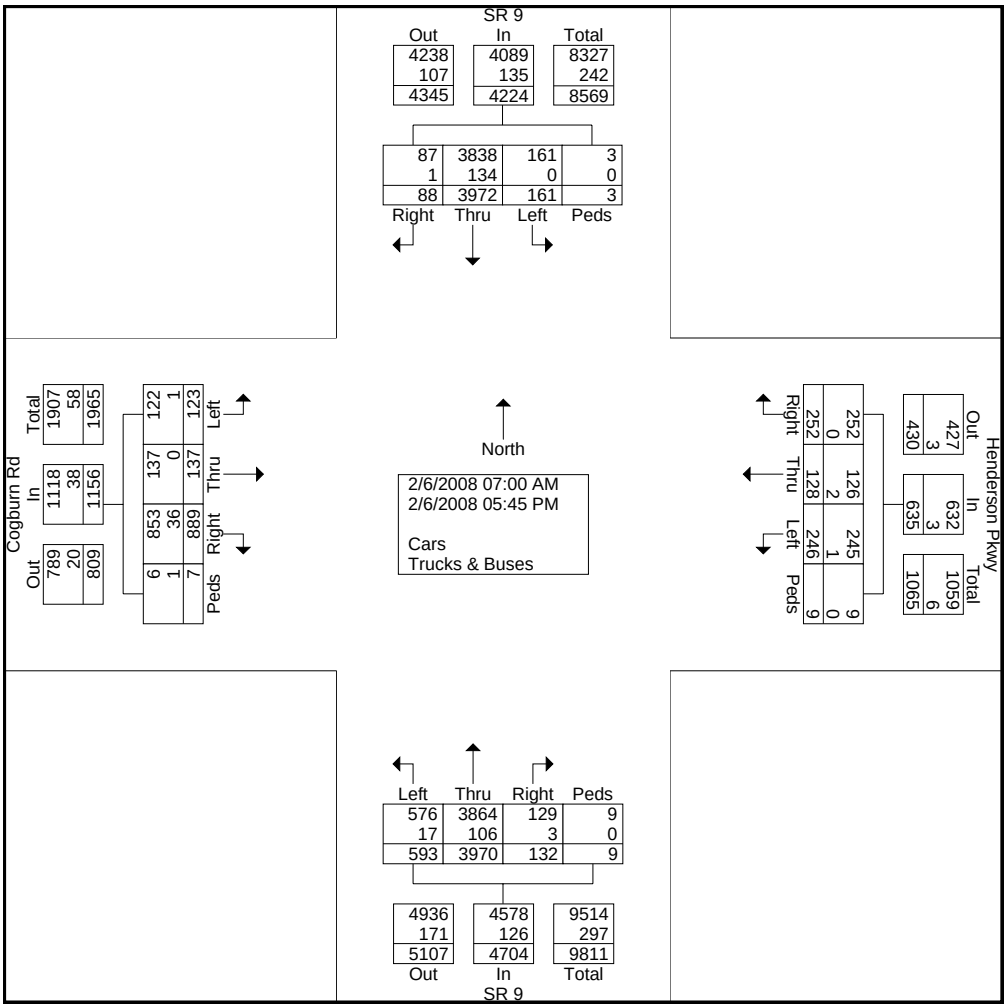

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Counter: 1934
Counted By: BLR
Weather: Mild
Other: LE

File Name : 08500-09
Site Code : 00850009
Start Date : 2/6/2008
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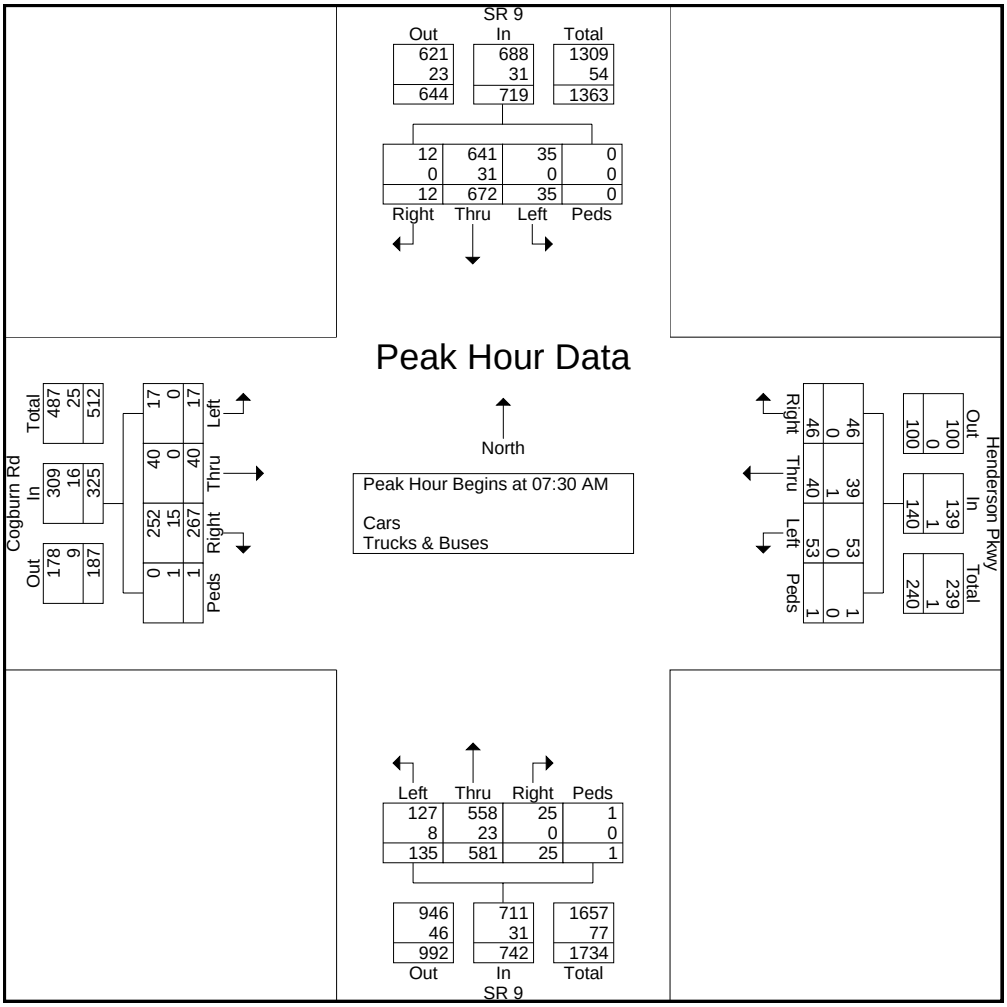
	SR 9 Northbound					SR 9 Southbound					Cogburn Rd Eastbound					Henderson Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	28	140	7	0	175	21	193	3	0	217	3	8	79	0	90	22	16	16	0	54	536
07:45 AM	30	130	7	1	168	6	169	4	0	179	5	7	65	0	77	21	11	18	0	50	474
08:00 AM	48	150	4	0	202	4	140	3	0	147	5	13	62	0	80	5	6	5	0	16	445
08:15 AM	29	161	7	0	197	4	170	2	0	176	4	12	61	1	78	5	7	7	1	20	471
Total Volume	135	581	25	1	742	35	672	12	0	719	17	40	267	1	325	53	40	46	1	140	1926
% App. Total	18.2	78.3	3.4	0.1		4.9	93.5	1.7	0		5.2	12.3	82.2	0.3		37.9	28.6	32.9	0.7		
PHF	.703	.902	.893	.250	.918	.417	.870	.750	.000	.828	.850	.769	.845	.250	.903	.602	.625	.639	.250	.648	.898
Cars	127	558	25	1	711	35	641	12	0	688	17	40	252	0	309	53	39	46	1	139	1847
% Cars	94.1	96.0	100	100	95.8	100	95.4	100	0	95.7	100	100	94.4	0	95.1	100	97.5	100	100	99.3	95.9
Trucks & Buses																					
% Trucks & Buses	5.9	4.0	0	0	4.2	0	4.6	0	0	4.3	0	0	5.6	100	4.9	0	2.5	0	0	0.7	4.1



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File Name : 08500-09
Site Code : 00850009
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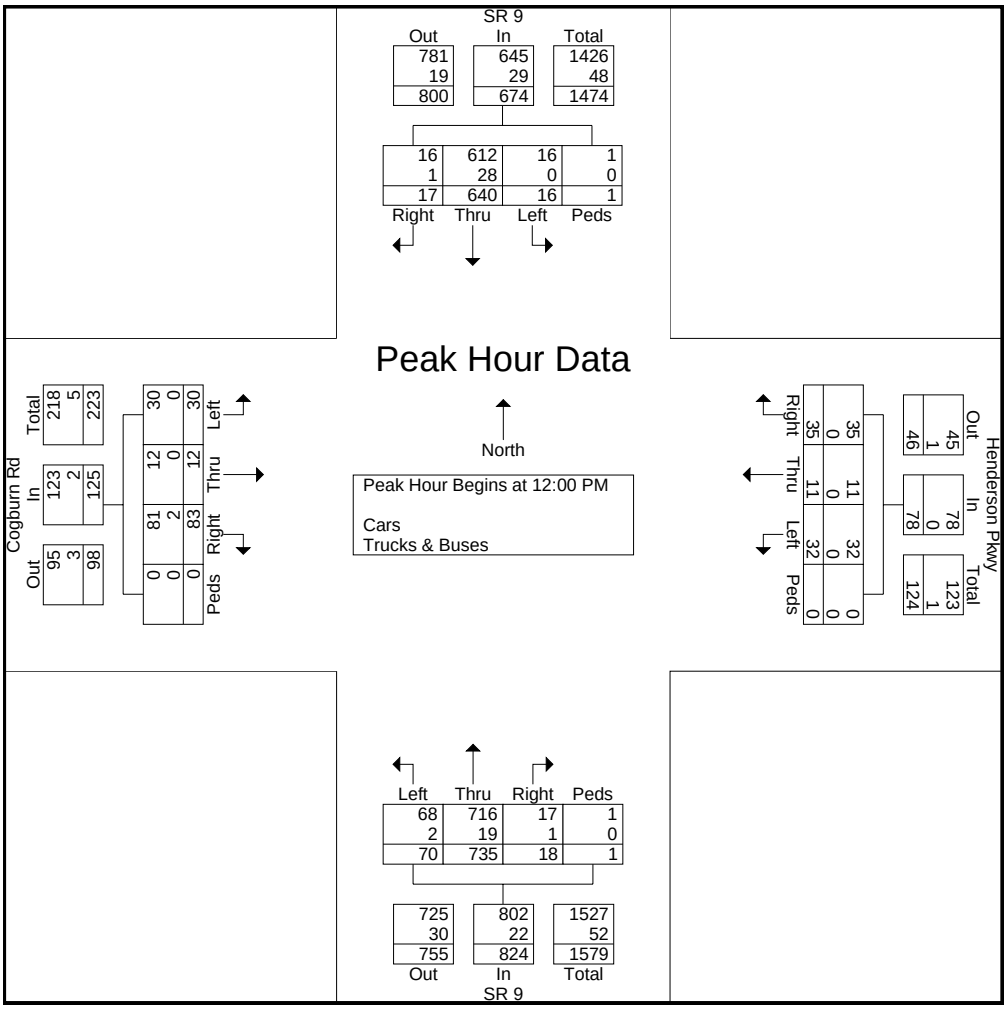
	SR 9 Northbound					SR 9 Southbound					Cogburn Rd Eastbound					Henderson Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	20	172	5	0	197	3	155	5	0	163	7	2	22	0	31	2	2	9	0	13	404
12:15 PM	22	180	6	1	209	3	140	2	0	145	10	3	20	0	33	10	5	7	0	22	409
12:30 PM	15	193	6	0	214	6	165	4	0	175	9	4	21	0	34	11	2	9	0	22	445
12:45 PM	13	190	1	0	204	4	180	6	1	191	4	3	20	0	27	9	2	10	0	21	443
Total Volume	70	735	18	1	824	16	640	17	1	674	30	12	83	0	125	32	11	35	0	78	1701
% App. Total	8.5	89.2	2.2	0.1		2.4	95	2.5	0.1		24	9.6	66.4	0		41	14.1	44.9	0		
PHF	.795	.952	.750	.250	.963	.667	.889	.708	.250	.882	.750	.750	.943	.000	.919	.727	.550	.875	.000	.886	.956
Cars	68	716	17	1	802	16	612	16	1	645	30	12	81	0	123	32	11	35	0	78	1648
% Cars	97.1	97.4	94.4	100	97.3	100	95.6	94.1	100	95.7	100	100	97.6	0	98.4	100	100	100	0	100	96.9
Trucks & Buses																					
% Trucks & Buses	2.9	2.6	5.6	0	2.7	0	4.4	5.9	0	4.3	0	0	2.4	0	1.6	0	0	0	0	0	3.1



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Weather: Mild
Other: LE

File Name : 08500-09
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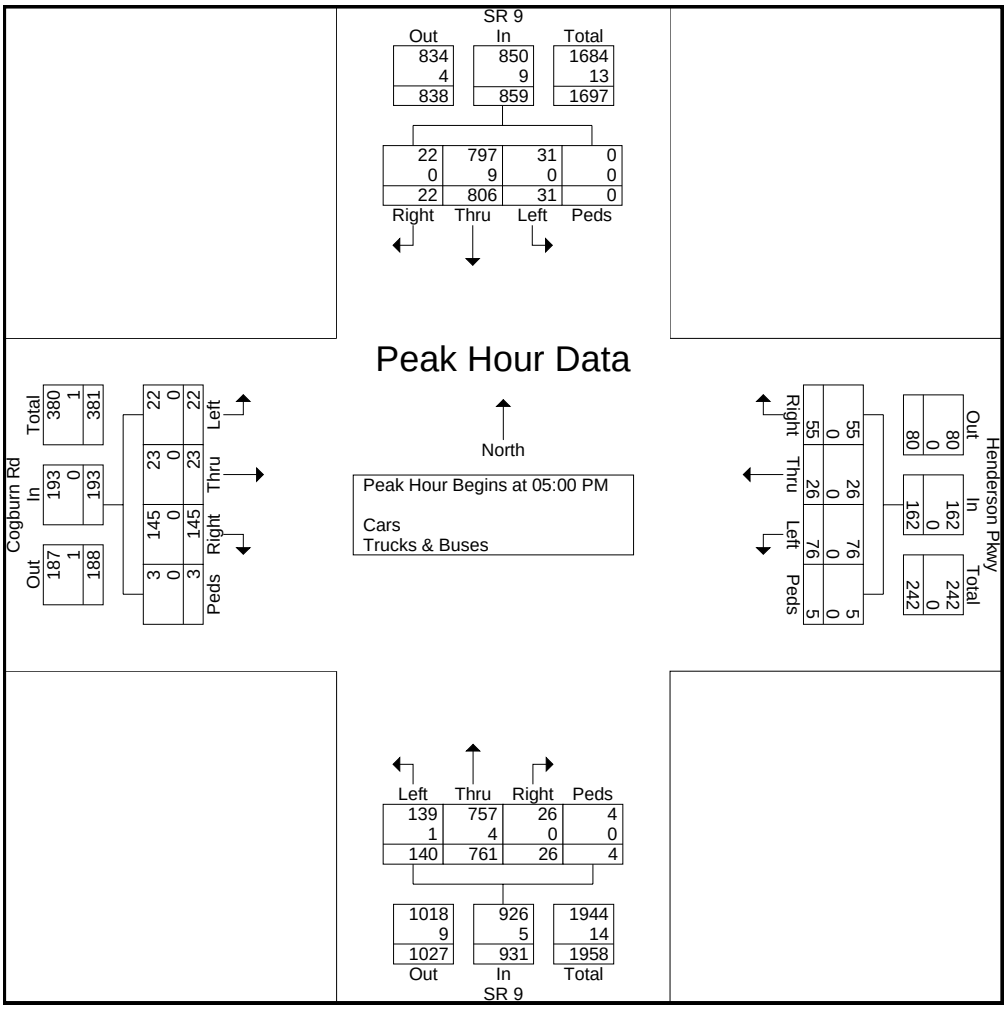
	SR 9 Northbound					SR 9 Southbound					Cogburn Rd Eastbound					Henderson Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	36	169	8	2	215	11	220	5	0	236	3	7	35	0	45	26	11	11	4	52	548
05:15 PM	30	200	6	0	236	5	230	5	0	240	8	7	39	0	54	19	3	18	1	41	571
05:30 PM	37	194	7	2	240	11	164	7	0	182	7	5	36	2	50	14	4	4	0	22	494
05:45 PM	37	198	5	0	240	4	192	5	0	201	4	4	35	1	44	17	8	22	0	47	532
Total Volume	140	761	26	4	931	31	806	22	0	859	22	23	145	3	193	76	26	55	5	162	2145
% App. Total	15	81.7	2.8	0.4		3.6	93.8	2.6	0		11.4	11.9	75.1	1.6		46.9	16	34	3.1		
PHF	.946	.951	.813	.500	.970	.705	.876	.786	.000	.895	.688	.821	.929	.375	.894	.731	.591	.625	.313	.779	.939
Cars	139	757	26	4	926	31	797	22	0	850	22	23	145	3	193	76	26	55	5	162	2131
% Cars	99.3	99.5	100	100	99.5	100	98.9	100	0	99.0	100	100	100	100	100	100	100	100	100	100	99.3
Trucks & Buses																					
% Trucks & Buses	0.7	0.5	0	0	0.5	0	1.1	0	0	1.0	0	0	0	0	0	0	0	0	0	0	0.7



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Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Lowes/Shopping Ent Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	5	115	0	0	120	1	168	3	0	172	1	0	2	0	3	1	1	0	0	2	297
07:15 AM	6	121	2	0	129	3	174	2	0	179	0	0	1	0	1	3	0	0	0	3	312
07:30 AM	6	173	0	0	179	3	264	2	1	270	1	0	1	0	2	2	0	5	0	7	458
07:45 AM	11	193	1	0	205	6	195	3	0	204	2	0	6	0	8	7	0	0	0	7	424
Total	28	602	3	0	633	13	801	10	1	825	4	0	10	0	14	13	1	5	0	19	1491
08:00 AM	4	170	3	0	177	4	163	3	0	170	1	0	2	0	3	2	0	1	0	3	353
08:15 AM	5	179	4	0	188	5	170	1	1	177	1	0	3	0	4	3	0	2	0	5	374
08:30 AM	8	159	4	0	171	8	180	1	0	189	0	0	6	0	6	8	0	2	0	10	376
08:45 AM	3	186	9	0	198	7	156	2	0	165	2	0	6	0	8	6	0	2	0	8	379
Total	20	694	20	0	734	24	669	7	1	701	4	0	17	0	21	19	0	7	0	26	1482
Break																					
11:00 AM	5	155	6	0	166	13	121	4	0	138	5	1	3	0	9	5	0	2	0	7	320
11:15 AM	9	144	9	0	162	24	128	1	0	153	5	0	2	0	7	6	0	7	0	13	335
11:30 AM	7	167	17	0	191	43	135	2	0	180	6	1	11	0	18	9	0	9	0	18	407
11:45 AM	3	163	24	0	190	52	122	8	0	182	6	1	9	0	16	10	3	11	0	24	412
Total	24	629	56	0	709	132	506	15	0	653	22	3	25	0	50	30	3	29	0	62	1474
12:00 PM	8	170	20	0	198	41	150	6	0	197	2	3	7	0	12	7	0	12	0	19	426
12:15 PM	16	154	16	0	186	43	132	5	0	180	4	1	4	0	9	8	5	27	0	40	415
12:30 PM	14	190	22	0	226	20	164	4	0	188	3	2	14	0	19	15	3	34	1	53	486
12:45 PM	9	189	11	3	212	19	167	4	0	190	8	0	8	0	16	23	3	29	0	55	473
Total	47	703	69	3	822	123	613	19	0	755	17	6	33	0	56	53	11	102	1	167	1800
Break																					
04:00 PM	4	154	11	0	169	31	184	0	0	215	0	0	9	0	9	4	0	9	0	13	406
04:15 PM	6	176	9	0	191	30	178	1	1	210	3	1	13	0	17	9	2	8	0	19	437
04:30 PM	7	167	12	0	186	22	177	1	0	200	5	0	3	0	8	10	2	9	0	21	415
04:45 PM	6	197	15	0	218	22	197	1	0	220	2	0	4	0	6	6	1	11	0	18	462
Total	23	694	47	0	764	105	736	3	1	845	10	1	29	0	40	29	5	37	0	71	1720
05:00 PM	4	195	13	0	212	21	222	2	1	246	2	1	7	0	10	13	0	8	0	21	489
05:15 PM	7	212	12	0	231	18	228	2	0	248	4	1	6	0	11	7	2	12	2	23	513
05:30 PM	0	209	20	0	229	33	176	0	0	209	6	2	5	0	13	9	0	16	0	25	476
05:45 PM	7	210	18	0	235	44	186	2	0	232	0	0	6	0	6	3	6	14	0	23	496
Total	18	826	63	0	907	116	812	6	1	935	12	4	24	0	40	32	8	50	2	92	1974
Grand Total	160	4148	258	3	4569	513	4137	60	4	4714	69	14	138	0	221	176	28	230	3	437	9941
Apprch %	3.5	90.8	5.6	0.1		10.9	87.8	1.3	0.1		31.2	6.3	62.4	0		40.3	6.4	52.6	0.7		
Total %	1.6	41.7	2.6	0	46	5.2	41.6	0.6	0	47.4	0.7	0.1	1.4	0	2.2	1.8	0.3	2.3	0	4.4	
Cars	159	4078	253	3	4493	512	4075	60	4	4651	65	14	135	0	214	173	27	229	3	432	9790
% Cars	99.4	98.3	98.1	100	98.3	99.8	98.5	100	100	98.7	94.2	100	97.8	0	96.8	98.3	96.4	99.6	100	98.9	98.5
Trucks & Buses	1	70	5	0	76	1	62	0	0	63	4	0	3	0	7	3	1	1	0	5	151
% Trucks & Buses	0.6	1.7	1.9	0	1.7	0.2	1.5	0	0	1.3	5.8	0	2.2	0	3.2	1.7	3.6	0.4	0	1.1	1.5

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

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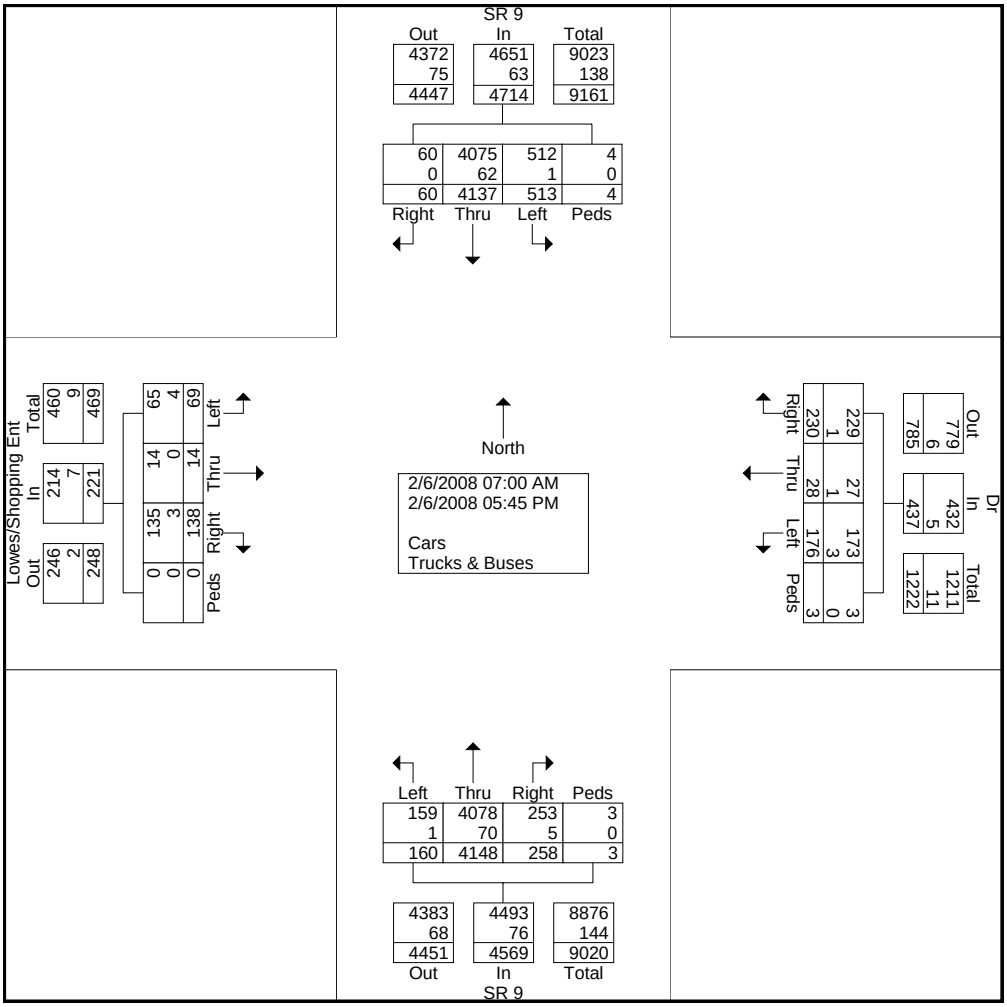

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Counted By: JRM
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Other: LE

File Name : 08500-10
Site Code : 00850010
Start Date : 2/6/2008
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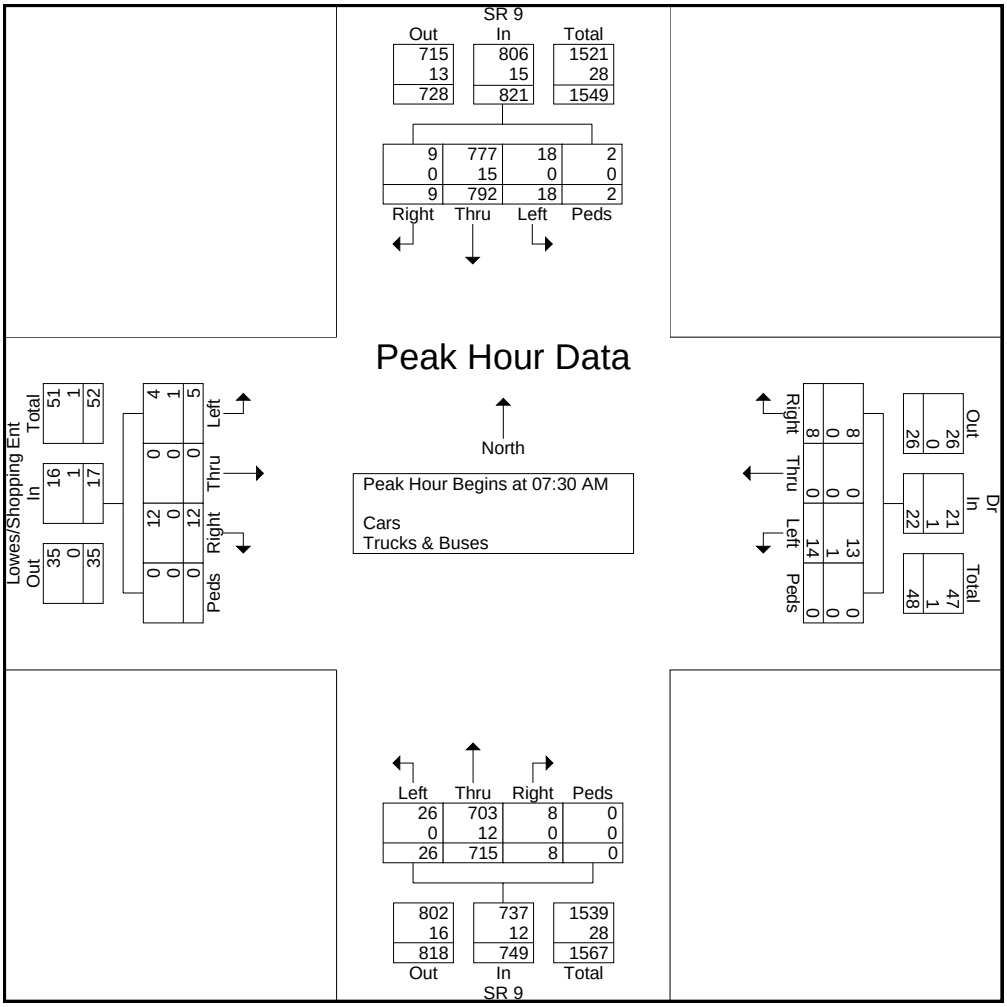
	SR 9 Northbound					SR 9 Southbound					Lowes/Shopping Ent Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	6	173	0	0	179	3	264	2	1	270	1	0	1	0	2	2	0	5	0	7	458
07:45 AM	11	193	1	0	205	6	195	3	0	204	2	0	6	0	8	7	0	0	0	7	424
08:00 AM	4	170	3	0	177	4	163	3	0	170	1	0	2	0	3	2	0	1	0	3	353
08:15 AM	5	179	4	0	188	5	170	1	1	177	1	0	3	0	4	3	0	2	0	5	374
Total Volume	26	715	8	0	749	18	792	9	2	821	5	0	12	0	17	14	0	8	0	22	1609
% App. Total	3.5	95.5	1.1	0		2.2	96.5	1.1	0.2		29.4	0	70.6	0		63.6	0	36.4	0		
PHF	.591	.926	.500	.000	.913	.750	.750	.750	.500	.760	.625	.000	.500	.000	.531	.500	.000	.400	.000	.786	.878
Cars	26	703	8	0	737	18	777	9	2	806	4	0	12	0	16	13	0	8	0	21	1580
% Cars	100	98.3	100	0	98.4	100	98.1	100	100	98.2	80.0	0	100	0	94.1	92.9	0	100	0	95.5	98.2
Trucks & Buses																					
% Trucks & Buses	0	1.7	0	0	1.6	0	1.9	0	0	1.8	20.0	0	0	0	5.9	7.1	0	0	0	4.5	1.8



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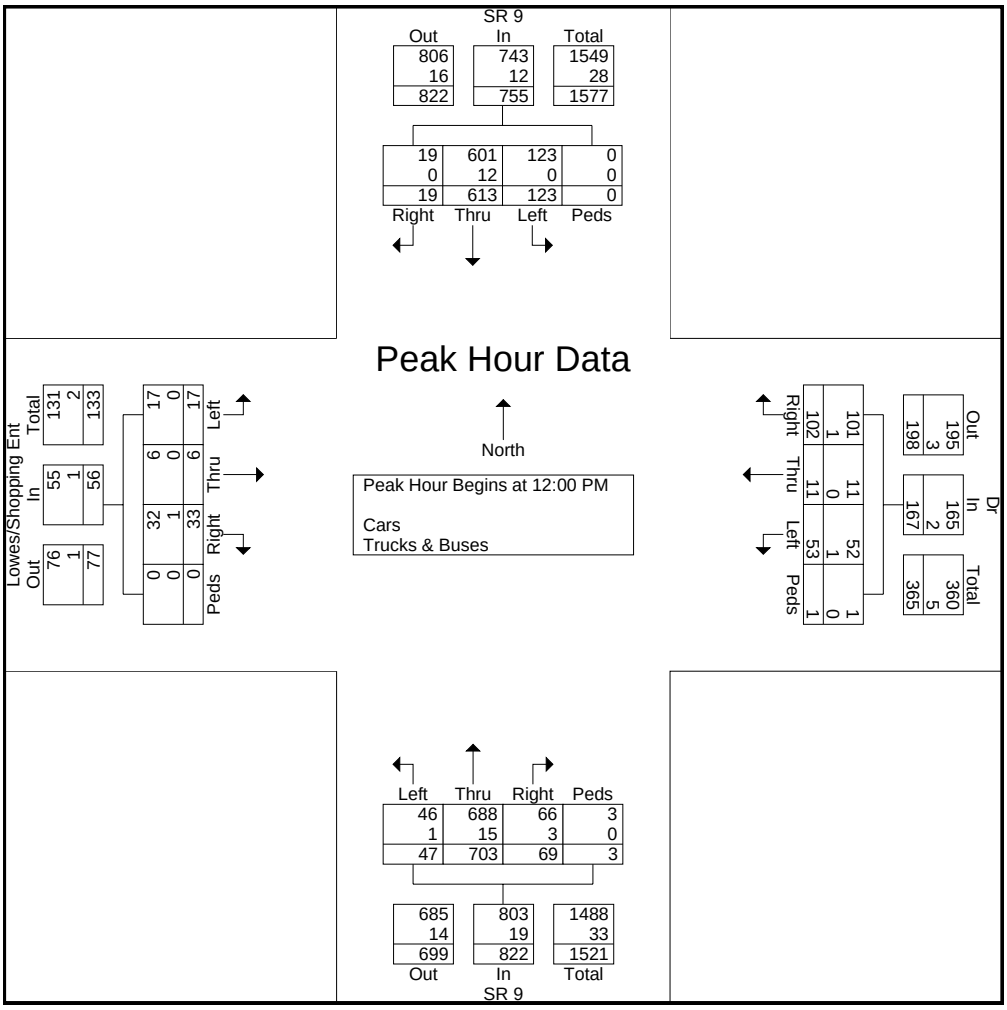
File Name : 08500-10
Site Code : 00850010
Start Date : 2/6/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Lowes/Shopping Ent Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	8	170	20	0	198	41	150	6	0	197	2	3	7	0	12	7	0	12	0	19	426
12:15 PM	16	154	16	0	186	43	132	5	0	180	4	1	4	0	9	8	5	27	0	40	415
12:30 PM	14	190	22	0	226	20	164	4	0	188	3	2	14	0	19	15	3	34	1	53	486
12:45 PM	9	189	11	3	212	19	167	4	0	190	8	0	8	0	16	23	3	29	0	55	473
Total Volume	47	703	69	3	822	123	613	19	0	755	17	6	33	0	56	53	11	102	1	167	1800
% App. Total	5.7	85.5	8.4	0.4		16.3	81.2	2.5	0		30.4	10.7	58.9	0		31.7	6.6	61.1	0.6		
PHF	.734	.925	.784	.250	.909	.715	.918	.792	.000	.958	.531	.500	.589	.000	.737	.576	.550	.750	.250	.759	.926
Cars	46	688	66	3	803	123	601	19	0	743	17	6	32	0	55	52	11	101	1	165	1766
% Cars	97.9	97.9	95.7	100	97.7	100	98.0	100	0	98.4	100	100	97.0	0	98.2	98.1	100	99.0	100	98.8	98.1
Trucks & Buses																					
% Trucks & Buses	2.1	2.1	4.3	0	2.3	0	2.0	0	0	1.6	0	0	3.0	0	1.8	1.9	0	1.0	0	1.2	1.9



Traffic Data Collection, Inc.

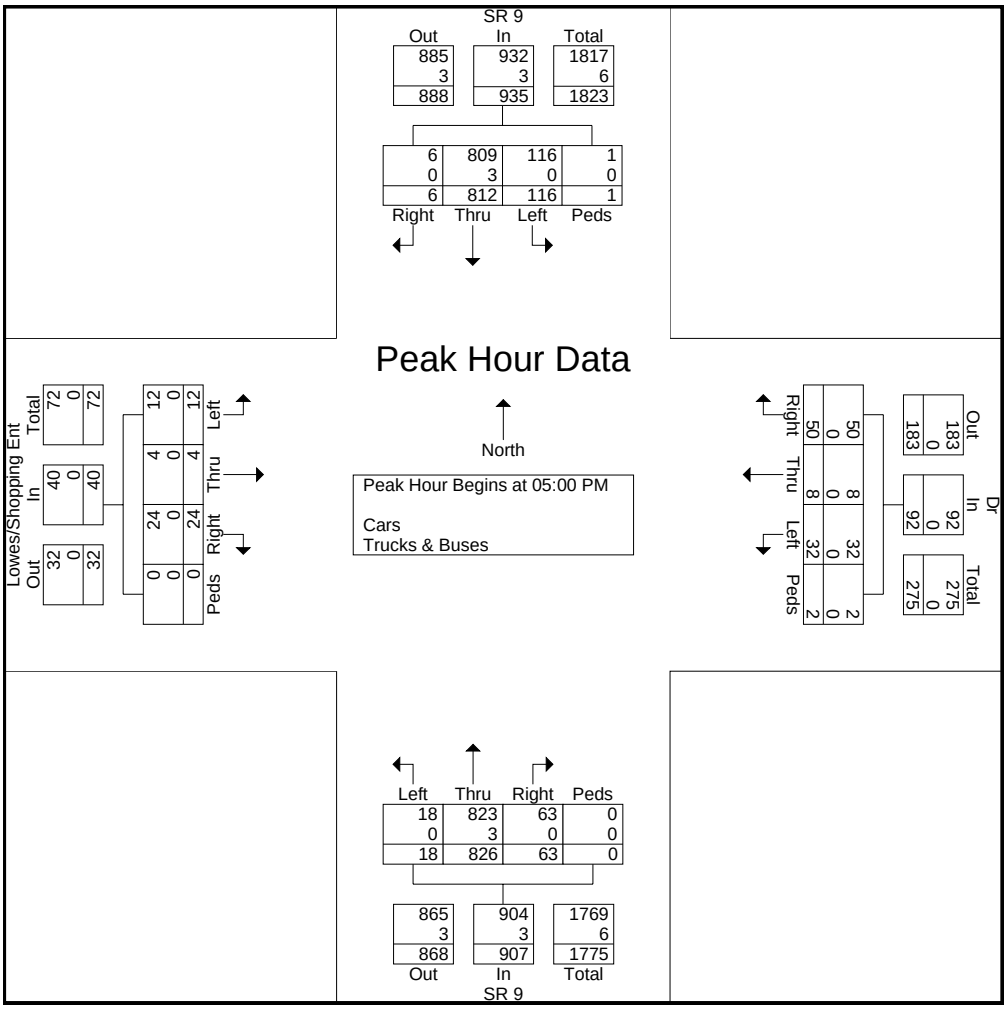
Atlanta - Hilton Head

www.trafficdatacollection.com

Counter: 1935
Counted By: JRM
Weather: Mild
Other: LE

File Name : 08500-10
Site Code : 00850010
Start Date : 2/6/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Lowes/Shopping Ent Eastbound					Dr Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	195	13	0	212	21	222	2	1	246	2	1	7	0	10	13	0	8	0	21	489
05:15 PM	7	212	12	0	231	18	228	2	0	248	4	1	6	0	11	7	2	12	2	23	513
05:30 PM	0	209	20	0	229	33	176	0	0	209	6	2	5	0	13	9	0	16	0	25	476
05:45 PM	7	210	18	0	235	44	186	2	0	232	0	0	6	0	6	3	6	14	0	23	496
Total Volume	18	826	63	0	907	116	812	6	1	935	12	4	24	0	40	32	8	50	2	92	1974
% App. Total	2	91.1	6.9	0		12.4	86.8	0.6	0.1		30	10	60	0		34.8	8.7	54.3	2.2		
PHF	.643	.974	.788	.000	.965	.659	.890	.750	.250	.943	.500	.500	.857	.000	.769	.615	.333	.781	.250	.920	.962
Cars	18	823	63	0	904	116	809	6	1	932	12	4	24	0	40	32	8	50	2	92	1968
% Cars	100	99.6	100	0	99.7	100	99.6	100	100	99.7	100	100	100	0	100	100	100	100	100	100	99.7
Trucks & Buses																					
% Trucks & Buses	0	0.4	0	0	0.3	0	0.4	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0.3



Traffic Data Collection, Inc.

Atlanta - Hilton Head
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Counter: 1842/2446
Counted By: JFU/BLR
Weather: Mild
Other: LE

File Name : 08500-11
Site Code : 00850011
Start Date : 2/7/2008
Page No : 1

Groups Printed- Cars - Trucks & Buses

	SR 9 Northbound					SR 9 Southbound					Windward Pkwy Eastbound					Windward Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	9	42	34	0	85	38	103	2	0	143	9	110	5	0	124	36	56	10	0	102	454
07:15 AM	9	62	44	0	115	46	131	4	0	181	24	105	10	0	139	52	62	12	0	126	561
07:30 AM	13	96	89	0	198	34	184	9	0	227	26	128	11	2	167	64	76	23	0	163	755
07:45 AM	14	94	75	0	183	39	120	14	0	173	30	149	16	0	195	62	104	29	0	195	746
Total	45	294	242	0	581	157	538	29	0	724	89	492	42	2	625	214	298	74	0	586	2516
08:00 AM	18	91	73	0	182	45	111	6	0	162	29	159	17	0	205	53	79	23	0	155	704
08:15 AM	14	85	88	0	187	46	119	1	0	166	27	164	13	0	204	56	92	27	0	175	732
08:30 AM	7	73	68	1	149	60	111	4	0	175	26	149	11	1	187	41	78	22	0	141	652
08:45 AM	18	81	82	0	181	61	119	12	0	192	22	158	11	0	191	69	56	30	0	155	719
Total	57	330	311	1	699	212	460	23	0	695	104	630	52	1	787	219	305	102	0	626	2807
Break																					
11:00 AM	15	59	55	0	129	56	99	13	0	168	22	84	23	0	129	82	88	48	0	218	644
11:15 AM	12	111	82	0	205	64	98	14	0	176	23	117	15	0	155	104	117	56	0	277	813
11:30 AM	26	104	83	0	213	74	94	31	0	199	24	107	21	0	152	103	135	77	0	315	879
11:45 AM	29	93	85	0	207	70	118	24	0	212	42	102	23	0	167	102	159	78	0	339	925
Total	82	367	305	0	754	264	409	82	0	755	111	410	82	0	603	391	499	259	0	1149	3261
12:00 PM	24	105	80	0	209	72	101	25	0	198	40	125	18	1	184	129	164	75	0	368	959
12:15 PM	18	144	82	0	244	92	109	20	0	221	34	122	26	0	182	104	150	106	0	360	1007
12:30 PM	23	117	115	0	255	86	110	31	0	227	43	109	17	0	169	90	193	112	0	395	1046
12:45 PM	21	131	88	1	241	113	130	22	0	265	26	138	19	1	184	103	168	101	0	372	1062
Total	86	497	365	1	949	363	450	98	0	911	143	494	80	2	719	426	675	394	0	1495	4074
Break																					
04:00 PM	20	118	49	0	187	47	106	15	0	168	18	87	15	1	121	123	137	57	0	317	793
04:15 PM	27	110	59	0	196	55	111	13	0	179	23	78	18	0	119	81	155	47	0	283	777
04:30 PM	23	101	69	0	193	50	78	7	0	135	29	87	11	1	128	108	150	57	0	315	771
04:45 PM	18	97	52	0	167	48	65	25	0	138	27	63	16	0	106	91	112	34	0	237	648
Total	88	426	229	0	743	200	360	60	0	620	97	315	60	2	474	403	554	195	0	1152	2989
05:00 PM	18	118	70	1	207	40	72	13	0	125	41	113	15	0	169	135	175	28	0	338	839
05:15 PM	22	139	58	0	219	51	120	10	0	181	26	62	7	0	95	139	165	71	0	375	870
05:30 PM	13	139	75	0	227	43	101	8	0	152	30	100	15	1	146	115	212	71	0	398	923
05:45 PM	27	131	57	1	216	57	85	14	0	156	33	77	15	1	126	99	188	62	0	349	847
Total	80	527	260	2	869	191	378	45	0	614	130	352	52	2	536	488	740	232	0	1460	3479
Grand Total	438	2441	1712	4	4595	1387	2595	337	0	4319	674	2693	368	9	3744	2141	3071	1256	0	6468	19126
Apprch %	9.5	53.1	37.3	0.1		32.1	60.1	7.8	0		18	71.9	9.8	0.2		33.1	47.5	19.4	0		
Total %	2.3	12.8	9	0	24	7.3	13.6	1.8	0	22.6	3.5	14.1	1.9	0	19.6	11.2	16.1	6.6	0	33.8	
Cars	422	2335	1648	4	4409	1341	2487	326	0	4154	660	2657	362	9	3688	2090	3033	1221	0	6344	18595
% Cars	96.3	95.7	96.3	100	96	96.7	95.8	96.7	0	96.2	97.9	98.7	98.4	100	98.5	97.6	98.8	97.2	0	98.1	97.2
Trucks & Buses	16	106	64	0	186	46	108	11	0	165	14	36	6	0	56	51	38	35	0	124	531
% Trucks & Buses	3.7	4.3	3.7	0	4	3.3	4.2	3.3	0	3.8	2.1	1.3	1.6	0	1.5	2.4	1.2	2.8	0	1.9	2.8

Note: Pedestrian data shown for each approach is crossing the approach from either direction combined.

Traffic Data Collection, Inc.

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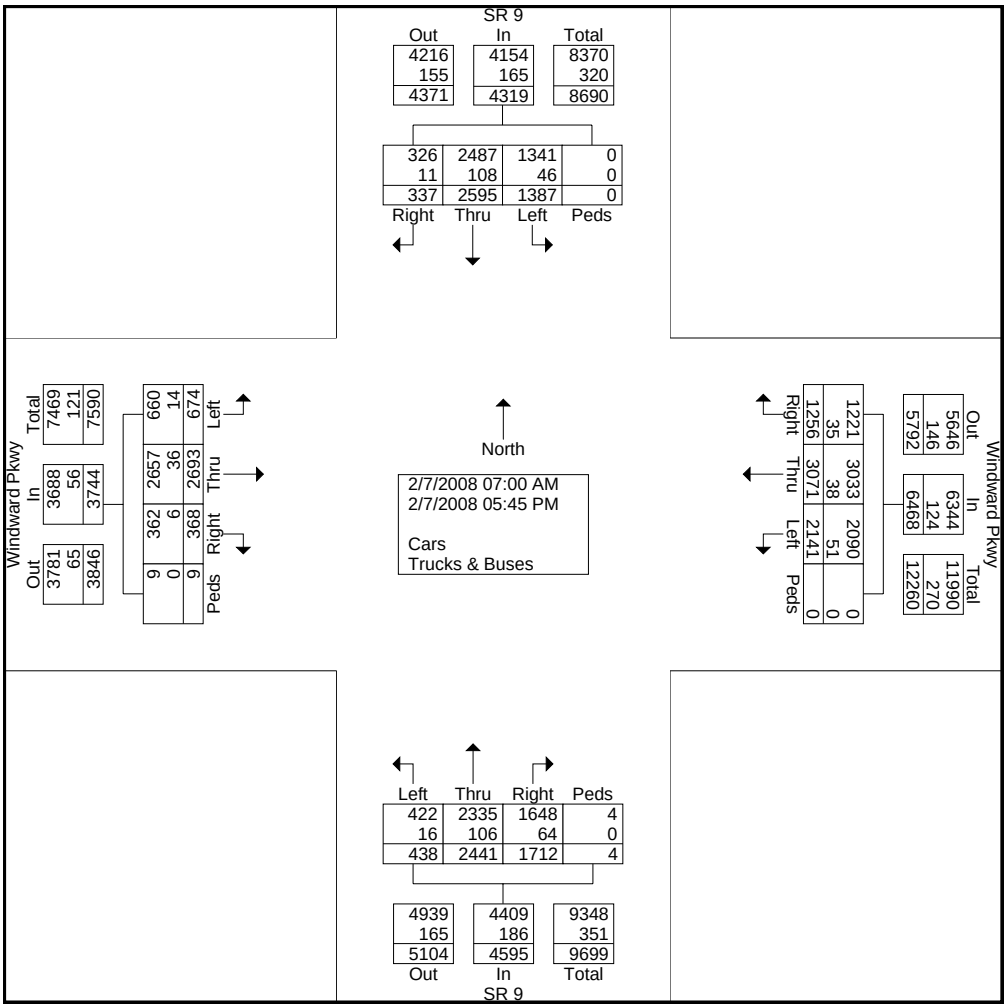
Counter: 1842/2446
Counted By: JFU/BLR
Weather: Mild
Other: LE

File Name : 08500-11
Site Code : 00850011
Start Date : 2/7/2008
Page No : 2



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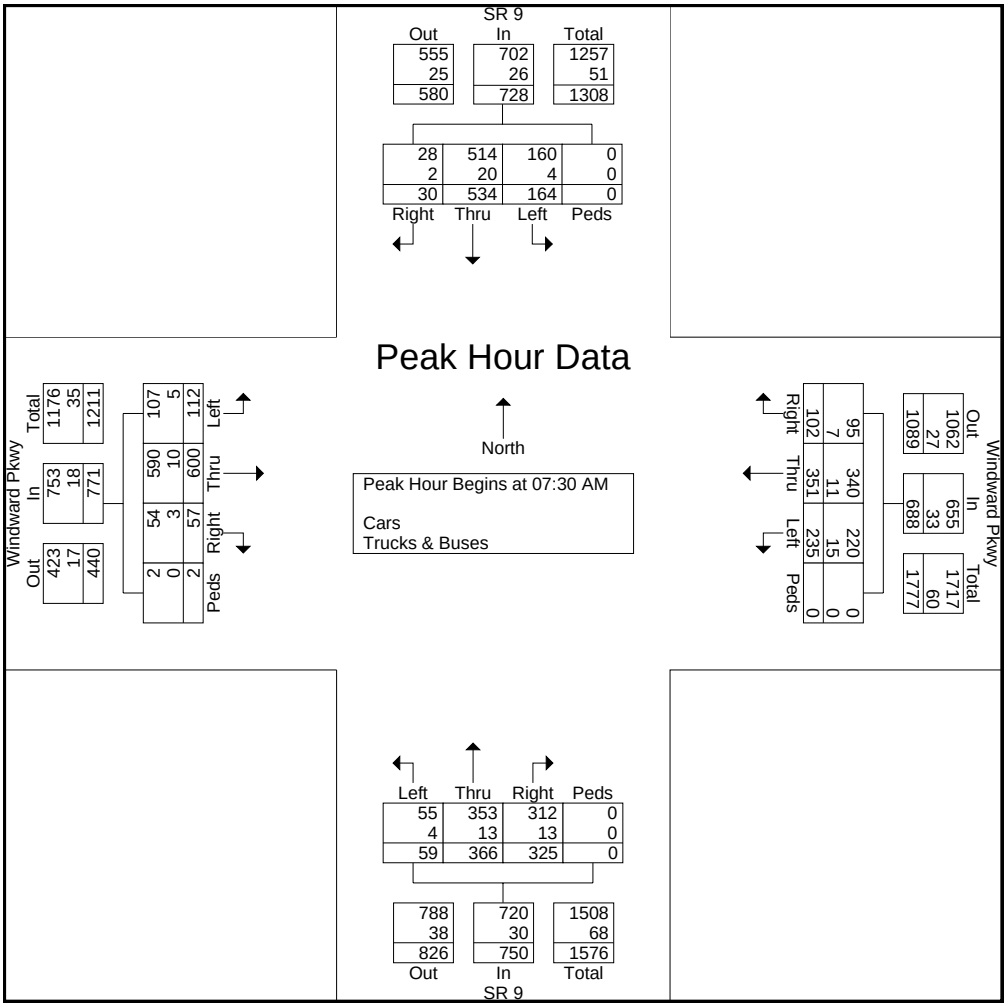
Counter: 1842/2446
Counted By: JFU/BLR
Weather: Mild
Other: LE

File Name : 08500-11
Site Code : 00850011
Start Date : 2/7/2008
Page No : 3

	SR 9 Northbound					SR 9 Southbound					Windward Pkwy Eastbound					Windward Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	13	96	89	0	198	34	184	9	0	227	26	128	11	2	167	64	76	23	0	163	755
07:45 AM	14	94	75	0	183	39	120	14	0	173	30	149	16	0	195	62	104	29	0	195	746
08:00 AM	18	91	73	0	182	45	111	6	0	162	29	159	17	0	205	53	79	23	0	155	704
08:15 AM	14	85	88	0	187	46	119	1	0	166	27	164	13	0	204	56	92	27	0	175	732
Total Volume	59	366	325	0	750	164	534	30	0	728	112	600	57	2	771	235	351	102	0	688	2937
% App. Total	7.9	48.8	43.3	0		22.5	73.4	4.1	0		14.5	77.8	7.4	0.3		34.2	51	14.8	0		
PHF	.819	.953	.913	.000	.947	.891	.726	.536	.000	.802	.933	.915	.838	.250	.940	.918	.844	.879	.000	.882	.973
Cars	55	353	312	0	720	160	514	28	0	702	107	590	54	2	753	220	340	95	0	655	2830
% Cars	93.2	96.4	96.0	0	96.0	97.6	96.3	93.3	0	96.4	95.5	98.3	94.7	100	97.7	93.6	96.9	93.1	0	95.2	96.4
Trucks & Buses																					
% Trucks & Buses	6.8	3.6	4.0	0	4.0	2.4	3.7	6.7	0	3.6	4.5	1.7	5.3	0	2.3	6.4	3.1	6.9	0	4.8	3.6



Traffic Data Collection, Inc.

Atlanta - Hilton Head

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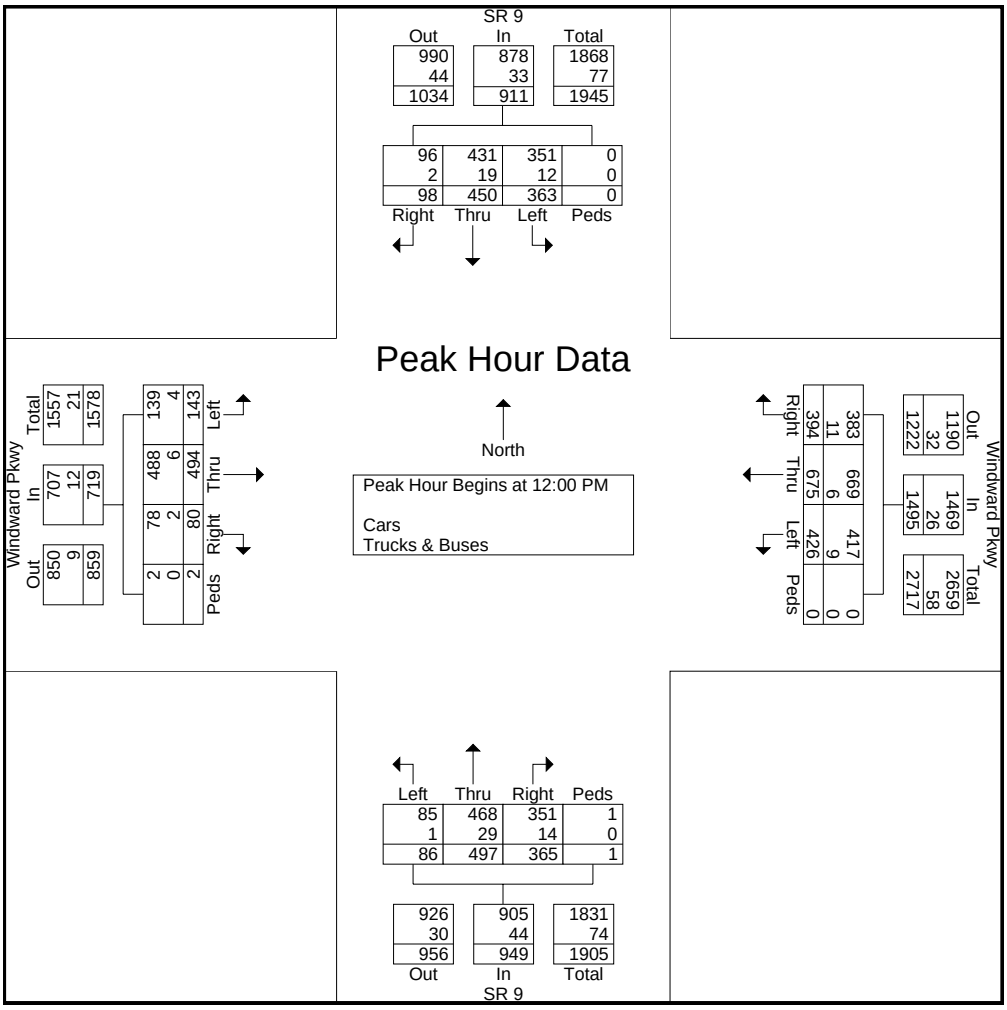
Counter: 1842/2446
Counted By: JFU/BLR
Weather: Mild
Other: LE

File Name : 08500-11
Site Code : 00850011
Start Date : 2/7/2008
Page No : 4

	SR 9 Northbound					SR 9 Southbound					Windward Pkwy Eastbound					Windward Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	24	105	80	0	209	72	101	25	0	198	40	125	18	1	184	129	164	75	0	368	959
12:15 PM	18	144	82	0	244	92	109	20	0	221	34	122	26	0	182	104	150	106	0	360	1007
12:30 PM	23	117	115	0	255	86	110	31	0	227	43	109	17	0	169	90	193	112	0	395	1046
12:45 PM	21	131	88	1	241	113	130	22	0	265	26	138	19	1	184	103	168	101	0	372	1062
Total Volume	86	497	365	1	949	363	450	98	0	911	143	494	80	2	719	426	675	394	0	1495	4074
% App. Total	9.1	52.4	38.5	0.1		39.8	49.4	10.8	0		19.9	68.7	11.1	0.3		28.5	45.2	26.4	0		
PHF	.896	.863	.793	.250	.930	.803	.865	.790	.000	.859	.831	.895	.769	.500	.977	.826	.874	.879	.000	.946	.959
Cars	85	468	351	1	905	351	431	96	0	878	139	488	78	2	707	417	669	383	0	1469	3959
% Cars	98.8	94.2	96.2	100	95.4	96.7	95.8	98.0	0	96.4	97.2	98.8	97.5	100	98.3	97.9	99.1	97.2	0	98.3	97.2
Trucks & Buses																					
% Trucks & Buses	1.2	5.8	3.8	0	4.6	3.3	4.2	2.0	0	3.6	2.8	1.2	2.5	0	1.7	2.1	0.9	2.8	0	1.7	2.8



Traffic Data Collection, Inc.

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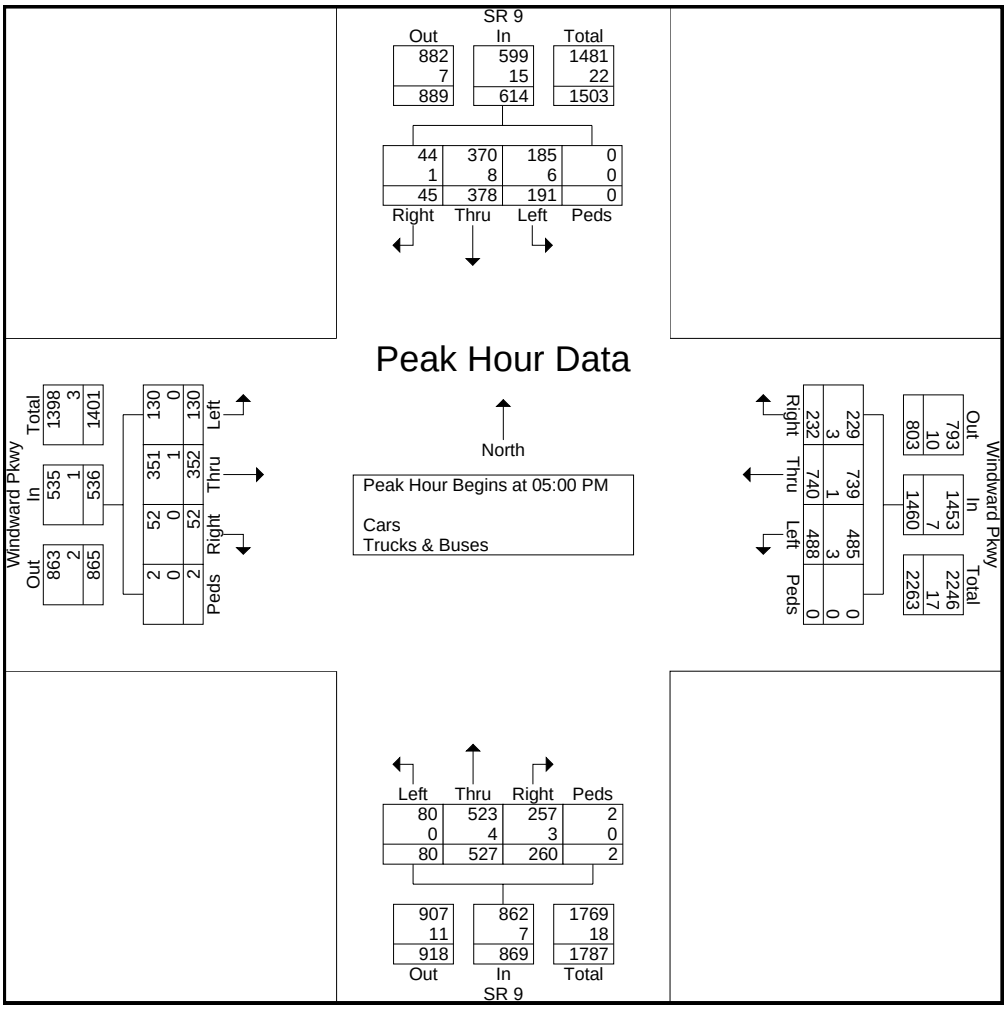
Counter: 1842/2446
Counted By: JFU/BLR
Weather: Mild
Other: LE

File Name : 08500-11
Site Code : 00850011
Start Date : 2/7/2008
Page No : 5

	SR 9 Northbound					SR 9 Southbound					Windward Pkwy Eastbound					Windward Pkwy Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	18	118	70	1	207	40	72	13	0	125	41	113	15	0	169	135	175	28	0	338	839
05:15 PM	22	139	58	0	219	51	120	10	0	181	26	62	7	0	95	139	165	71	0	375	870
05:30 PM	13	139	75	0	227	43	101	8	0	152	30	100	15	1	146	115	212	71	0	398	923
05:45 PM	27	131	57	1	216	57	85	14	0	156	33	77	15	1	126	99	188	62	0	349	847
Total Volume	80	527	260	2	869	191	378	45	0	614	130	352	52	2	536	488	740	232	0	1460	3479
% App. Total	9.2	60.6	29.9	0.2		31.1	61.6	7.3	0		24.3	65.7	9.7	0.4		33.4	50.7	15.9	0		
PHF	.741	.948	.867	.500	.957	.838	.788	.804	.000	.848	.793	.779	.867	.500	.793	.878	.873	.817	.000	.917	.942
Cars	80	523	257	2	862	185	370	44	0	599	130	351	52	2	535	485	739	229	0	1453	3449
% Cars	100	99.2	98.8	100	99.2	96.9	97.9	97.8	0	97.6	100	99.7	100	100	99.8	99.4	99.9	98.7	0	99.5	99.1
Trucks & Buses																					
% Trucks & Buses	0	0.8	1.2	0	0.8	3.1	2.1	2.2	0	2.4	0	0.3	0	0	0.2	0.6	0.1	1.3	0	0.5	0.9



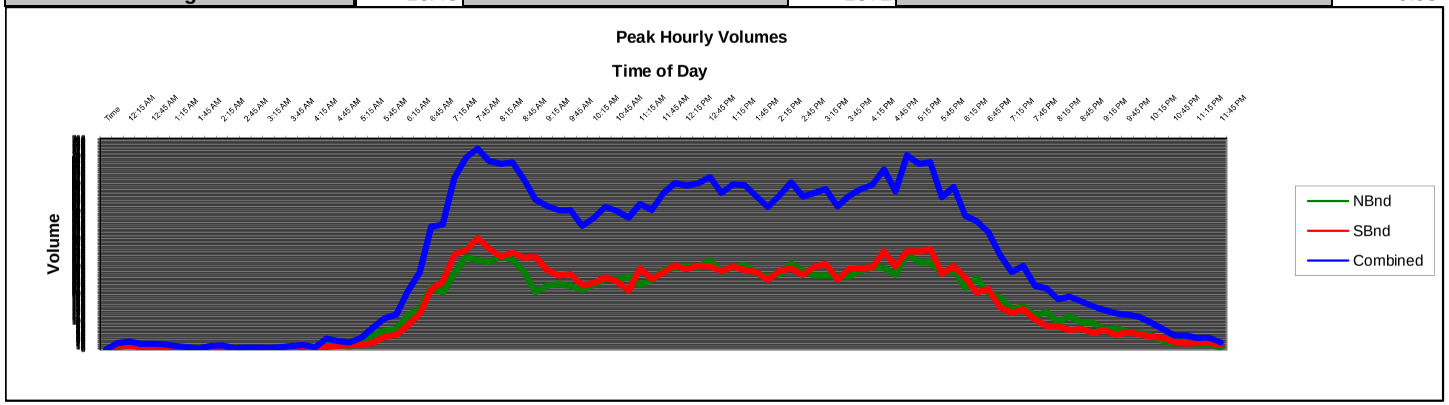
Traffic Data Collection, Inc.

7610 Ball Mill Road, NE Atlanta, GA 30350
Atlanta - Hilton Head

Ph. 770 394-5728 Fax 770 394-5729
File: 08501-A.xls

29-Jan-08	Location A1 - Northbound SR 9 north of Upper Hembree Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	8	12	5	4	10	11	74	207	318	208	216	265
30	16	8	6	2	2	25	123	276	337	233	236	235
45	7	5	2	6	30	54	149	335	327	237	256	251
00	11	2	4	6	16	67	227	324	283	232	255	289
Hr Total	42	27	17	18	58	157	573	1142	1265	910	963	1040
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	298	284	264	269	286	349	289	190	137	96	62	29
30	304	299	274	270	300	318	224	147	99	72	52	19
45	298	308	312	266	297	315	260	157	121	78	31	19
00	324	276	285	265	272	279	207	122	99	64	23	7
Hr Total	1224	1167	1135	1070	1155	1261	980	616	456	310	168	74
24 Hour Total :			15828									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			1314	**AM Peak Hour Factor :**				0.08
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1261	**PM Peak Hour Factor :**				0.08

29-Jan-08	Location A2 - Southbound SR 9 north of Upper Hembree Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	15	7	8	3	6	15	53	246	367	336	233	214
30	13	5	9	4	6	18	88	346	337	288	242	294
45	13	3	3	2	9	25	130	362	353	269	262	256
00	10	2	3	7	14	47	219	406	334	275	248	280
Hr Total	51	17	23	16	35	105	490	1360	1391	1168	985	1044
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	306	285	253	300	296	357	302	153	85	61	56	22
30	291	301	285	312	299	356	262	134	84	71	46	23
45	305	290	295	254	357	365	206	146	71	53	43	24
00	303	281	271	293	302	274	220	109	75	63	28	18
Hr Total	1205	1157	1104	1159	1254	1352	990	542	315	248	173	87
24 Hour Total :			16271									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1481	**AM Peak Hour Factor :**				0.09
PM Peak Hour Begins :			16:45	**PM Peak Volume :**			1372	**PM Peak Hour Factor :**				0.08



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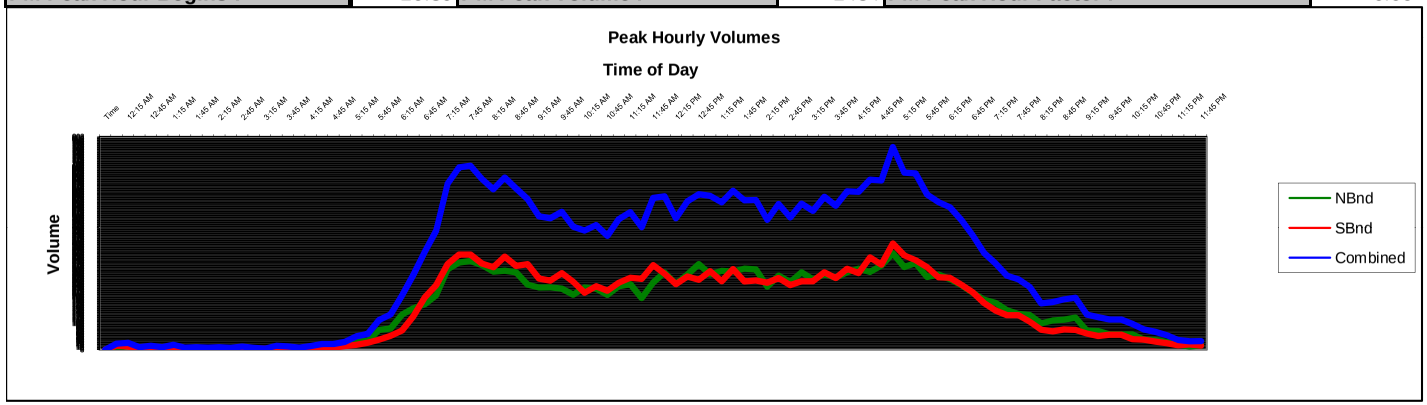
30-Jan-08	Location A1 - Northbound SR 9 north of Upper Hembree Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	7	6	5	3	5	16	81	207	321	247	209	241
30	14	9	6	1	7	32	133	305	296	236	236	249
45	6	5	6	9	13	33	157	331	300	237	232	196
00	5	8	7	3	14	75	173	337	294	232	208	255
Hr Total	32	28	24	16	39	156	544	1180	1211	952	885	941
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	294	286	305	294	294	366	285	190	132	122	58	30
30	250	299	239	267	308	314	268	178	100	72	58	20
45	285	297	281	286	295	329	245	150	111	71	39	12
00	325	308	257	274	319	276	216	136	114	58	37	17
Hr Total	1154	1190	1082	1121	1216	1285	1014	654	457	323	192	79
24 Hour Total :			15775									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1294	**AM Peak Hour Factor :**				0.08
PM Peak Hour Begins :			16:45	**PM Peak Volume :**			1328	**PM Peak Hour Factor :**				0.08

30-Jan-08	Location A2 - Southbound SR 9 north of Upper Hembree Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	16	4	3	4	3	14	53	245	327	325	258	254
30	12	10	4	3	7	19	73	325	313	270	216	273
45	4	3	1	6	9	27	127	361	353	262	241	269
00	10	2	5	10	8	38	199	361	318	291	224	321
Hr Total	42	19	13	23	27	98	452	1292	1311	1148	939	1117
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	288	298	263	260	307	403	275	177	106	75	57	25
30	249	260	254	260	291	358	273	149	76	61	40	17
45	278	306	272	294	350	340	247	131	70	52	38	20
00	265	259	245	272	323	313	218	131	77	57	31	16
Hr Total	1080	1123	1034	1086	1271	1414	1013	588	329	245	166	78
24 Hour Total :			15908									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1374	**AM Peak Hour Factor :**				0.09
PM Peak Hour Begins :			16:30	**PM Peak Volume :**			1434	**PM Peak Hour Factor :**				0.09



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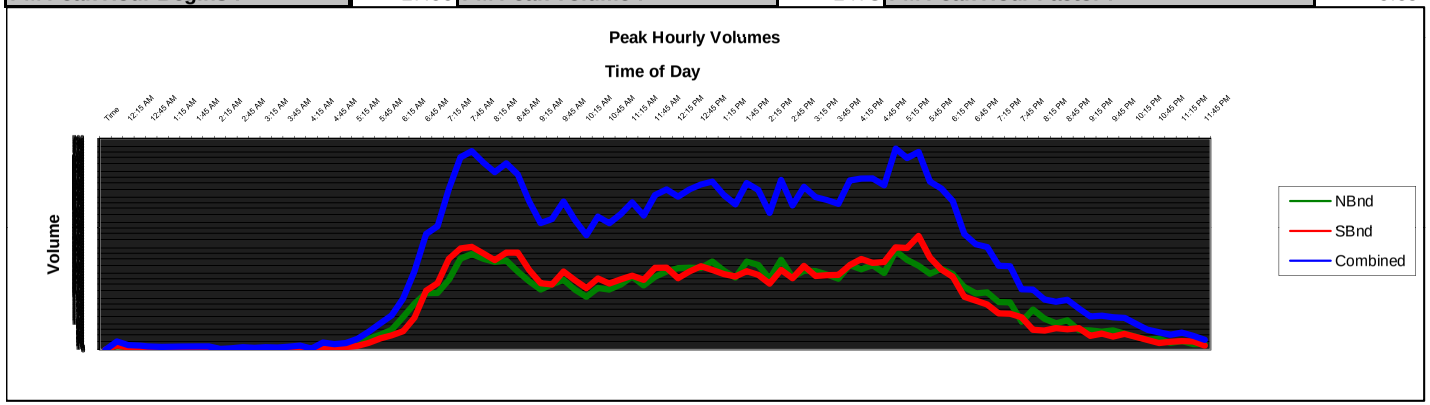
31-Jan-08	Location A1 - Northbound SR 9 north of Upper Hembree Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	13	6	9	1	5	14	72	205	328	247	217	235
30	9	5	2	5	3	25	118	253	317	217	191	264
45	10	6	3	3	16	40	167	329	322	236	223	232
00	5	7	6	5	14	54	204	345	282	252	217	263
Hr Total	37	24	20	14	38	133	561	1132	1249	952	848	994
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	282	318	306	285	305	356	292	207	145	71	58	25
30	294	285	255	284	290	324	273	172	112	70	47	31
45	296	260	324	271	305	303	226	171	95	65	37	20
00	295	318	262	256	277	274	203	101	106	70	39	21
Hr Total	1167	1181	1147	1096	1177	1257	994	651	458	276	181	97
24 Hour Total :			15684									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			1319	**AM Peak Hour Factor :**				0.08
PM Peak Hour Begins :			16:30	**PM Peak Volume :**			1262	**PM Peak Hour Factor :**				0.08

31-Jan-08	Location A2 - Southbound SR 9 north of Upper Hembree Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	17	4	3	6	10	10	52	240	347	288	251	254
30	8	6	1	4	1	14	67	328	323	240	222	267
45	5	6	2	5	10	25	116	365	350	235	257	252
00	7	5	3	6	6	41	213	371	350	282	239	295
Hr Total	37	21	9	21	27	90	448	1304	1370	1045	969	1068
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	296	288	270	302	305	369	289	163	72	78	57	29
30	258	273	238	266	327	367	263	131	69	50	46	31
45	282	264	288	269	313	410	191	130	78	58	35	30
00	301	283	258	270	316	332	177	117	74	47	24	15
Hr Total	1137	1108	1054	1107	1261	1478	920	541	293	233	162	105
24 Hour Total :			15808									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1411	**AM Peak Hour Factor :**				0.09
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1478	**PM Peak Hour Factor :**				0.09



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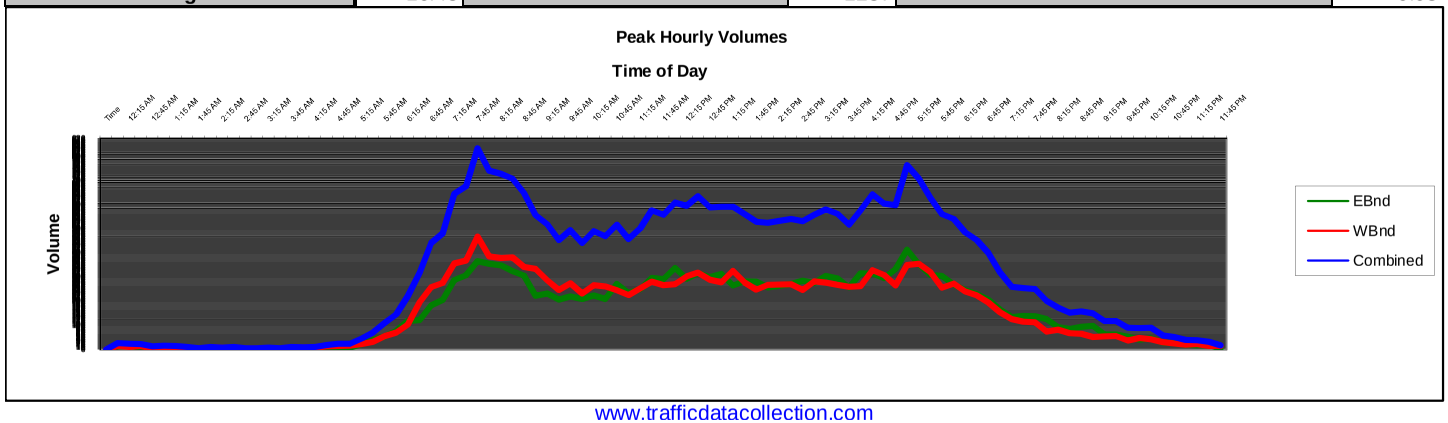
29-Jan-08	Location B1 - Eastbound SR 9 east of Wills Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	12	8	4	3	3	8	77	207	357	224	211	234
30	14	7	2	3	4	23	118	289	351	233	225	250
45	8	4	6	4	6	39	123	309	327	208	210	298
00	9	3	3	5	10	55	184	368	308	221	273	293
Hr Total	43	22	15	15	23	125	502	1173	1343	886	919	1075
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	340	315	258	277	317	416	270	165	127	99	41	20
30	295	267	265	306	316	354	246	134	93	63	47	17
45	319	284	273	296	297	310	231	140	85	62	29	18
00	301	282	286	259	335	307	206	139	94	53	27	3
Hr Total	1255	1148	1082	1138	1265	1387	953	578	399	277	144	58
24 Hour Total :			15825									
AM Peak Hour Begins :			07:45	**AM Peak Volume :**			1403	**AM Peak Hour Factor :**				0.09
PM Peak Hour Begins :			16:45	**PM Peak Volume :**			1415	**PM Peak Hour Factor :**				0.09

29-Jan-08	Location B2 - Westbound SR 9 east of Wills Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	14	8	7	2	6	16	70	277	388	336	233	226
30	10	8	6	5	6	22	104	358	381	288	268	254
45	14	6	5	1	13	32	197	370	384	247	262	282
00	4	2	2	6	14	56	259	470	344	276	246	268
Hr Total	42	24	20	14	39	126	630	1475	1497	1147	1009	1030
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	272	279	269	284	263	351	274	155	75	52	48	20
30	303	327	270	278	330	357	241	127	82	55	43	22
45	319	279	271	269	310	322	225	116	68	56	30	14
00	290	249	248	261	266	257	196	113	65	37	25	14
Hr Total	1184	1134	1058	1092	1169	1287	936	511	290	200	146	70
24 Hour Total :			16130									
AM Peak Hour Begins :			07:45	**AM Peak Volume :**			1623	**AM Peak Hour Factor :**				0.10
PM Peak Hour Begins :			16:45	**PM Peak Volume :**			1287	**PM Peak Hour Factor :**				0.08



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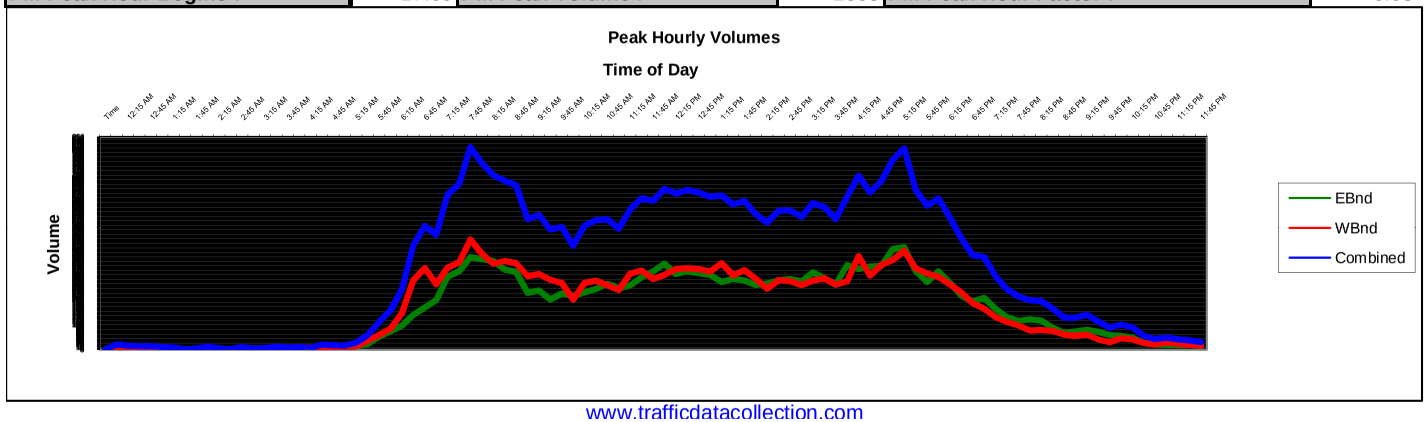
30-Jan-08	Location B1 - Eastbound SR 9 east of Wills Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	9	4	7	5	3	5	74	199	364	229	217	246
30	5	5	2	2	0	15	97	294	357	238	230	259
45	7	0	2	6	12	23	140	315	322	202	244	291
00	6	2	3	1	8	52	170	372	313	226	265	315
Hr Total	27	11	14	14	23	95	481	1180	1356	895	956	1111
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	346	301	260	274	340	404	315	208	122	73	55	20
30	304	272	266	311	324	412	269	164	117	80	48	18
45	315	285	279	287	334	317	218	131	89	72	28	19
00	308	278	284	263	337	272	193	116	68	59	21	15
Hr Total	1273	1136	1089	1135	1335	1405	995	619	396	284	152	72
24 Hour Total :			16054									
AM Peak Hour Begins :			08:30	**AM Peak Volume :**			1415	**AM Peak Hour Factor :**				0.09
PM Peak Hour Begins :			16:30	**PM Peak Volume :**			1487	**PM Peak Hour Factor :**				0.09

30-Jan-08	Location B2 - Westbound SR 9 east of Wills Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	13	7	6	0	8	12	85	263	386	296	201	240
30	11	4	3	5	7	14	147	330	345	304	269	306
45	7	2	0	6	9	36	280	351	357	281	277	318
00	8	3	8	8	10	59	328	443	348	268	259	284
Hr Total	39	16	17	19	34	121	840	1387	1436	1149	1006	1148
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	301	314	285	260	275	361	293	165	77	56	46	29
30	324	348	245	278	376	398	263	131	79	61	42	24
45	327	299	280	287	298	327	230	112	76	41	27	19
00	324	320	276	262	341	307	187	98	61	30	22	16
Hr Total	1276	1281	1086	1087	1290	1393	973	506	293	188	137	88
24 Hour Total :			16810									
AM Peak Hour Begins :			07:45	**AM Peak Volume :**			1531	**AM Peak Hour Factor :**				0.09
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1398	**PM Peak Hour Factor :**				0.08



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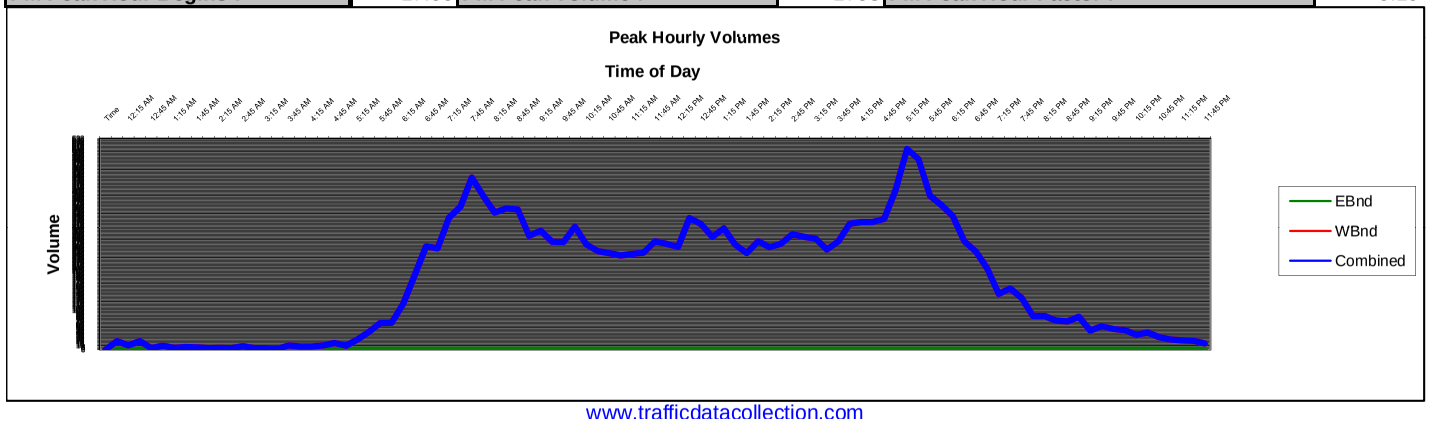
* Note: Data in red denotes tube failure.

31-Jan-08	Location B1 - Eastbound SR 9 east of Wills Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0
00	0	0	0	0	0	0	0	0	0	0	0	0
Hr Total	0	0	0	0	0	0	0	0	0	0	0	0
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
45	0	0	0	0	0	0	0	0	0	0	0	0
00	0	0	0	0	0	0	0	0	0	0	0	0
Hr Total	0	0	0	0	0	0	0	0	0	0	0	0
24 Hour Total :			0									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			0	**AM Peak Hour Factor :**				
PM Peak Hour Begins :			17:15	**PM Peak Volume :**			0	**PM Peak Hour Factor :**				

31-Jan-08	Location B2 - Westbound SR 9 east of Wills Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	22	10	4	4	8	10	69	258	391	290	313	240
30	11	5	5	4	8	26	117	336	349	303	268	244
45	22	7	4	2	11	45	189	364	360	275	251	247
00	4	6	9	11	17	68	263	438	357	274	246	276
Hr Total	59	28	22	21	44	149	638	1396	1457	1142	1078	1007
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	269	287	276	287	321	407	368	207	86	84	50	26
30	262	309	261	283	325	511	340	142	86	49	38	24
45	335	267	270	255	325	485	276	156	74	60	44	23
00	320	246	294	276	333	392	250	132	72	53	32	16
Hr Total	1186	1109	1101	1101	1304	1795	1234	637	318	246	164	89
24 Hour Total :			17325									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			1542	**AM Peak Hour Factor :**				0.09
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1795	**PM Peak Hour Factor :**				0.10



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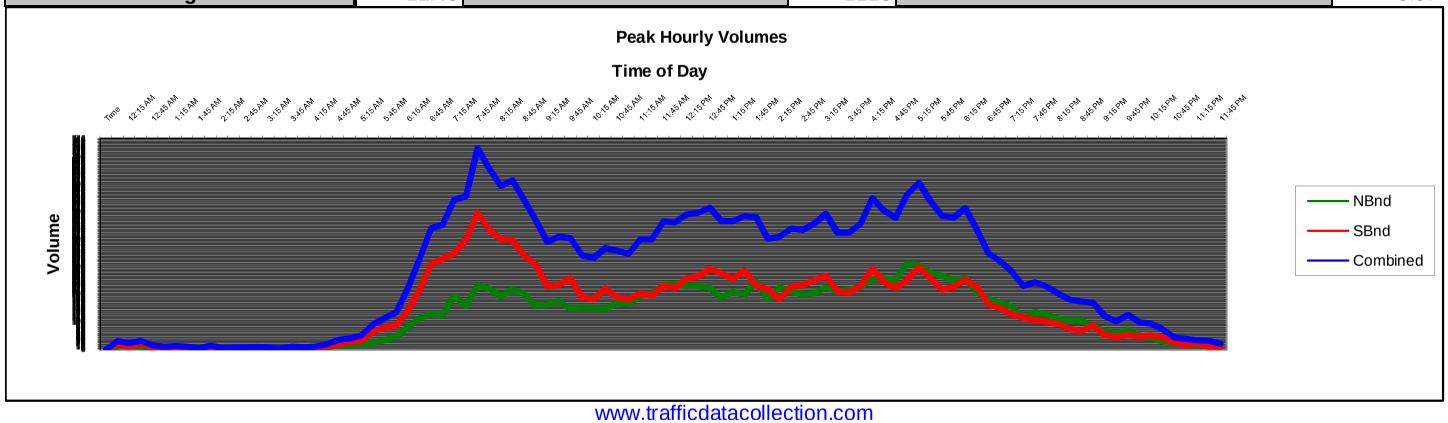
29-Jan-08	Location C1 - Northbound SR 9 south of Academy St - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	12	5	5	7	4	14	46	124	223	162	153	165
30	12	7	2	4	4	20	82	196	194	163	151	197
45	11	4	3	3	7	26	115	159	219	177	148	206
00	7	2	5	3	16	34	131	236	204	148	171	235
Hr Total	42	18	15	17	31	94	374	715	840	650	623	803
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	240	190	184	205	227	314	254	171	128	83	51	21
30	233	211	227	227	258	309	262	157	112	69	43	13
45	232	200	213	214	260	281	208	116	107	57	30	20
00	225	250	202	219	256	269	186	137	107	73	20	10
Hr Total	930	851	826	865	1001	1173	910	581	454	282	144	64
24 Hour Total :			12303									
AM Peak Hour Begins :			07:45	**AM Peak Volume :**			872	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1173	**PM Peak Hour Factor :**				0.10

29-Jan-08	Location C2 - Southbound SR 9 south of Academy St - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	18	6	9	2	4	27	89	332	438	311	191	184
30	11	6	4	4	7	31	141	351	403	230	183	205
45	21	6	4	1	12	65	217	401	399	236	223	196
00	8	3	3	7	19	81	312	499	343	259	190	232
Hr Total	58	21	20	14	42	204	759	1583	1583	1036	787	817
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	224	278	220	254	232	252	228	151	102	88	48	18
30	260	258	184	269	295	300	255	128	93	54	52	21
45	267	287	229	213	247	261	230	117	75	46	44	11
00	293	233	235	207	224	219	166	108	68	53	24	11
Hr Total	1044	1056	868	943	998	1032	879	504	338	241	168	61
24 Hour Total :			15056									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			1741	**AM Peak Hour Factor :**				0.12
PM Peak Hour Begins :			12:45	**PM Peak Volume :**			1116	**PM Peak Hour Factor :**				0.07



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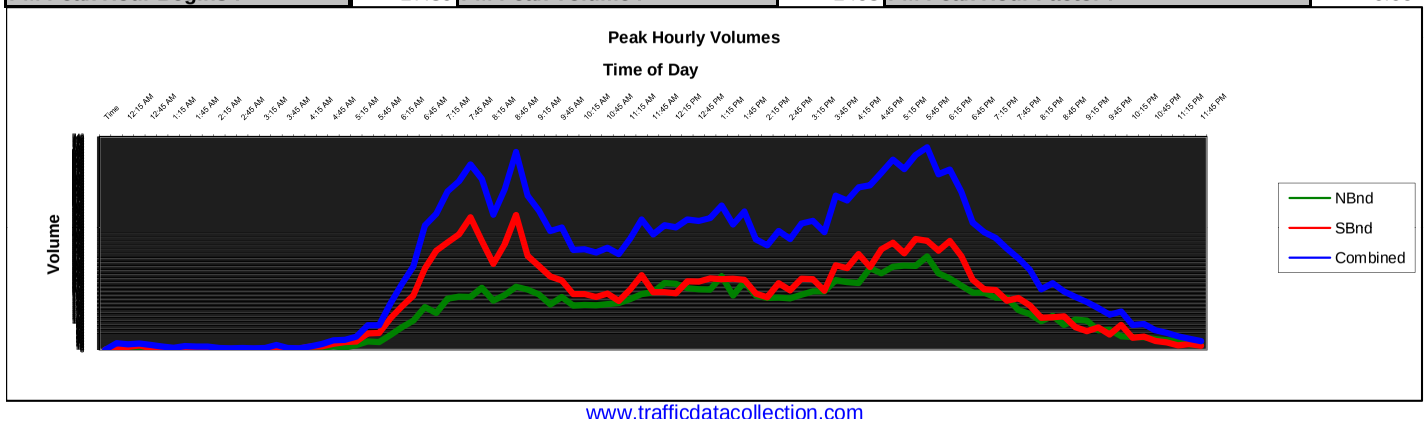
30-Jan-08	Location C1 - Northbound SR 9 south of Academy St - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	15	6	4	2	1	8	52	129	217	211	155	164
30	9	3	3	3	1	17	79	179	172	194	157	178
45	7	8	2	11	8	29	102	186	192	159	156	195
00	12	7	4	1	12	27	150	185	221	185	160	202
Hr Total	43	24	13	17	22	81	383	679	802	749	628	739
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	234	211	190	193	237	291	268	200	125	106	47	33
30	231	258	182	205	234	295	250	183	100	102	45	32
45	216	190	183	205	286	294	225	182	119	68	44	18
00	212	239	180	244	268	327	200	139	87	70	37	16
Hr Total	893	898	735	847	1025	1207	943	704	431	346	173	99
24 Hour Total :			12481									
AM Peak Hour Begins :			08:30	**AM Peak Volume :**			818	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1207	**PM Peak Hour Factor :**				0.10

30-Jan-08	Location C2 - Southbound SR 9 south of Academy St - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	8	5	7	3	4	27	111	347	381	329	195	171
30	10	4	3	3	11	29	152	376	301	293	195	212
45	15	5	3	6	12	57	190	405	370	257	185	261
00	5	4	2	5	21	59	285	464	472	243	197	202
Hr Total	38	18	15	17	48	172	738	1592	1524	1122	772	846
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	202	250	197	249	286	375	347	212	155	79	87	26
30	198	247	184	247	335	338	381	209	112	65	42	15
45	240	249	233	207	290	388	328	172	114	78	46	20
00	239	245	208	296	352	382	245	181	117	53	31	14
Hr Total	879	991	822	999	1263	1483	1301	774	498	275	206	75
24 Hour Total :			16468									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1626	**AM Peak Hour Factor :**				0.10
PM Peak Hour Begins :			17:30	**PM Peak Volume :**			1498	**PM Peak Hour Factor :**				0.09



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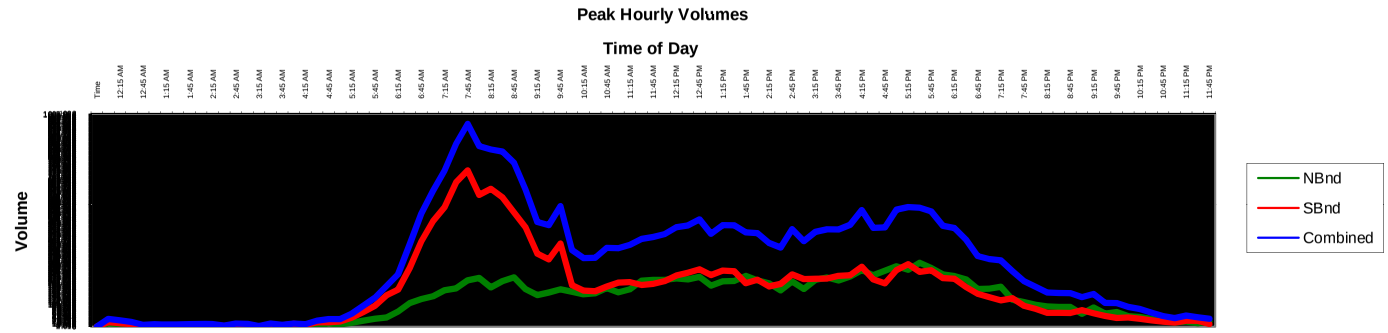
31-Jan-08	Location C1 - Northbound SR 9 south of Academy St - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	15	6	4	6	1	11	44	144	231	178	166	163
30	13	5	7	2	3	19	72	173	186	150	154	177
45	11	7	2	6	8	29	112	182	216	162	158	218
00	3	8	4	3	15	38	131	220	234	177	183	222
Hr Total	42	26	17	17	27	97	359	719	867	667	661	780
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	222	195	220	179	238	286	248	180	104	61	50	21
30	229	215	206	222	268	270	240	189	96	91	46	24
45	224	217	172	233	244	303	224	128	94	62	37	17
00	236	241	214	219	265	279	179	117	94	70	27	25
Hr Total	911	868	812	853	1015	1138	891	614	388	284	160	87
24 Hour Total :			12300									
AM Peak Hour Begins :			08:00	**AM Peak Volume :**			867	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1138	**PM Peak Hour Factor :**				0.09

31-Jan-08	Location C2 - Southbound SR 9 south of Academy St - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	22	6	9	8	14	25	149	499	624	470	197	209
30	17	6	6	1	9	43	176	565	653	346	171	211
45	12	3	3	9	21	70	279	684	613	319	168	198
00	6	6	11	6	21	99	404	740	541	394	190	203
Hr Total	57	21	29	24	65	237	1008	2488	2431	1529	726	821
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	216	245	223	226	244	268	230	140	85	79	44	20
30	242	266	191	227	284	296	227	125	66	64	38	29
45	255	263	203	228	224	260	188	135	66	51	30	28
00	272	206	248	241	205	267	156	99	65	42	24	13
Hr Total	985	980	865	922	957	1091	801	499	282	236	136	90
24 Hour Total :			17280									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			2701	**AM Peak Hour Factor :**				0.16
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1091	**PM Peak Hour Factor :**				0.06



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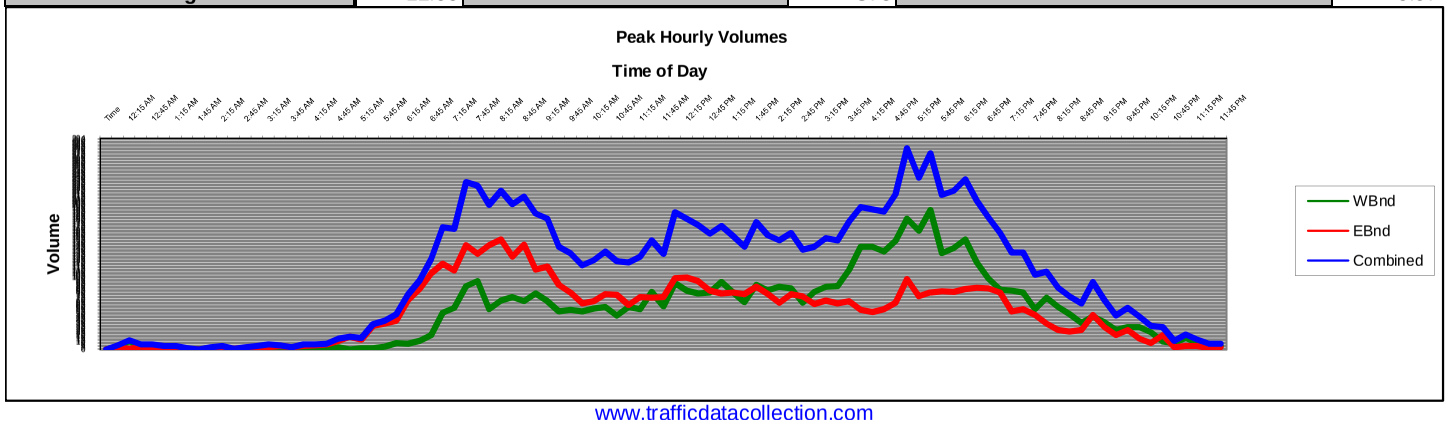
29-Jan-08	Location D1 - Westbound Milton Ave St west of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	3	3	2	2	2	0	9	51	56	78	53	59
30	12	3	3	4	1	2	8	58	68	67	57	56
45	3	1	0	1	1	2	12	88	73	53	59	80
00	5	0	1	0	3	4	20	95	67	55	47	60
Hr Total	23	7	6	7	7	8	49	292	264	253	216	255
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	92	94	82	80	143	182	141	83	72	46	31	16
30	82	79	87	87	143	165	153	82	59	38	24	9
45	78	66	85	88	136	194	121	79	49	27	11	6
00	79	90	65	111	151	134	99	56	37	31	9	5
Hr Total	331	329	319	366	573	675	514	300	217	142	75	36
24 Hour Total :			5264									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			307	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			16:45	**PM Peak Volume :**			692	**PM Peak Hour Factor :**				0.13

29-Jan-08	Location D2 - Eastbound Milton Ave St west of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	3	2	1	3	5	18	40	119	145	111	64	62
30	1	2	2	3	6	14	68	110	153	115	67	73
45	4	1	1	5	7	33	84	145	129	90	77	72
00	2	0	2	3	12	36	106	133	146	79	76	73
Hr Total	10	5	6	14	30	101	298	507	573	395	284	280
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	99	78	77	63	55	98	80	79	36	48	15	5
30	100	79	65	68	52	74	84	53	27	31	9	5
45	95	77	77	64	56	79	86	56	25	20	20	2
00	82	87	74	67	65	81	85	48	27	27	3	3
Hr Total	376	321	293	262	228	332	335	236	115	126	47	15
24 Hour Total :			5189									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			576	**AM Peak Hour Factor :**				0.11
PM Peak Hour Begins :			12:00	**PM Peak Volume :**			376	**PM Peak Hour Factor :**				0.07



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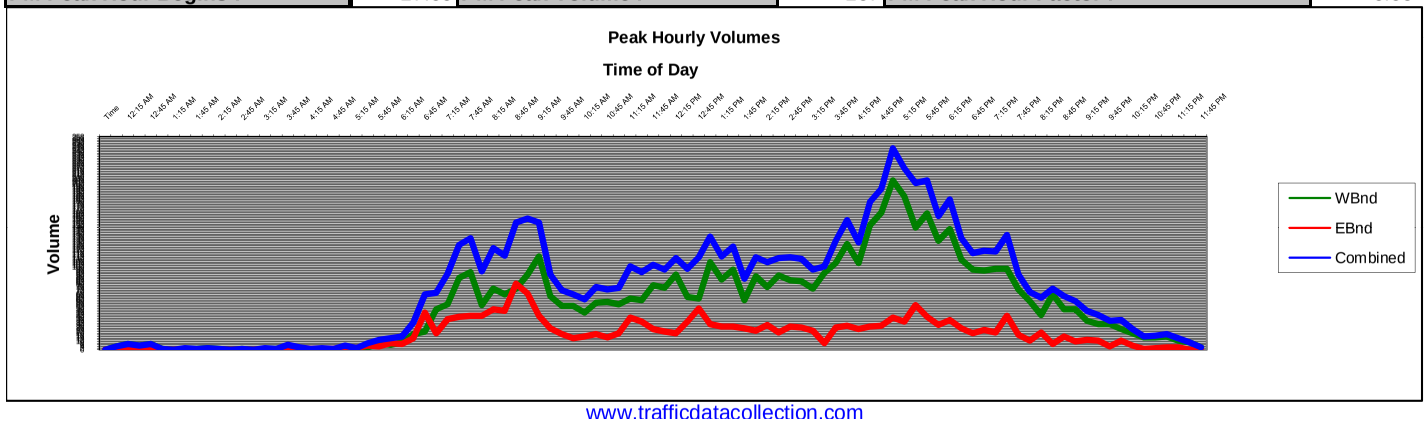
*Note: Tube failure in outside (right-hand) lane occurred during this time period - inside lane counting correctly.

30-Jan-08	Location D1 - Westbound Milton Ave St west of SR 9 - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	4	1	2	0	1	2	6	49	54	91	53	55
30	7	0	1	1	0	0	9	55	74	113	45	62
45	5	1	0	1	1	3	19	87	67	65	57	60
00	7	1	1	3	0	8	22	94	74	53	58	78
Hr Total	23	3	4	5	2	13	56	285	269	322	213	255
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	75	106	89	83	128	205	132	96	59	49	25	16
30	91	85	76	74	105	186	146	98	42	35	20	11
45	64	97	90	93	151	148	109	98	67	31	15	9
00	62	60	84	105	166	165	97	73	49	31	15	3
Hr Total	292	348	339	355	550	704	484	365	217	146	75	39
24 Hour Total :			5364									
AM Peak Hour Begins :			08:30	**AM Peak Volume :**			345	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			16:30	**PM Peak Volume :**			708	**PM Peak Hour Factor :**				0.13

30-Jan-08	Location E2 - Eastbound Academy St east of SR 9 - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	0	0	0	0	2	3	8	20	41	68	14	20
30	0	0	0	1	1	2	7	37	49	41	16	39
45	0	1	0	0	1	5	14	40	47	26	19	34
00	0	0	0	3	1	4	45	41	80	19	15	25
Hr Total	0	1	0	4	5	14	74	138	217	154	64	118
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	22	31	23	27	29	39	30	24	11	10	11	3
30	20	28	30	23	25	34	36	21	21	12	5	3
45	34	28	21	8	28	54	26	41	7	11	1	0
00	50	26	28	27	29	40	20	18	16	4	2	0
Hr Total	126	113	102	85	111	167	112	104	55	37	19	6
24 Hour Total :			1826									
AM Peak Hour Begins :			08:15	**AM Peak Volume :**			244	**AM Peak Hour Factor :**				0.13
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			167	**PM Peak Hour Factor :**				0.09



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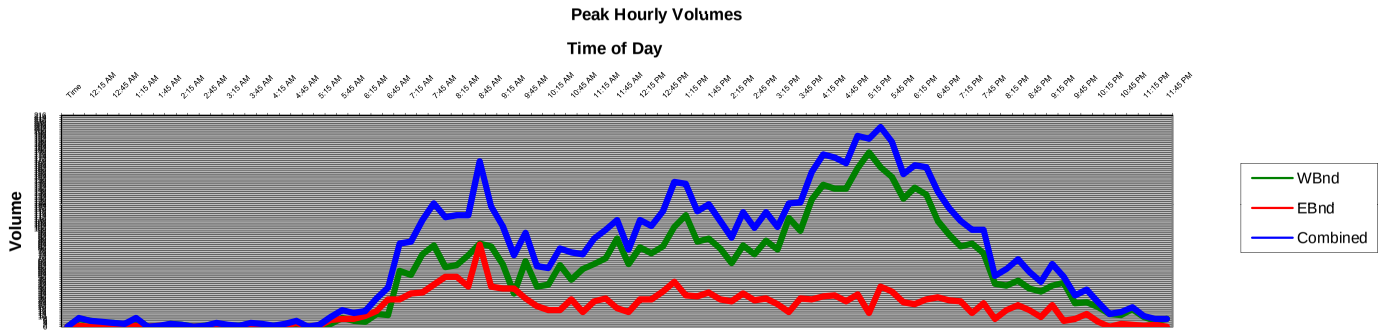
*Note: Tube failure in outside (right-hand) lane occurred during this time period - inside lane counting correctly.

31-Jan-08	Location D1 - Westbound Milton Ave St west of SR 9 - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	8	2	3	3	1	0	6	57	61	82	41	59
30	6	8	2	1	1	1	5	53	63	64	43	64
45	4	0	0	1	2	3	13	74	73	34	63	70
00	4	0	1	3	2	9	12	83	85	67	48	90
Hr Total	22	10	6	8	6	13	36	267	282	247	195	283
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	64	102	80	88	130	162	131	94	44	36	25	18
30	81	114	65	79	145	178	142	82	42	42	20	10
45	75	87	83	111	141	163	135	85	47	45	13	6
00	82	90	74	98	141	153	108	75	39	24	12	8
Hr Total	302	393	302	376	557	656	516	336	172	147	70	42
24 Hour Total :			5244									
AM Peak Hour Begins :			08:30	**AM Peak Volume :**			304	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			656	**PM Peak Hour Factor :**				0.13

31-Jan-08	Location E2 - Eastbound Academy St east of SR 9 - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	1	1	0	1	2	0	8	28	51	41	21	15
30	0	1	0	1	0	1	11	34	51	39	17	26
45	1	0	0	0	1	7	16	35	41	39	17	29
00	0	1	0	1	4	8	28	43	84	29	28	19
Hr Total	2	3	0	3	7	16	63	140	227	148	83	89
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	15	46	28	29	28	33	25	27	8	10	13	2
30	28	32	26	23	31	14	23	26	17	22	5	1
45	28	31	34	15	32	41	28	14	22	6	0	2
00	36	35	27	29	26	36	30	24	17	8	3	0
Hr Total	107	144	115	96	117	124	106	91	64	46	21	5
24 Hour Total :			1817									
AM Peak Hour Begins :			08:00	**AM Peak Volume :**			227	**AM Peak Hour Factor :**				0.12
PM Peak Hour Begins :			12:45	**PM Peak Volume :**			145	**PM Peak Hour Factor :**				0.08



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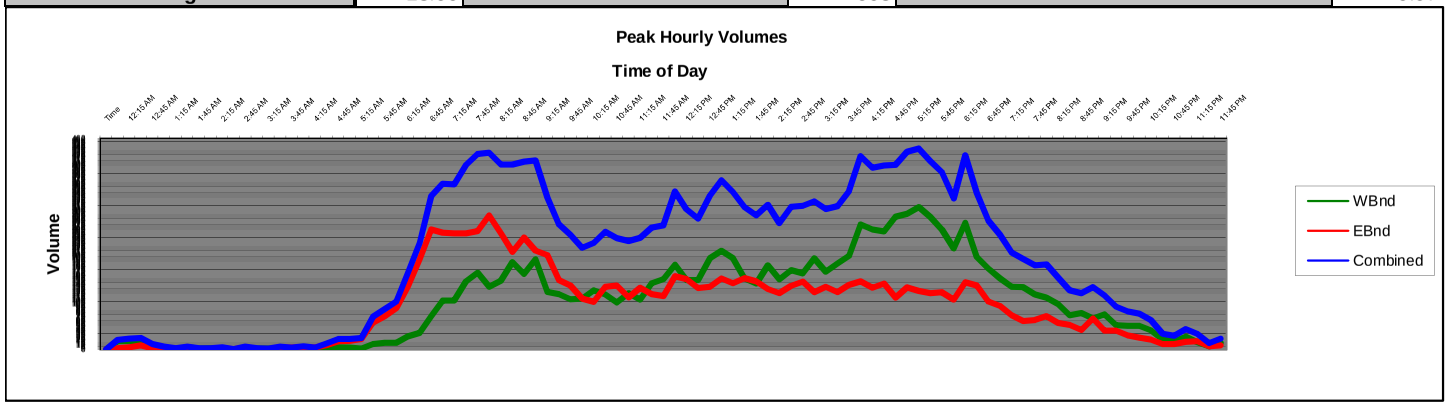
5-Feb-08	Location E1 - Westbound Academy St east of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	18	3	3	2	2	4	15	107	137	197	111	123
30	19	1	2	2	0	2	29	107	150	126	129	109
45	16	5	0	2	3	12	36	149	191	121	120	145
00	9	2	2	0	5	15	73	168	165	110	103	154
Hr Total	62	11	7	6	10	33	153	531	643	554	463	531
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	185	215	184	199	273	296	221	155	113	68	52	28
30	152	199	153	170	262	311	277	137	99	77	42	16
45	152	155	173	188	258	289	202	136	75	53	22	7
00	199	144	166	205	290	262	177	120	80	52	18	15
Hr Total	688	713	676	762	1083	1158	877	548	367	250	134	66
24 Hour Total :			10326									
AM Peak Hour Begins :			08:15	**AM Peak Volume :**			703	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			16:45	**PM Peak Volume :**			1186	**PM Peak Hour Factor :**				0.11

5-Feb-08	Location E2 - Eastbound Academy St east of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	3	3	0	1	5	19	90	255	293	216	111	114
30	5	2	3	0	4	23	138	254	254	206	104	135
45	9	1	1	4	10	59	197	254	213	152	137	121
00	3	1	4	4	18	73	262	259	245	140	140	117
Hr Total	20	7	8	9	37	174	687	1022	1005	714	492	487
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	160	155	132	125	149	136	109	95	73	68	26	17
30	154	145	123	137	135	128	147	75	58	41	22	18
45	134	156	139	125	144	123	140	62	54	41	12	7
00	137	149	148	141	113	125	105	64	43	31	12	9
Hr Total	585	605	542	528	541	512	501	296	228	181	72	51
24 Hour Total :			9304									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1060	**AM Peak Hour Factor :**				0.11
PM Peak Hour Begins :			13:00	**PM Peak Volume :**			605	**PM Peak Hour Factor :**				0.07



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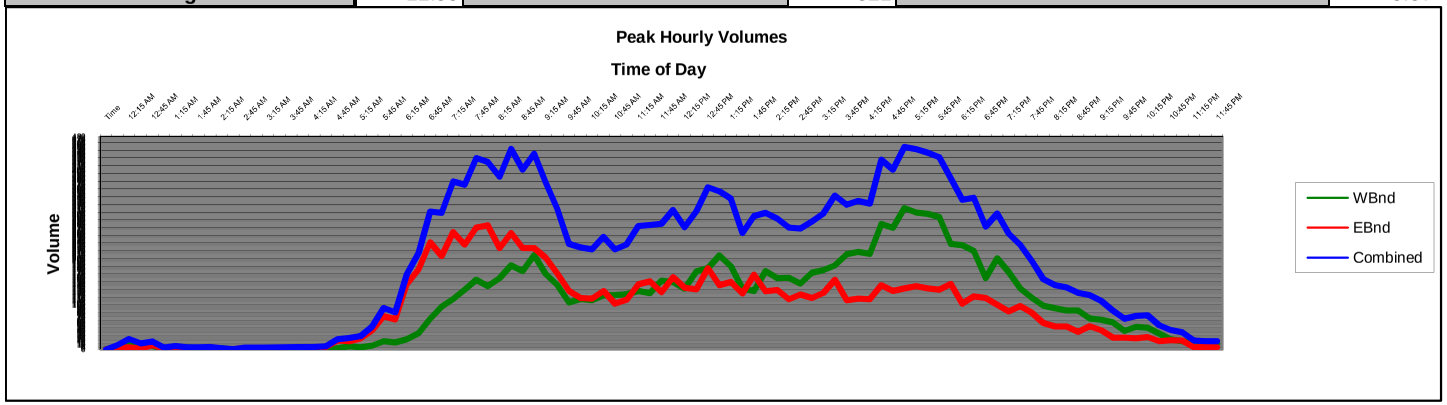
6-Feb-08		Location E1 - Westbound Academy St east of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	6	2	2	2	0	7	16	97	143	213	114	125
30	19	6	3	2	1	5	23	114	161	170	111	132
45	12	5	0	2	1	9	37	135	190	146	122	127
00	8	3	1	3	3	19	69	157	177	106	123	155
Hr Total	45	16	6	9	5	40	145	503	671	635	470	539
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	152	212	177	173	220	319	238	206	99	70	51	19
30	137	188	161	179	216	309	235	175	93	67	49	15
45	176	137	162	190	283	306	222	138	88	61	36	13
00	183	132	149	215	274	299	161	117	88	42	23	14
Hr Total	648	669	649	757	993	1233	856	636	368	240	159	61
24 Hour Total :			10353									
AM Peak Hour Begins :			08:30	**AM Peak Volume :**			750	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1233	**PM Peak Hour Factor :**				0.12

6-Feb-08		Location E2 - Eastbound Academy St east of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	4	2	4	2	5	19	68	211	280	229	116	112
30	5	2	0	2	5	25	147	265	229	207	115	147
45	2	0	1	3	6	43	181	237	263	172	132	154
00	10	2	3	3	20	75	242	275	229	132	103	129
Hr Total	21	6	8	10	36	162	638	988	1001	740	466	542
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	163	145	131	116	115	138	148	101	60	53	25	20
30	139	152	134	128	113	143	103	86	52	43	28	5
45	136	126	113	157	145	138	120	98	52	27	19	6
00	183	169	124	111	132	135	116	83	40	27	21	5
Hr Total	621	592	502	512	505	554	487	368	204	150	93	36
24 Hour Total :			9242									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1057	**AM Peak Hour Factor :**				0.11
PM Peak Hour Begins :			12:00	**PM Peak Volume :**			621	**PM Peak Hour Factor :**				0.07



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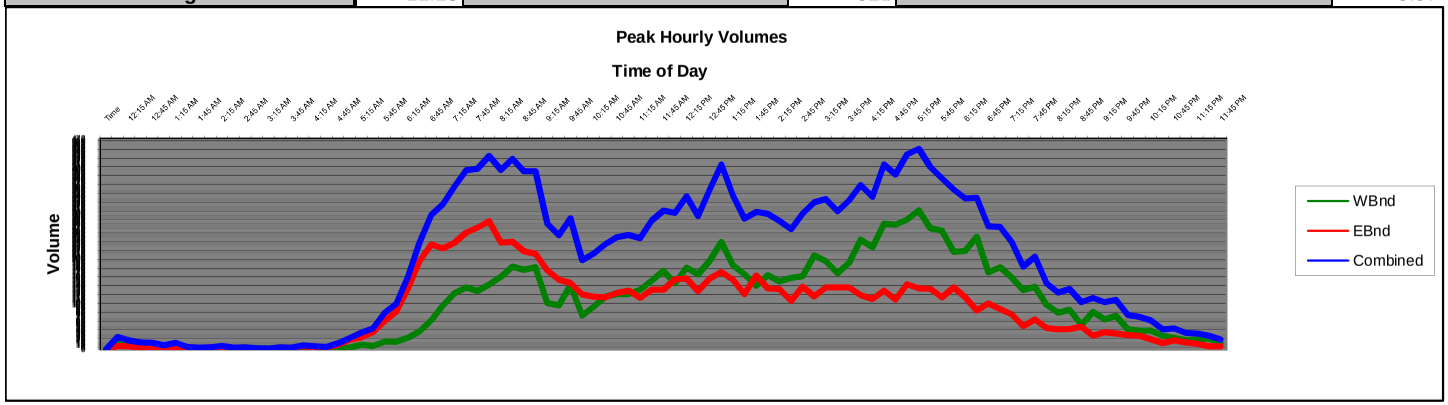
7-Feb-08	Location E1 - Westbound Academy St east of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	20	5	1	2	1	4	17	98	145	184	76	124
30	13	12	2	2	4	11	26	125	162	104	96	134
45	13	3	1	1	2	8	41	139	185	99	118	154
00	11	3	4	2	3	18	65	131	178	144	124	176
Hr Total	57	23	8	7	10	41	149	493	670	531	414	588
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	148	240	166	210	245	290	218	184	100	84	42	21
30	183	188	152	197	228	311	220	161	82	67	42	23
45	168	168	160	170	281	271	252	133	89	75	31	24
00	199	142	164	194	279	265	172	140	55	45	26	15
Hr Total	698	738	642	771	1033	1137	862	618	326	271	141	83
24 Hour Total :			10311									
AM Peak Hour Begins :			08:15	**AM Peak Volume :**			709	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			16:30	**PM Peak Volume :**			1161	**PM Peak Hour Factor :**				0.11

7-Feb-08	Location E2 - Eastbound Academy St east of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	8	4	4	1	8	22	85	226	287	214	123	132
30	7	3	6	0	3	27	136	238	239	177	118	115
45	3	3	3	4	4	39	198	261	241	156	117	134
00	4	1	1	2	11	64	235	273	220	149	127	134
Hr Total	22	11	14	7	26	152	654	998	987	696	485	515
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	157	173	137	119	122	146	139	90	48	31	31	16
30	159	156	135	139	113	137	117	79	45	39	23	13
45	130	124	109	139	132	136	87	52	46	36	14	7
00	159	165	140	139	112	117	103	67	51	32	21	7
Hr Total	605	618	521	536	479	536	446	288	190	138	89	43
24 Hour Total :			9056									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			1060	**AM Peak Hour Factor :**				0.12
PM Peak Hour Begins :			12:15	**PM Peak Volume :**			621	**PM Peak Hour Factor :**				0.07



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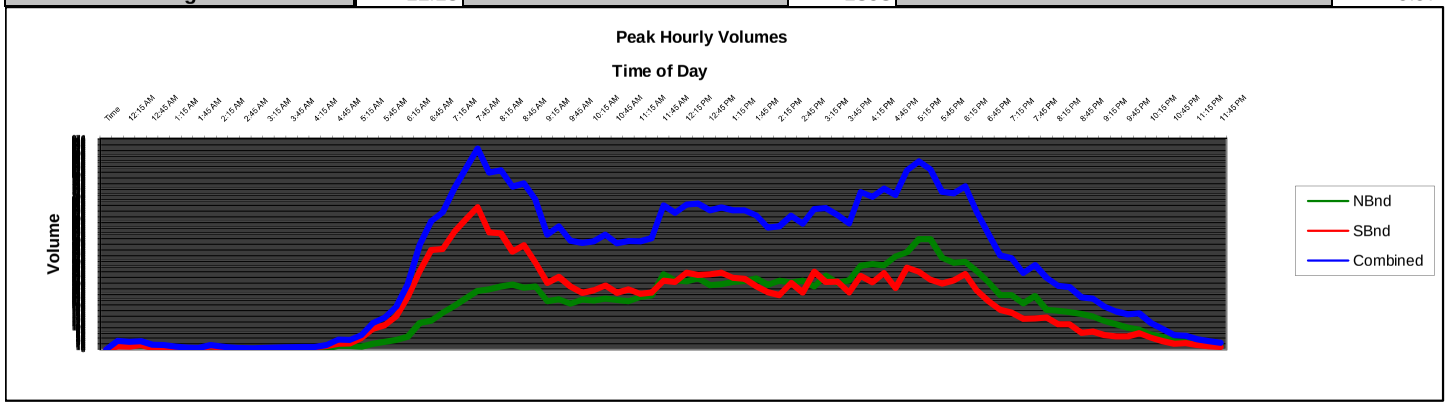
29-Jan-08	Location A1 - Northbound SR 9 north of Milton Ave - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	25	10	6	6	6	16	44	170	277	291	230	223
30	22	8	7	5	2	14	59	201	291	223	225	242
45	18	5	3	5	4	27	122	236	299	232	235	250
00	15	4	4	4	18	36	133	270	285	211	229	346
Hr Total	80	27	20	20	30	93	358	877	1152	957	919	1061
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	319	301	298	290	386	449	400	251	183	152	92	34
30	314	311	317	341	394	509	404	251	178	132	69	26
45	329	315	309	307	388	509	361	212	172	116	57	24
00	296	328	317	319	429	423	312	247	164	101	39	19
Hr Total	1258	1255	1241	1257	1597	1890	1477	961	697	501	257	103
24 Hour Total :			18088									
AM Peak Hour Begins :			08:15	**AM Peak Volume :**			1166	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			16:45	**PM Peak Volume :**			1896	**PM Peak Hour Factor :**				0.10

29-Jan-08	Location A2 - Southbound SR 9 north of Milton Ave - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	15	11	15	0	6	28	153	463	539	399	261	277
30	13	5	7	3	10	53	243	541	535	306	273	256
45	21	4	5	5	16	96	360	600	451	335	295	263
00	7	3	4	6	27	112	458	656	480	290	261	317
Hr Total	56	23	31	14	59	289	1214	2260	2005	1330	1090	1113
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	311	354	264	358	339	377	319	183	148	83	75	29
30	354	330	251	311	310	358	348	169	116	66	54	21
45	344	326	307	313	353	321	271	141	116	60	38	15
00	346	290	262	262	283	304	222	143	76	61	27	12
Hr Total	1355	1300	1084	1244	1285	1360	1160	636	456	270	194	77
24 Hour Total :			19905									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			2336	**AM Peak Hour Factor :**				0.12
PM Peak Hour Begins :			12:15	**PM Peak Volume :**			1398	**PM Peak Hour Factor :**				0.07



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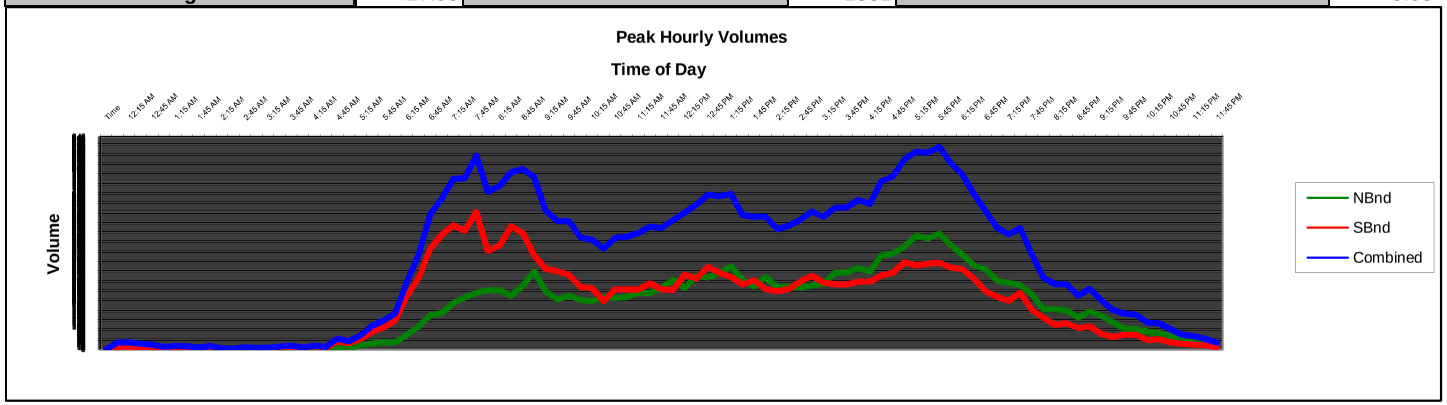
30-Jan-08		Location A1 - Northbound SR 9 north of Milton Ave - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	20	4	7	4	2	8	31	161	264	348	221	234
30	19	11	2	4	2	19	64	207	264	259	215	252
45	13	11	2	9	5	27	103	233	240	223	233	251
00	14	6	4	7	13	32	153	252	284	240	230	273
Hr Total	66	32	15	24	22	86	351	853	1052	1070	899	1010
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	311	340	322	285	363	458	464	307	180	169	90	39
30	274	370	277	294	346	506	422	296	180	150	79	39
45	328	308	281	340	419	494	375	287	174	121	72	29
00	321	281	277	343	428	516	356	246	143	93	59	20
Hr Total	1234	1299	1157	1262	1556	1974	1617	1136	677	533	300	127
24 Hour Total :			18352									
AM Peak Hour Begins :			08:15	**AM Peak Volume :**			1136	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			17:15	**PM Peak Volume :**			1980	**PM Peak Hour Factor :**				0.11

30-Jan-08		Location A2 - Southbound SR 9 north of Milton Ave - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	11	7	8	3	7	29	130	510	439	420	278	268
30	13	5	2	4	15	45	238	553	464	360	274	267
45	12	3	2	4	7	78	319	529	549	349	216	296
00	7	3	6	10	36	98	449	612	519	332	268	268
Hr Total	43	18	18	21	65	250	1136	2204	1971	1461	1036	1099
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	265	343	269	329	302	388	365	234	141	102	65	26
30	334	323	259	298	302	375	358	217	110	70	41	21
45	317	290	270	291	330	382	317	253	117	55	45	18
00	368	310	302	290	343	386	259	177	96	66	32	10
Hr Total	1284	1266	1100	1208	1277	1531	1299	881	464	293	183	75
24 Hour Total :			20183									
AM Peak Hour Begins :			07:00	**AM Peak Volume :**			2204	**AM Peak Hour Factor :**				0.11
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1531	**PM Peak Hour Factor :**				0.08



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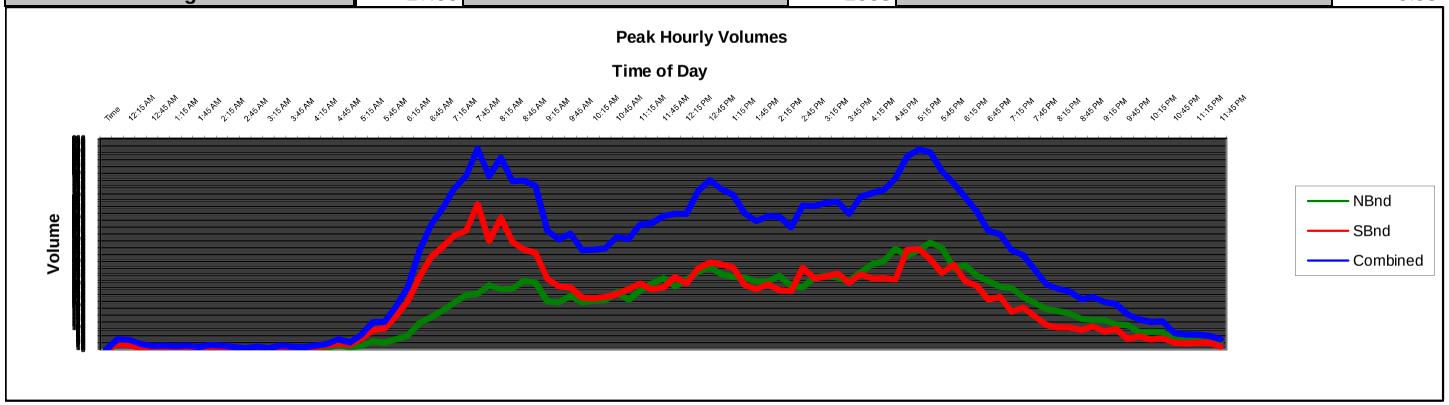
31-Jan-08	Location A1 - Northbound SR 9 north of Milton Ave - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	23	10	7	8	3	10	46	177	293	304	214	226
30	25	9	6	4	6	18	63	213	273	218	221	269
45	18	11	5	6	8	36	121	248	277	214	222	300
00	7	8	2	3	20	30	147	253	313	245	261	324
Hr Total	73	38	20	21	37	94	377	891	1156	981	918	1119
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	287	342	309	328	351	424	370	285	184	134	77	40
30	317	331	334	335	388	452	382	280	175	134	80	38
45	352	326	290	328	402	486	336	238	163	114	77	31
00	374	310	283	312	459	462	312	211	139	110	45	34
Hr Total	1330	1309	1216	1303	1600	1824	1400	1014	661	492	279	143
24 Hour Total :			18296									
AM Peak Hour Begins :			08:15	**AM Peak Volume :**			1167	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1824	**PM Peak Hour Factor :**				0.10

31-Jan-08	Location A2 - Southbound SR 9 north of Milton Ave - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	23	7	13	5	7	22	152	466	493	439	236	275
30	19	5	11	2	11	49	220	518	598	322	232	299
45	7	6	6	12	17	87	331	540	488	286	238	273
00	9	3	4	10	27	96	420	660	454	282	251	282
Hr Total	58	21	34	29	62	254	1123	2184	2033	1329	957	1129
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	329	387	297	323	342	452	385	238	111	104	60	28
30	299	373	269	331	323	456	309	171	101	81	45	30
45	368	294	266	344	324	409	290	191	100	93	51	31
00	395	273	371	304	319	348	227	150	89	48	30	13
Hr Total	1391	1327	1203	1302	1308	1665	1211	750	401	326	186	102
24 Hour Total :			20385									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			2291	**AM Peak Hour Factor :**				0.11
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1665	**PM Peak Hour Factor :**				0.08



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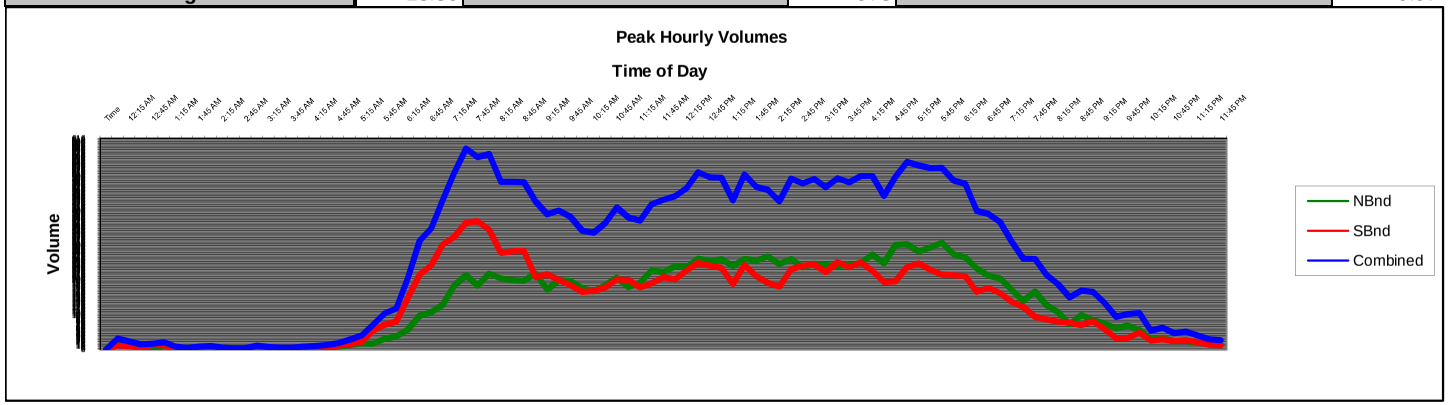
5-Feb-08	Location B1 - Northbound SR 9 north of Mayfield Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	20	9	3	7	3	13	38	130	221	221	178	182
30	14	4	3	2	5	18	58	187	207	175	170	195
45	10	5	3	4	5	17	99	217	203	203	188	231
00	3	5	1	3	8	32	108	187	201	200	210	226
Hr Total	47	23	10	16	21	80	303	721	832	799	746	834
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	243	263	272	250	252	307	277	207	129	86	57	25
30	240	244	249	247	277	286	269	175	109	76	29	20
45	265	264	264	244	251	297	236	141	74	62	33	16
00	258	260	240	247	305	312	216	169	101	70	24	15
Hr Total	1006	1031	1025	988	1085	1202	998	692	413	294	143	76
24 Hour Total :			13385									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			834	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1202	**PM Peak Hour Factor :**				0.09

5-Feb-08	Location B2 - Southbound SR 9 north of Mayfield Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	12	12	7	4	5	16	81	306	349	211	168	202
30	9	4	3	5	5	22	150	328	282	219	171	181
45	5	0	1	2	8	55	218	369	286	202	181	193
00	14	3	3	3	11	73	245	374	287	187	204	211
Hr Total	40	19	14	14	29	166	694	1377	1204	819	724	787
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	204	238	194	247	254	240	216	164	88	82	49	27
30	230	191	183	226	229	251	214	139	81	60	26	21
45	252	246	234	255	197	232	168	124	78	33	30	14
00	244	214	244	240	199	218	180	95	71	34	24	12
Hr Total	930	889	855	968	879	941	778	522	318	209	129	74
24 Hour Total :			13379									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1420	**AM Peak Hour Factor :**				0.11
PM Peak Hour Begins :			15:30	**PM Peak Volume :**			978	**PM Peak Hour Factor :**				0.07



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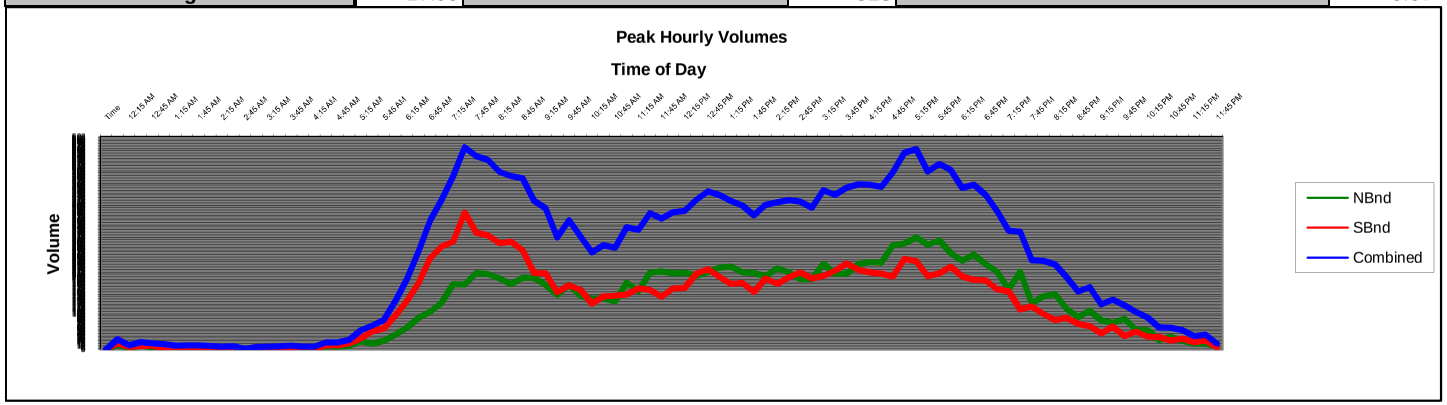
6-Feb-08	Location B1 - Northbound SR 9 north of Mayfield Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	12	11	3	4	2	10	41	131	212	202	150	188
30	5	5	6	5	6	23	61	184	200	182	143	164
45	11	6	4	6	8	16	89	183	184	154	144	216
00	6	8	2	8	8	24	106	215	202	182	135	220
Hr Total	34	30	15	23	24	73	297	713	798	720	572	788
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	214	230	206	198	240	298	271	219	149	109	55	24
30	216	233	229	241	246	315	249	169	156	82	54	17
45	208	217	217	213	244	294	267	219	114	75	27	16
00	218	215	198	213	293	307	240	130	91	86	36	10
Hr Total	856	895	850	865	1023	1214	1027	737	510	352	172	67
24 Hour Total :			12655									
AM Peak Hour Begins :			07:45	**AM Peak Volume :**			811	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1214	**PM Peak Hour Factor :**				0.10

6-Feb-08	Location B2 - Southbound SR 9 north of Mayfield Rd - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	17	4	7	3	6	17	95	290	321	215	167	155
30	7	6	2	3	2	31	136	303	299	214	129	172
45	10	6	5	3	12	51	187	385	303	161	149	167
00	11	4	0	3	12	59	256	328	279	181	151	148
Hr Total	45	20	14	12	32	158	674	1306	1202	771	596	642
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	172	204	200	200	224	255	233	169	100	66	50	31
30	173	184	184	207	217	248	205	164	83	45	36	21
45	213	187	203	221	213	206	196	112	89	65	35	25
00	226	162	217	242	205	214	194	121	72	38	25	6
Hr Total	784	737	804	870	859	923	828	566	344	214	146	83
24 Hour Total :			12630									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1337	**AM Peak Hour Factor :**				0.11
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			923	**PM Peak Hour Factor :**				0.07



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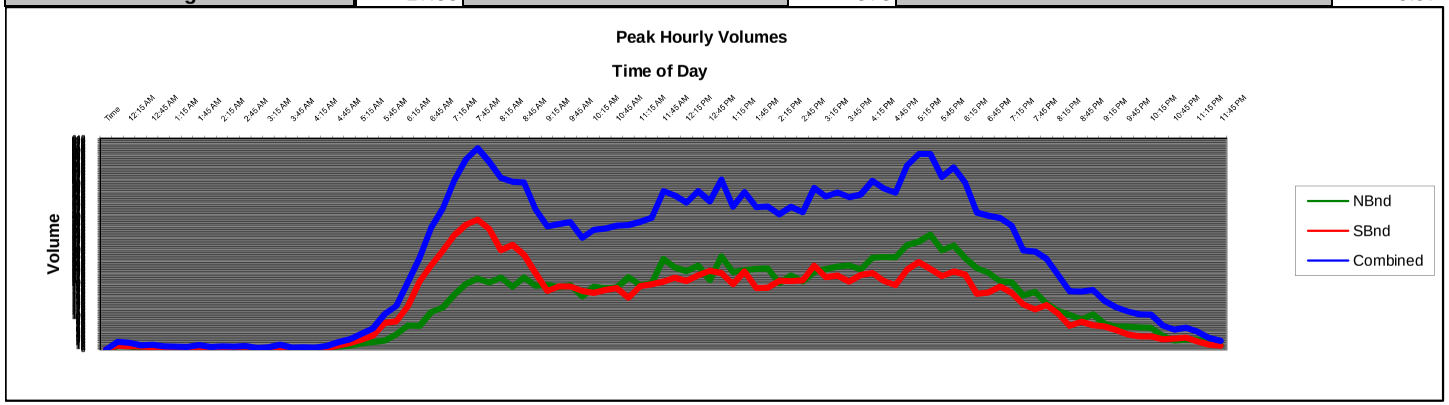
7-Feb-08	Location B1 - Northbound SR 9 north of Mayfield Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	11	6	3	4	3	12	46	127	203	193	161	220
30	10	5	3	4	3	18	73	166	219	196	191	195
45	3	4	2	10	7	22	72	199	191	189	186	201
00	8	5	2	2	9	27	114	216	219	195	189	275
Hr Total	32	20	10	20	22	79	305	708	832	773	727	891
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	249	283	246	236	243	317	316	207	140	107	67	30
30	238	235	201	244	279	328	278	204	117	78	66	30
45	255	241	225	252	281	349	247	164	105	69	42	20
00	211	245	207	256	280	301	233	175	91	70	27	14
Hr Total	953	1004	879	988	1083	1295	1074	750	453	324	202	94
24 Hour Total :			13518									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			891	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			1295	**PM Peak Hour Factor :**				0.10

7-Feb-08	Location B2 - Southbound SR 9 north of Mayfield Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	12	4	5	1	4	19	86	300	367	232	178	158
30	10	4	7	3	3	30	131	347	302	178	172	193
45	10	4	7	5	4	42	207	379	318	192	181	198
00	7	9	9	4	13	81	256	395	288	192	187	206
Hr Total	39	21	28	13	24	172	680	1421	1275	794	718	755
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	218	233	188	255	227	242	237	192	135	74	40	36
30	208	198	209	220	233	266	228	172	109	70	40	24
45	226	237	208	225	208	245	169	137	72	59	31	15
00	239	187	210	206	196	223	173	122	85	46	33	12
Hr Total	891	855	815	906	864	976	807	623	401	249	144	87
24 Hour Total :			13558									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			1488	**AM Peak Hour Factor :**				0.11
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			976	**PM Peak Hour Factor :**				0.07



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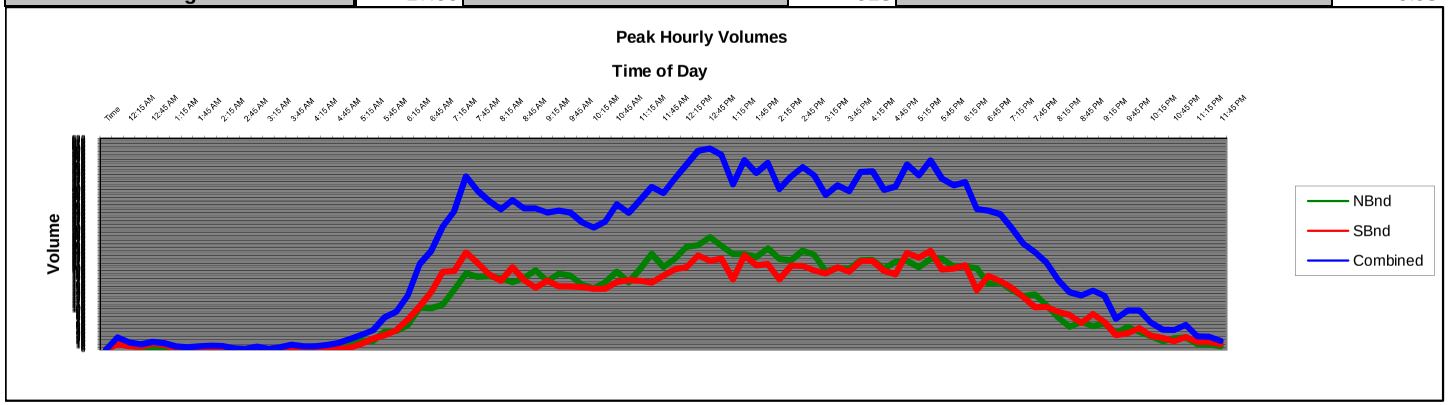
5-Feb-08		Location C1 - Northbound SR 9 north of Cogburn Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	17	4	4	5	2	22	47	113	185	200	163	169
30	10	5	5	1	8	23	61	151	180	172	154	203
45	6	5	2	5	7	21	106	192	169	191	169	241
00	4	5	0	7	14	45	104	183	180	186	196	208
Hr Total	37	19	11	18	31	111	318	639	714	749	682	821
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	229	261	255	239	225	223	209	169	111	59	44	31
30	259	240	228	197	226	207	209	150	81	66	33	14
45	263	240	225	206	204	228	205	135	57	41	21	13
00	283	233	249	203	221	229	165	139	69	57	28	8
Hr Total	1034	974	957	845	876	887	788	593	318	223	126	66
24 Hour Total :			11837									
AM Peak Hour Begins :			10:45	**AM Peak Volume :**			821	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			12:15	**PM Peak Volume :**			1066	**PM Peak Hour Factor :**				0.09

5-Feb-08		Location C2 - Southbound SR 9 north of Cogburn Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	14	12	6	2	6	4	48	196	189	155	157	175
30	8	3	4	1	0	14	75	197	173	173	153	173
45	7	1	1	1	4	27	109	244	207	159	153	168
00	15	3	2	5	2	36	144	217	175	159	170	186
Hr Total	44	19	13	9	12	81	376	854	744	646	633	702
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	202	229	215	199	222	243	204	172	107	89	54	31
30	207	176	176	192	223	231	212	155	95	69	35	19
45	237	237	211	207	198	248	149	132	87	36	29	19
00	223	212	210	196	189	201	185	106	67	41	21	14
Hr Total	869	854	812	794	832	923	750	565	356	235	139	83
24 Hour Total :			11345									
AM Peak Hour Begins :			07:00	**AM Peak Volume :**			854	**AM Peak Hour Factor :**				0.08
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			923	**PM Peak Hour Factor :**				0.08



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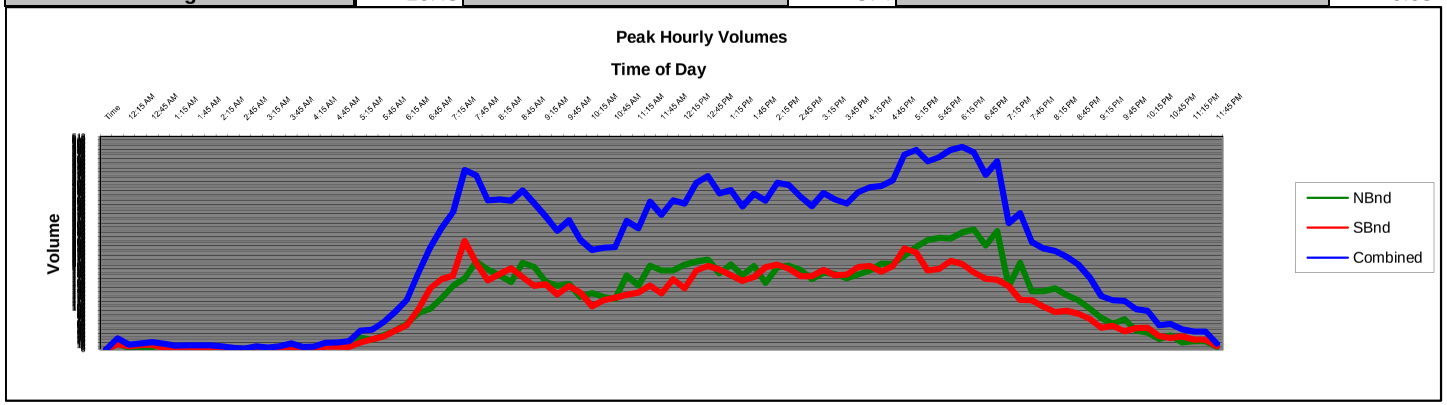
File: 08500-C.xls

6-Feb-08		Location C1 - Northbound SR 9 north of Cogburn Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	14	10	4	4	3	14	46	125	195	201	128	180
30	4	6	4	3	6	29	62	155	181	165	137	156
45	4	3	0	6	9	23	89	173	164	155	128	204
00	6	5	2	10	10	35	99	214	211	160	123	192
Hr Total	28	24	10	23	28	101	296	667	751	681	516	732
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	192	185	162	171	182	228	270	288	142	100	46	17
30	206	207	200	187	192	250	285	154	149	77	41	20
45	214	181	204	184	209	266	292	211	132	62	26	20
00	219	203	194	173	209	272	253	142	120	74	34	6
Hr Total	831	776	760	715	792	1016	1100	795	543	313	147	63
24 Hour Total :			11708									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			763	**AM Peak Hour Factor :**				0.07
PM Peak Hour Begins :			17:45	**PM Peak Volume :**			1119	**PM Peak Hour Factor :**				0.10

6-Feb-08		Location C2 - Southbound SR 9 north of Cogburn Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	13	4	6	4	3	6	46	171	168	155	138	133
30	8	3	4	2	1	17	59	180	184	159	105	139
45	11	7	4	2	7	25	99	264	198	134	120	156
00	12	5	0	5	7	32	149	210	176	155	126	136
Hr Total	44	19	14	13	18	80	353	825	726	603	489	564
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	171	195	200	178	201	246	216	170	104	75	52	32
30	149	181	206	194	203	236	208	154	91	53	53	24
45	192	167	196	181	189	192	188	121	94	58	33	24
00	203	176	178	182	203	196	172	120	87	44	28	8
Hr Total	715	719	780	735	796	870	784	565	376	230	166	88
24 Hour Total :			10572									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			826	**AM Peak Hour Factor :**				0.08
PM Peak Hour Begins :			16:45	**PM Peak Volume :**			874	**PM Peak Hour Factor :**				0.08



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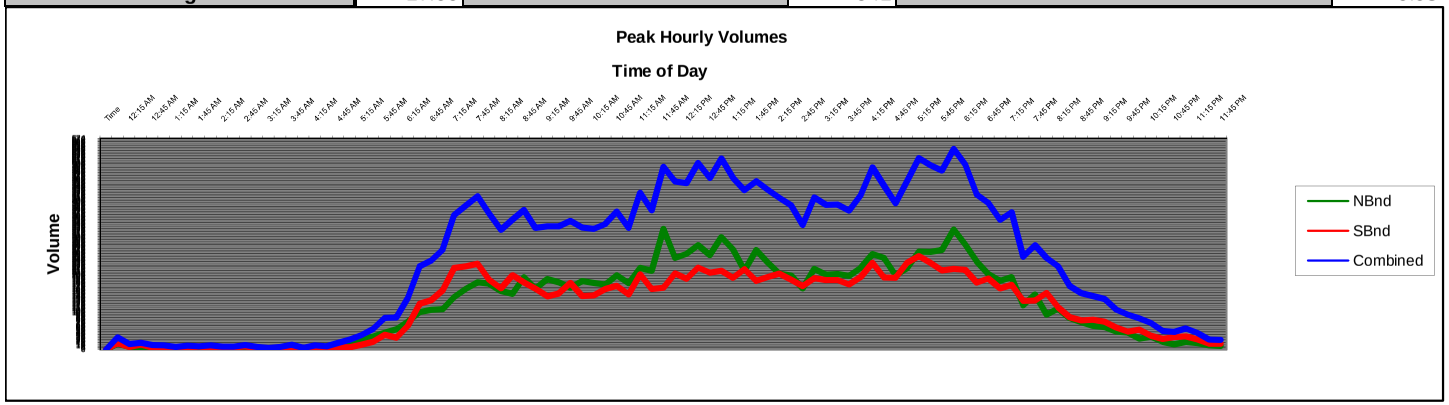
File: 08500-C.xls

7-Feb-08	Location C1 - Northbound SR 9 north of Cogburn Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	16	6	6	5	2	21	55	110	179	165	186	180
30	8	3	1	3	6	26	76	143	159	191	181	222
45	4	6	3	5	8	35	102	165	151	183	177	214
00	7	1	3	8	11	46	108	183	197	168	202	328
Hr Total	35	16	13	21	27	128	341	601	686	707	746	944
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	249	305	237	219	222	221	326	186	95	64	30	21
30	260	272	206	204	259	266	285	197	111	61	35	17
45	284	215	201	205	249	265	239	120	85	49	21	11
00	257	271	166	200	202	271	205	150	74	46	14	10
Hr Total	1050	1063	810	828	932	1023	1055	653	365	220	100	59
24 Hour Total :			12423									
AM Peak Hour Begins :			10:45	**AM Peak Volume :**			944	**AM Peak Hour Factor :**				0.08
PM Peak Hour Begins :			17:30	**PM Peak Volume :**			1147	**PM Peak Hour Factor :**				0.09

7-Feb-08	Location C2 - Southbound SR 9 north of Cogburn Rd - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	17	5	5	2	2	6	32	161	190	165	145	150
30	7	4	7	1	5	13	64	222	166	144	147	204
45	14	4	5	2	1	21	124	226	202	152	164	164
00	5	8	9	5	7	40	134	233	182	181	173	168
Hr Total	43	21	26	10	15	80	354	842	740	642	629	686
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	207	214	197	194	197	236	219	166	154	81	54	36
30	192	195	206	189	236	254	217	176	115	76	37	28
45	223	218	190	189	196	236	182	132	88	60	29	16
00	209	186	172	177	195	215	193	133	79	49	34	16
Hr Total	831	813	765	749	824	941	811	607	436	266	154	96
24 Hour Total :			11381									
AM Peak Hour Begins :			07:15	**AM Peak Volume :**			871	**AM Peak Hour Factor :**				0.08
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			941	**PM Peak Hour Factor :**				0.08



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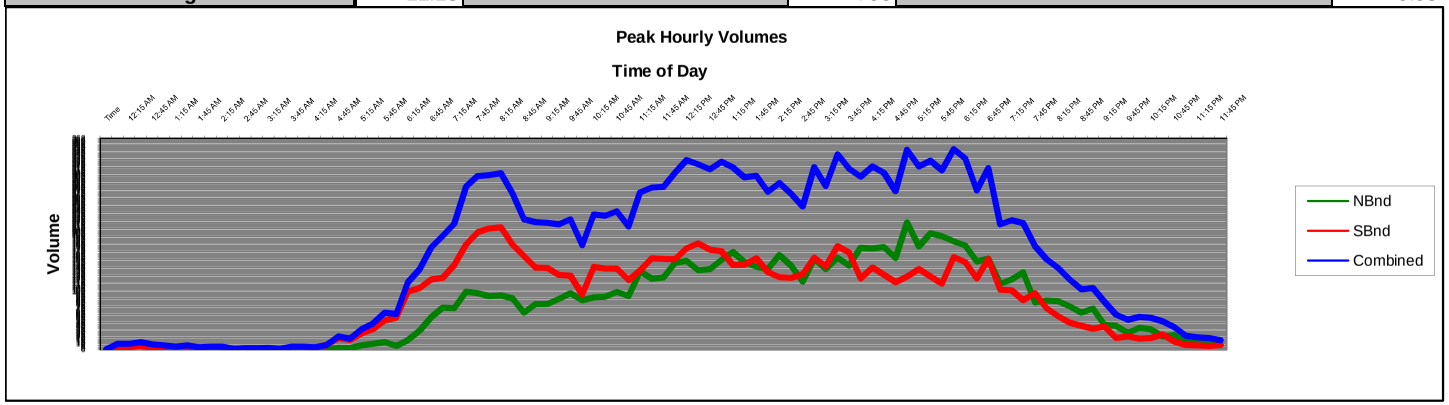
5-Feb-08	Location D1 - Northbound Windward Pkwy north of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	8	3	2	2	1	2	6	73	93	79	86	93
30	4	1	3	2	1	7	16	72	94	79	91	136
45	7	4	0	0	0	10	33	101	89	88	92	123
00	6	1	2	2	3	13	56	98	64	98	100	125
Hr Total	25	9	7	6	5	32	111	344	340	344	369	477
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	151	156	140	158	177	221	188	114	85	71	38	16
30	154	170	164	140	176	179	181	122	84	43	35	14
45	138	152	146	160	178	202	153	134	75	41	23	14
00	140	144	118	146	159	197	158	82	64	29	25	8
Hr Total	583	622	568	604	690	799	680	452	308	184	121	52
24 Hour Total :			7732									
AM Peak Hour Begins :			10:45	**AM Peak Volume :**			477	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			799	**PM Peak Hour Factor :**				0.10

5-Feb-08	Location D1 - Southbound Windward Pkwy north of SR 9 - Alpharetta, GA										
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	2	4	3	0	4	17	56	125	211	143	96	121
30	6	4	2	1	3	28	101	147	213	142	144	138
45	6	3	1	1	8	35	107	183	183	130	141	159
00	3	3	0	3	20	51	122	204	163	129	141	158
Hr Total	17	14	6	5	35	131	386	659	770	544	522	576
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	157	171	135	160	124	127	161	104	72	36	19	8
30	176	147	126	145	143	140	152	103	58	40	20	7
45	185	148	125	180	130	127	124	86	47	20	26	6
00	174	159	131	169	117	115	158	98	41	23	14	8
Hr Total	692	625	517	654	514	509	595	391	218	119	79	29
24 Hour Total :			8607									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			811	**AM Peak Hour Factor :**				0.09
PM Peak Hour Begins :			12:15	**PM Peak Volume :**			706	**PM Peak Hour Factor :**				0.08



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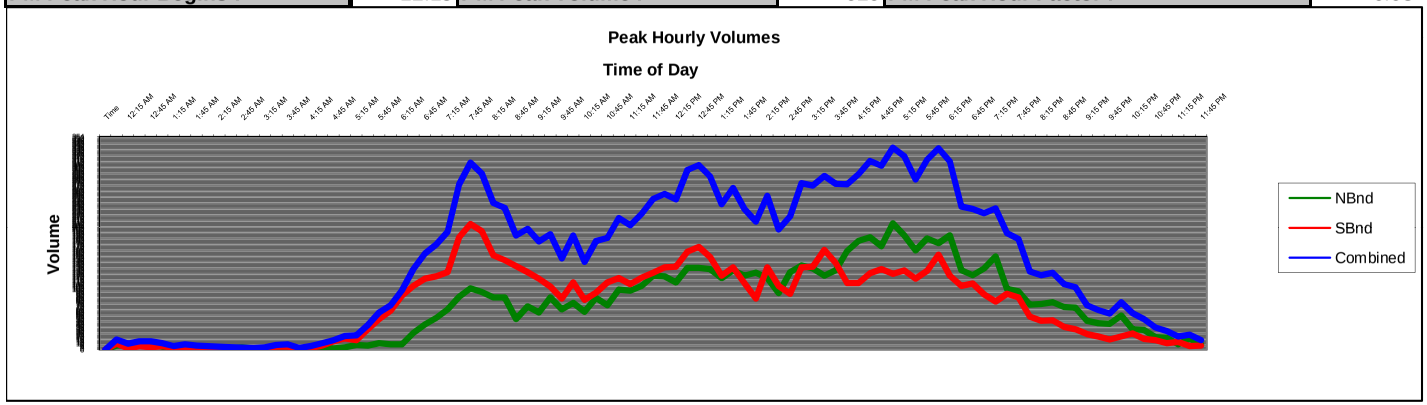
6-Feb-08	Location D1 - Northbound Windward Pkwy north of SR 9 - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	7	5	4	2	1	4	9	53	96	72	78	100
30	8	3	2	3	3	8	9	67	87	62	63	98
45	8	5	3	3	4	7	28	88	87	87	86	106
00	10	2	4	4	2	11	42	102	51	67	74	123
Hr Total	33	15	13	12	10	30	88	310	321	288	301	427
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	122	134	128	140	164	210	177	135	75	70	57	20
30	112	119	119	135	181	190	190	155	76	48	34	9
45	136	132	94	123	187	165	132	101	79	44	33	19
00	136	123	129	132	172	185	124	97	71	43	21	9
Hr Total	506	508	470	530	704	750	623	488	301	205	145	57
24 Hour Total :			7135									
AM Peak Hour Begins :			10:45	**AM Peak Volume :**			427	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			16:30	**PM Peak Volume :**			759	**PM Peak Hour Factor :**				0.11

6-Feb-08	Location D1 - Southbound Windward Pkwy north of SR 9 - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	10	6	2	1	2	19	65	122	197	129	112	119
30	2	3	3	1	3	16	90	129	157	118	83	109
45	6	4	1	5	7	34	106	187	149	105	95	120
00	4	5	0	5	14	51	118	209	139	85	112	128
Hr Total	22	18	6	12	26	120	379	647	642	437	402	476
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	137	154	85	137	111	126	158	92	55	34	22	11
30	138	123	137	138	111	132	123	80	48	26	27	13
45	163	137	106	166	127	118	106	93	49	22	18	6
00	171	111	93	144	134	131	110	87	38	17	16	7
Hr Total	609	525	421	585	483	507	497	352	190	99	83	37
24 Hour Total :			7575									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			750	**AM Peak Hour Factor :**				0.10
PM Peak Hour Begins :			12:15	**PM Peak Volume :**			626	**PM Peak Hour Factor :**				0.08



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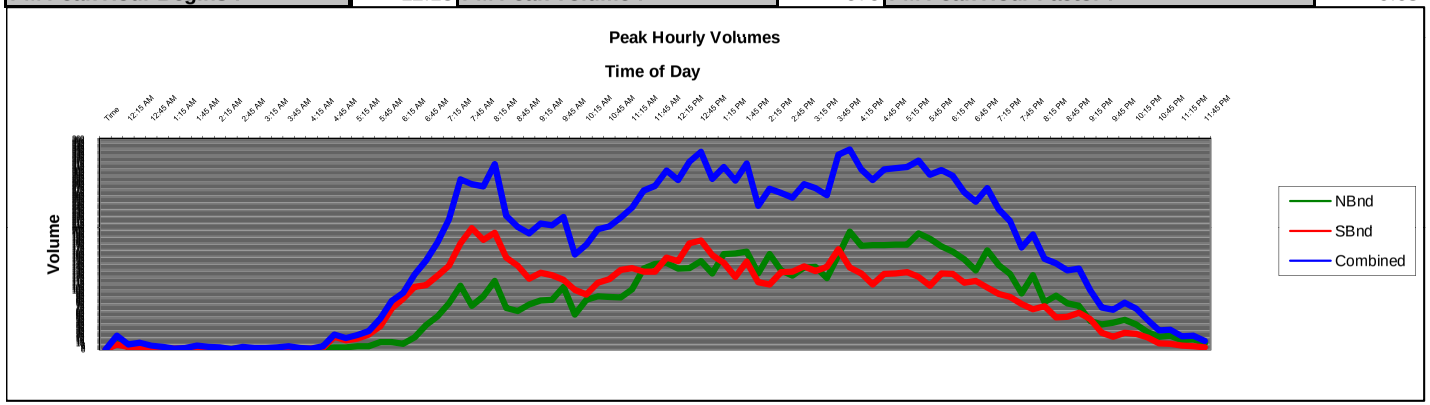
7-Feb-08	Location D1 - Northbound Windward Pkwy north of SR 9 - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	15	4	2	2	2	4	13	57	91	77	60	89
30	4	0	2	1	0	6	10	79	117	84	85	103
45	7	1	1	2	3	6	21	109	71	85	91	138
00	5	2	3	3	4	13	42	75	66	107	90	146
Hr Total	31	7	8	8	9	29	86	320	345	353	326	476
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	148	130	130	140	201	179	176	169	127	75	51	24
30	138	163	163	141	177	179	167	144	81	49	43	16
45	139	164	135	122	178	198	154	129	92	43	30	18
00	151	167	126	161	178	189	135	96	79	46	22	11
Hr Total	576	624	554	564	734	745	632	538	379	213	146	69
24 Hour Total :			7772									
AM Peak Hour Begins :			10:45	**AM Peak Volume :**			476	**AM Peak Hour Factor :**				0.06
PM Peak Hour Begins :			17:00	**PM Peak Volume :**			745	**PM Peak Hour Factor :**				0.10

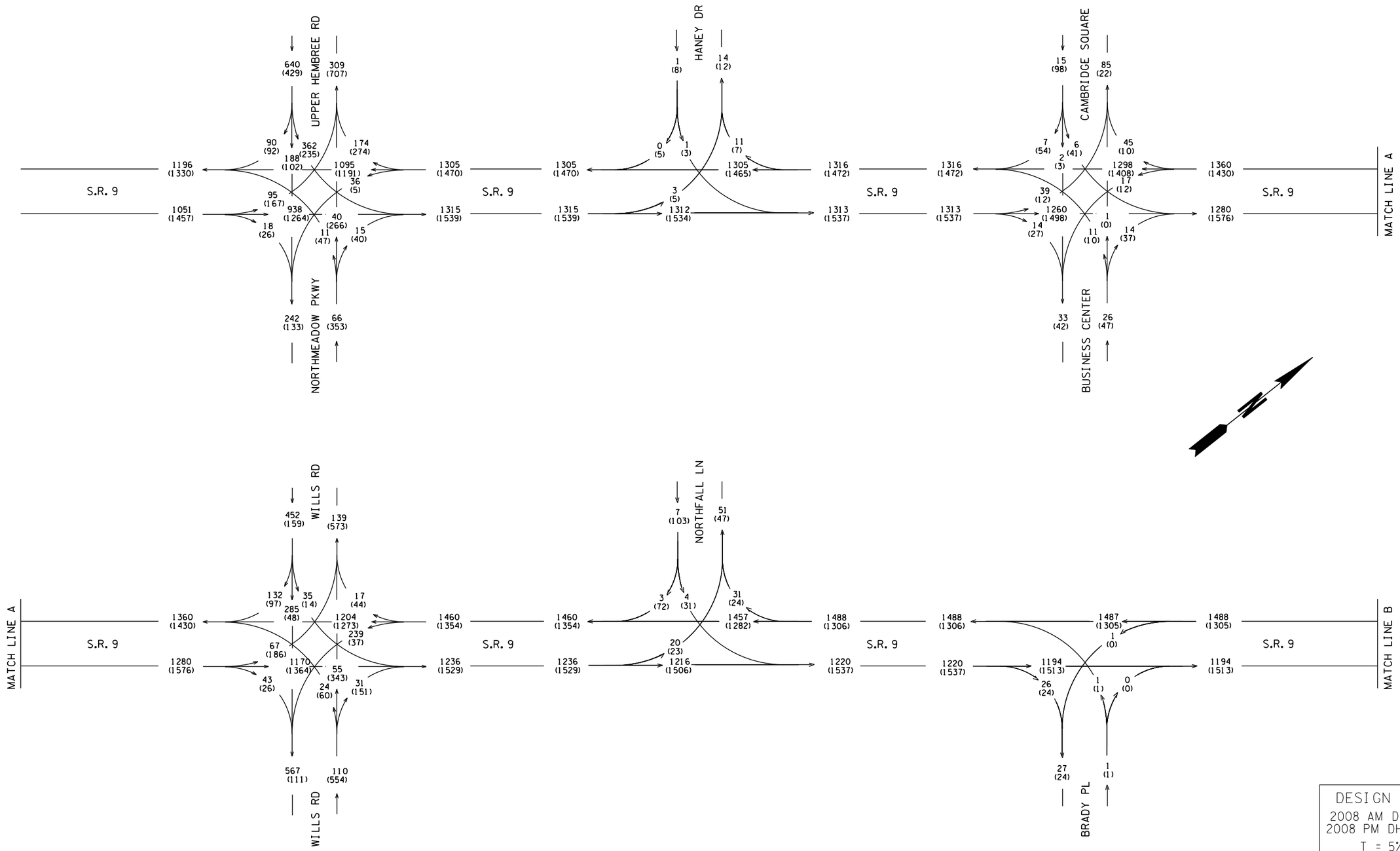
7-Feb-08	Location D1 - Southbound Windward Pkwy north of SR 9 - Alpharetta, GA											
End Time	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
15	9	1	3	1	1	16	70	126	187	121	102	136
30	5	2	2	2	2	19	87	143	199	131	94	139
45	5	2	0	2	3	26	107	181	157	127	114	133
00	2	5	2	3	22	40	110	207	143	119	120	133
Hr Total	21	10	7	8	28	101	374	657	686	498	430	541
End Time	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
15	157	161	115	142	140	130	130	106	69	63	29	10
30	151	148	111	134	130	132	129	95	74	52	27	7
45	181	124	132	141	111	124	114	90	55	29	21	6
00	186	150	133	171	129	109	117	78	56	22	11	4
Hr Total	675	583	491	588	510	495	490	369	254	166	88	27
24 Hour Total :			8097									
AM Peak Hour Begins :			07:30	**AM Peak Volume :**			774	**AM Peak Hour Factor :**				0.10
PM Peak Hour Begins :			12:15	**PM Peak Volume :**			679	**PM Peak Hour Factor :**				0.08



APPENDIX B

S.R. 9

Traffic Diagrams



DESIGN TRAFFIC
2008 AM DHV = 000
2008 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

LONG ENGINEERING, INC.
1780 Corporate Drive
Suite 400
Norcross, Georgia 30093
Tel 770.931.8005
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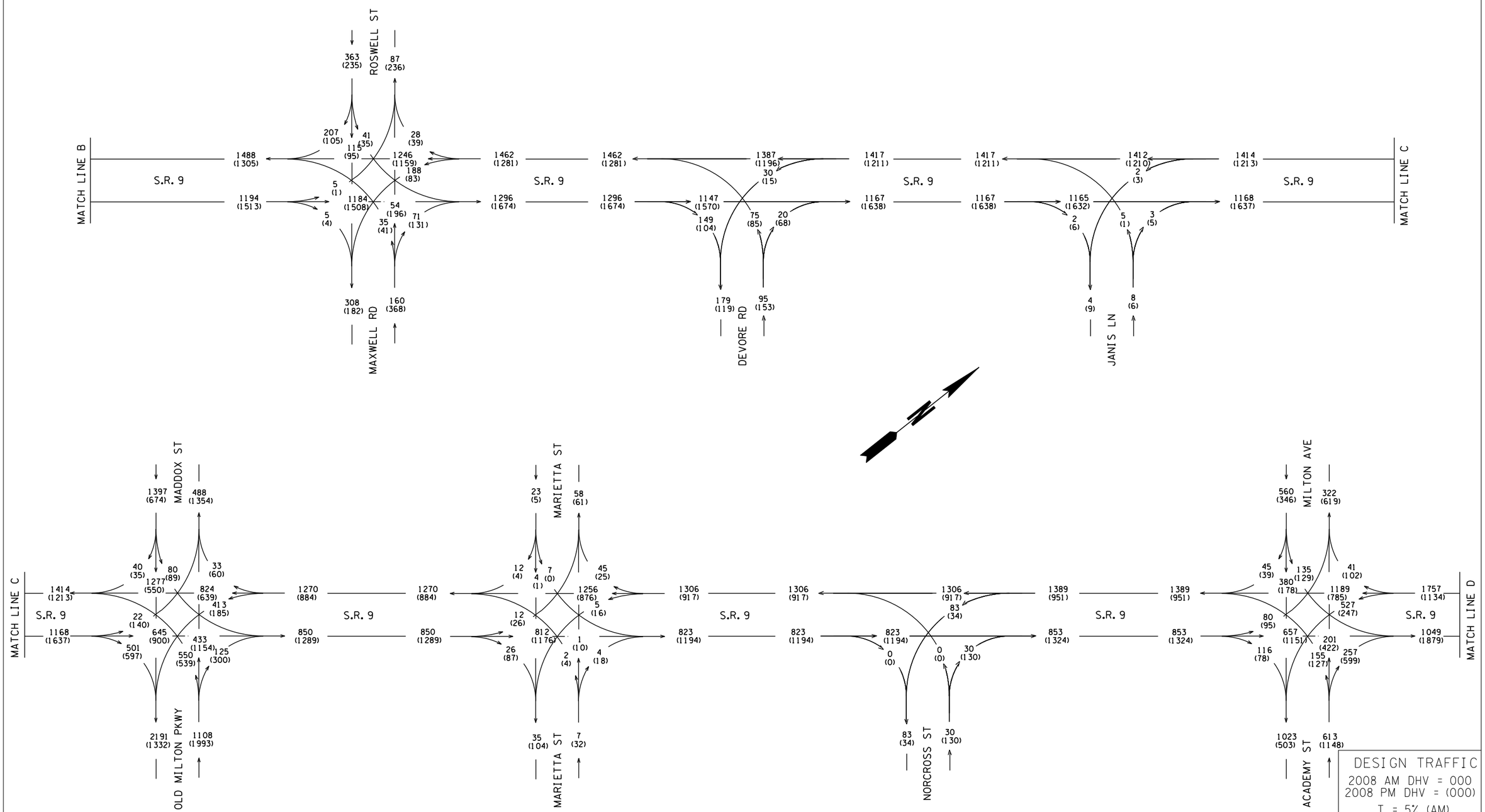
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2008 AM/PM DHV

DRAWING No. 10-01

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC
2008 AM DHV = 000
2008 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

LONG ENGINEERING, INC.

1780 Corporate Drive
Suite 400
Norcross, Georgia 30093
Tel 770.931.8005
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REVISION DATES

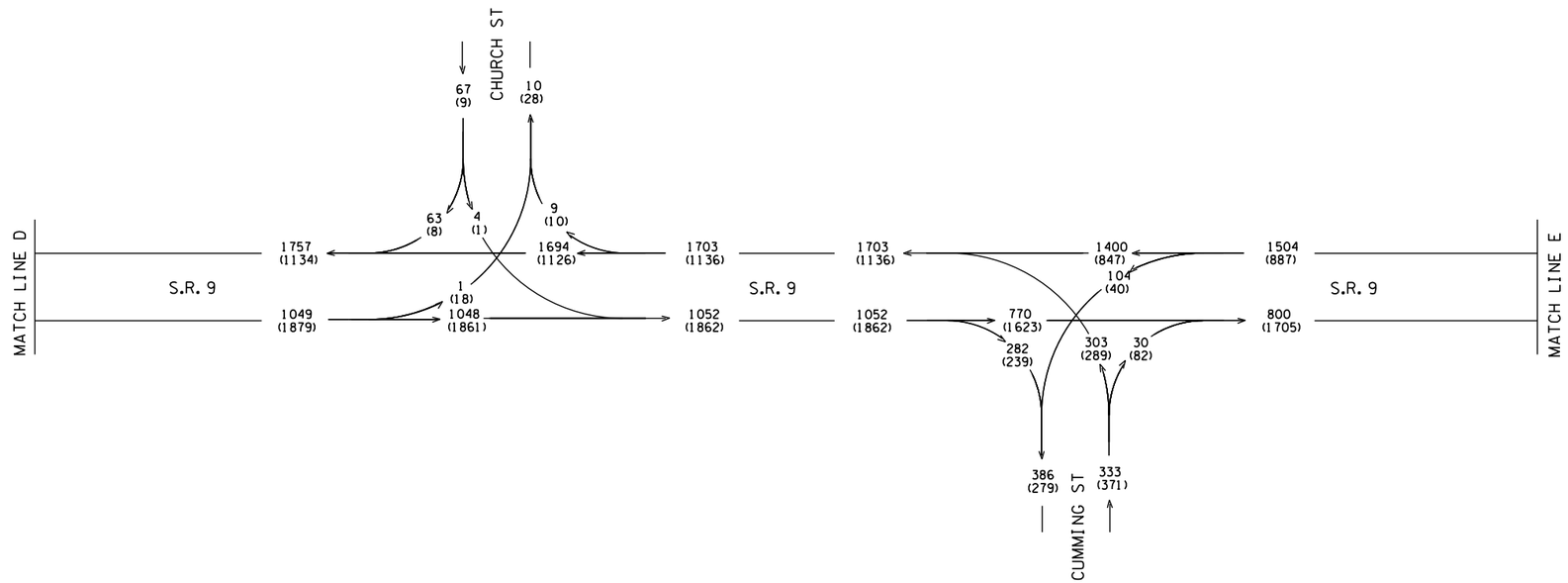
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

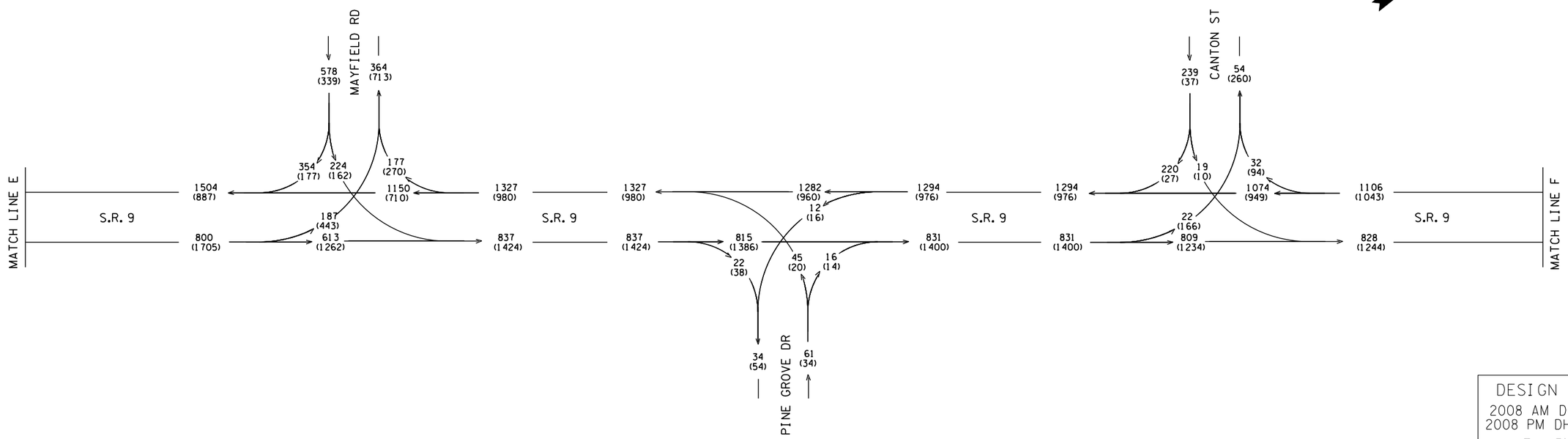
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9
FULTON COUNTY
2008 AM/PM DHV

DRAWING No. 10-02





DESIGN TRAFFIC
2008 AM DHV = 000
2008 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

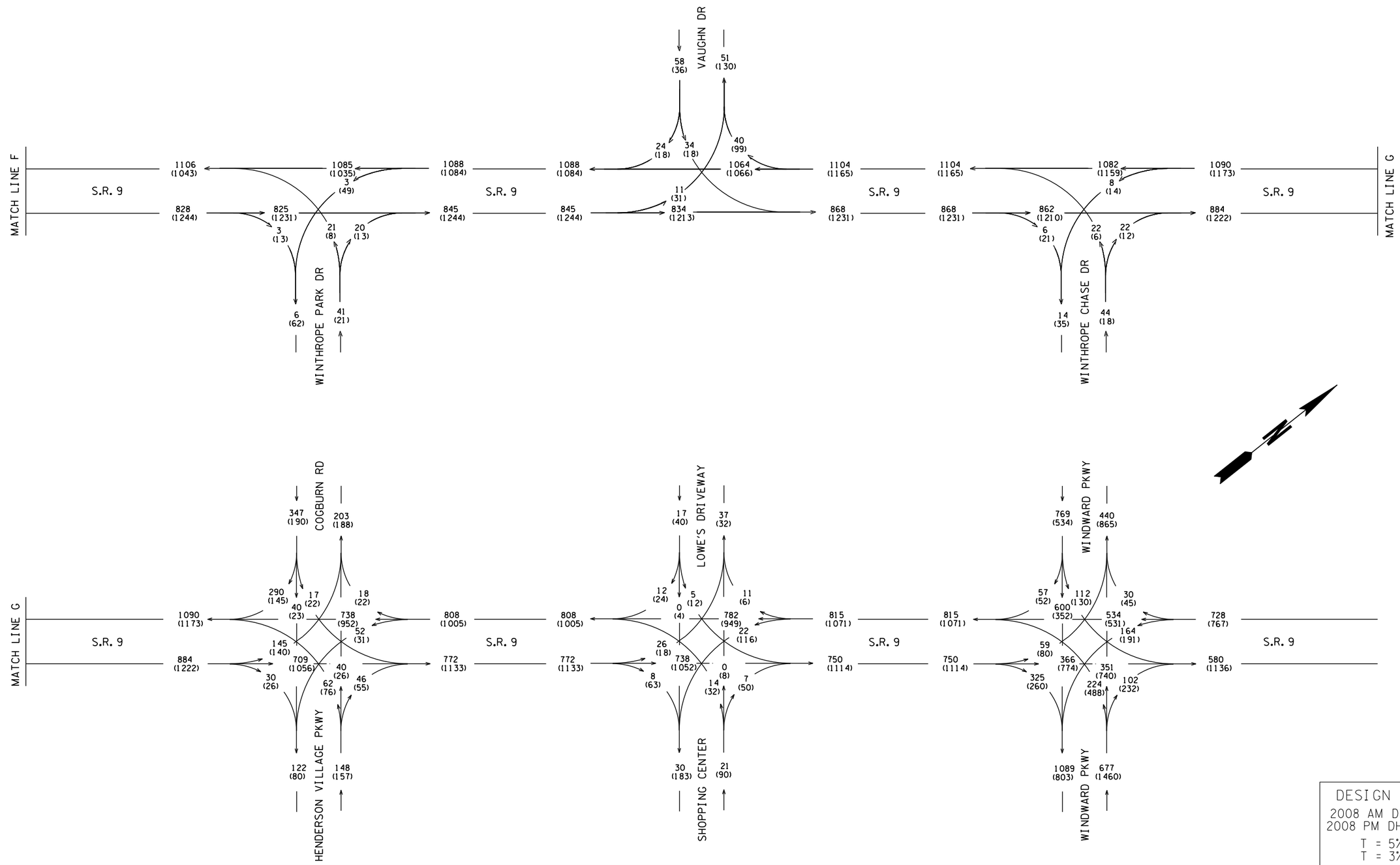
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9
FULTON COUNTY
2008 AM/PM DHV

DRAWING No. 10-03

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC
2008 AM DHV = 000
2008 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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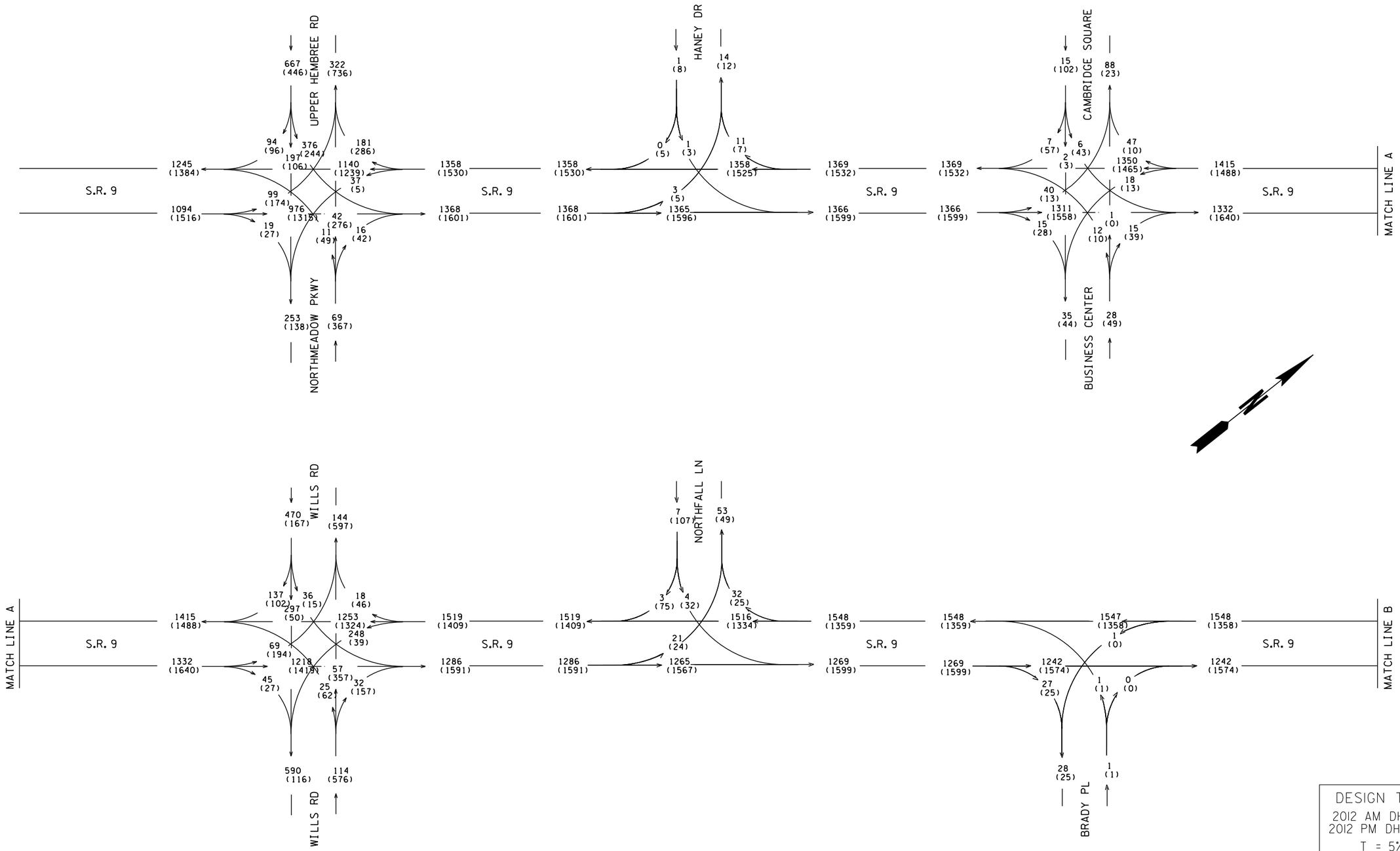
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2008 AM/PM DHV

DRAWING No. 10-04

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC
2012 AM DHV = 000
2012 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
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SKB	N.T.S.

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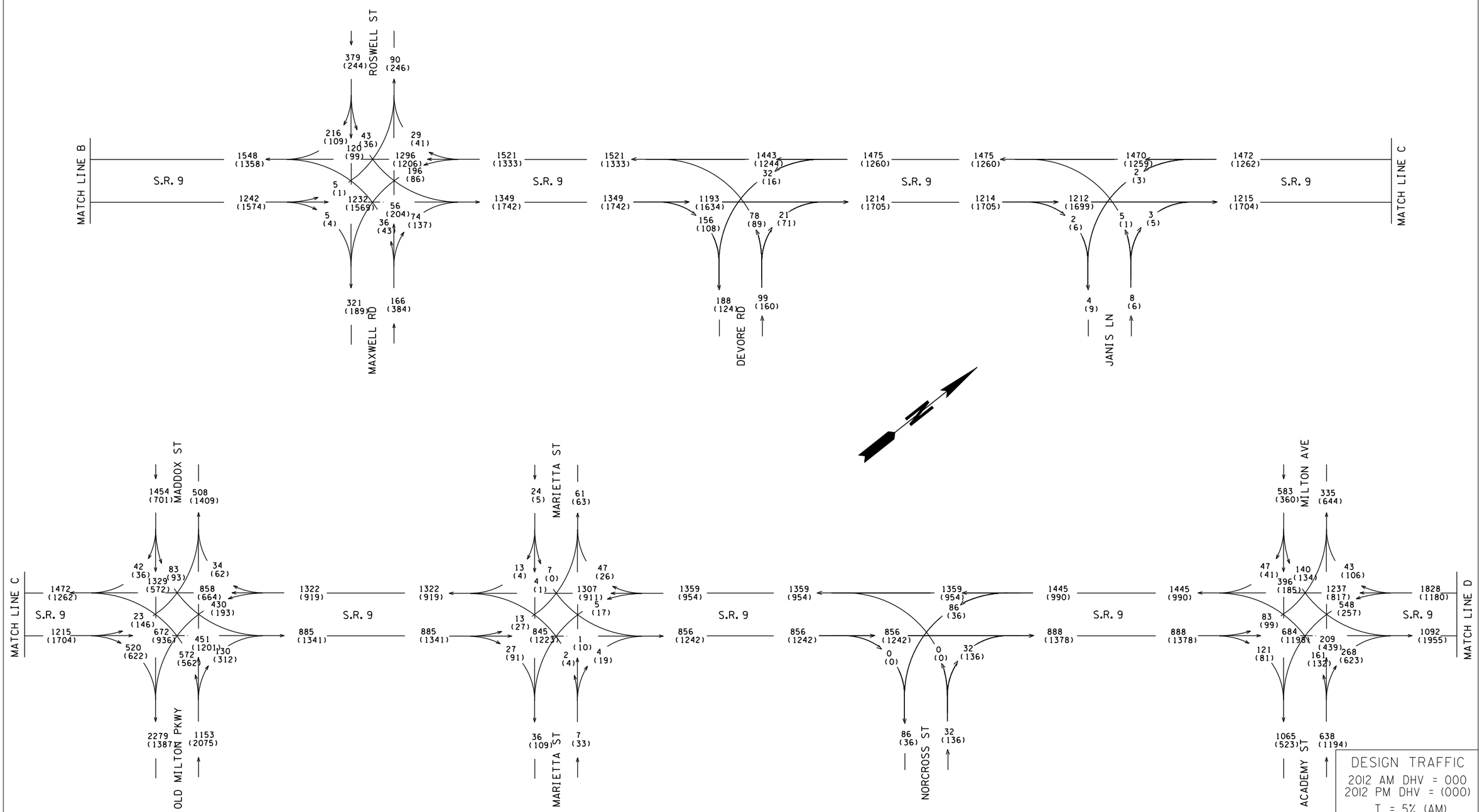
TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-05

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2012 AM DHV = 000
2012 PM DHV = (000)

T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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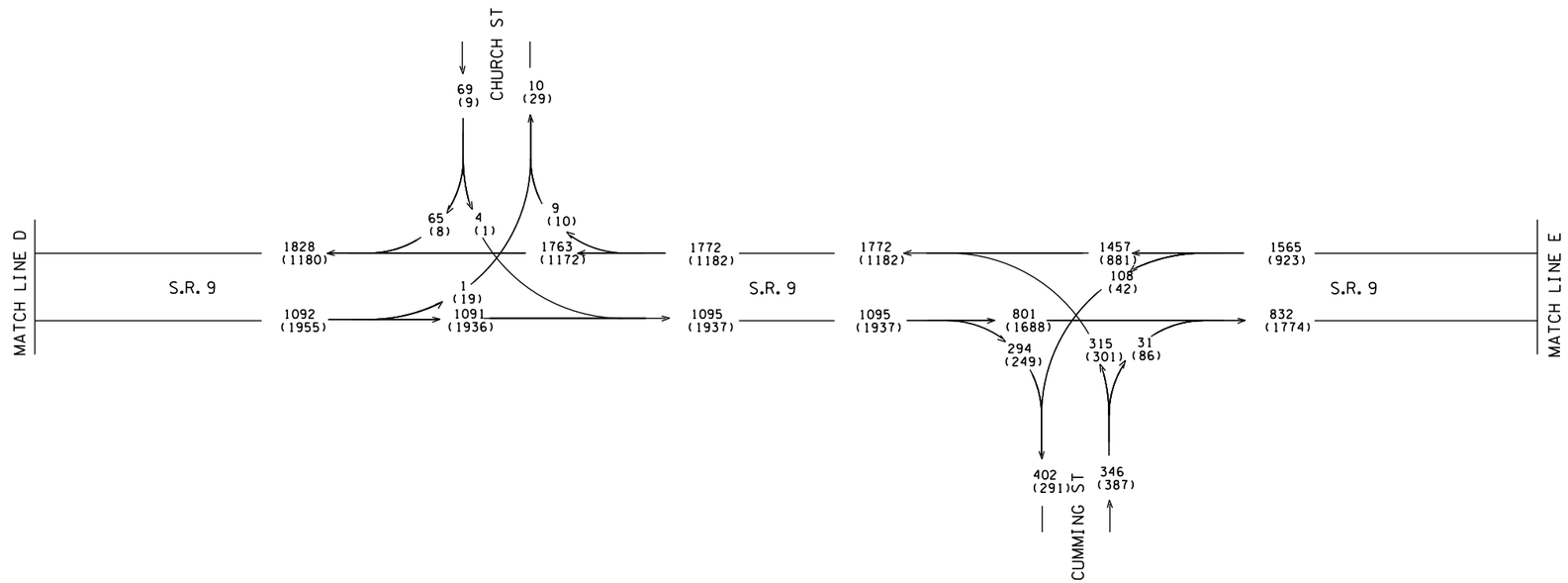
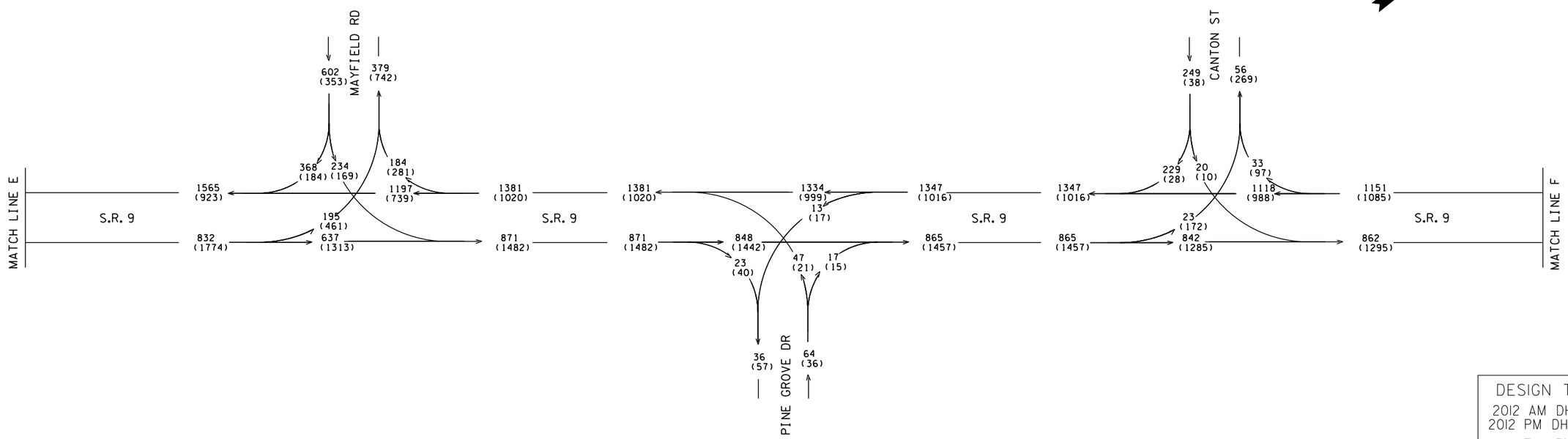
TRAFFIC DIAGRAM

S.R. 9
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-06

GPLN





DESIGN TRAFFIC
2012 AM DHV = 000
2012 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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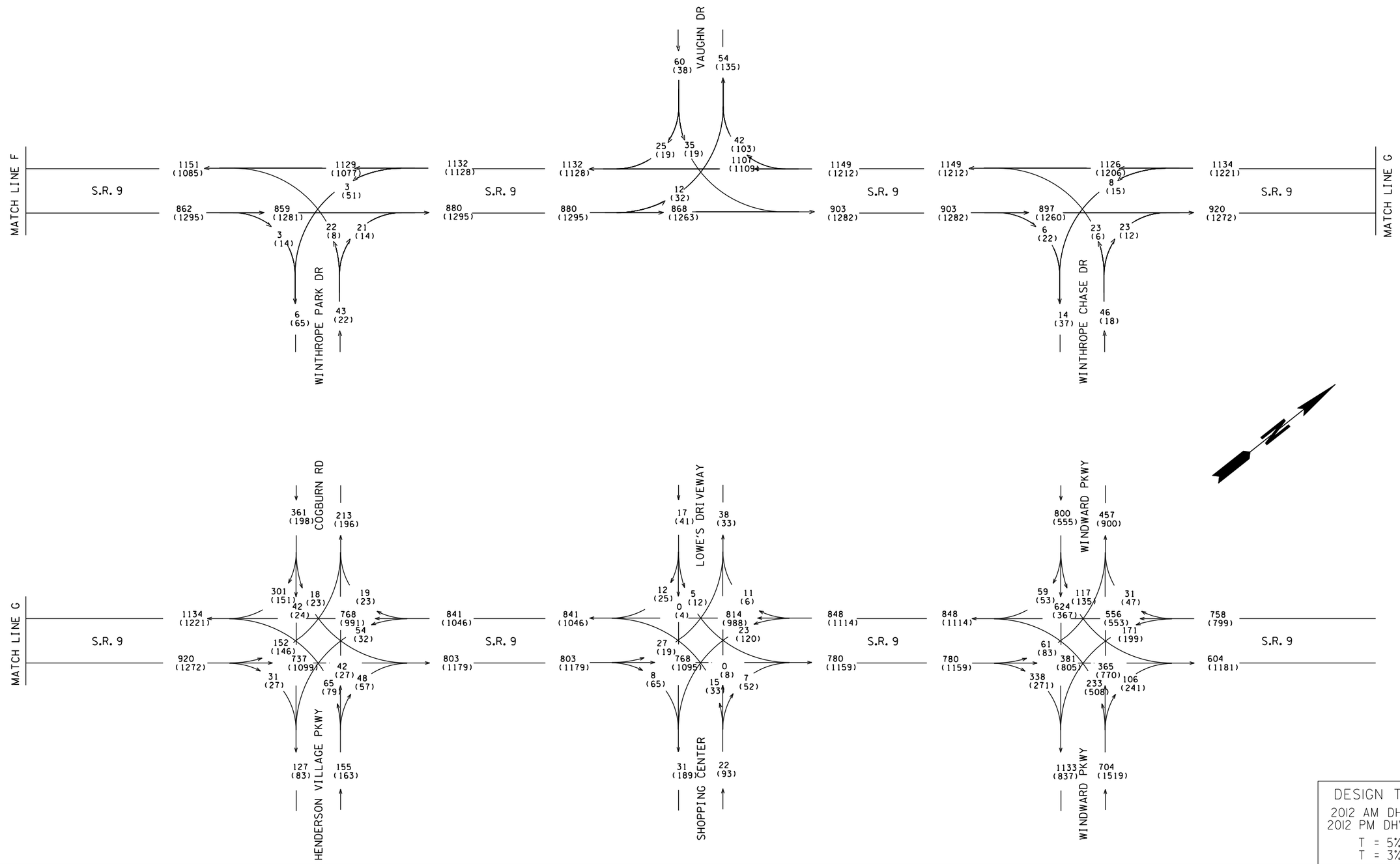
TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-07

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC
2012 AM DHV = 000
2012 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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DEPARTMENT OF TRANSPORTATION

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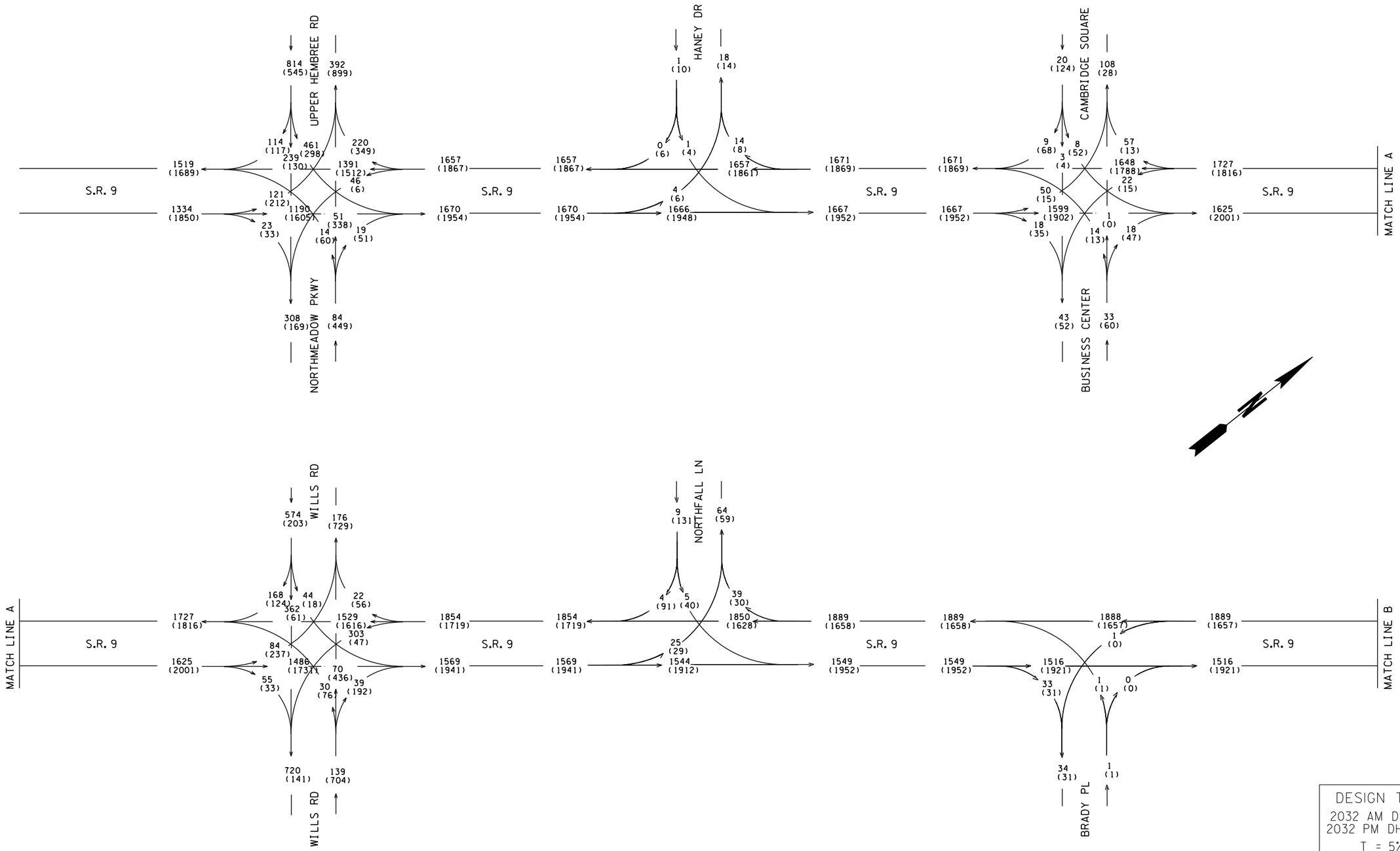
TRAFFIC DIAGRAM

S.R. 9
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-08

GPLN

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC
2032 AM DHV = 000
2032 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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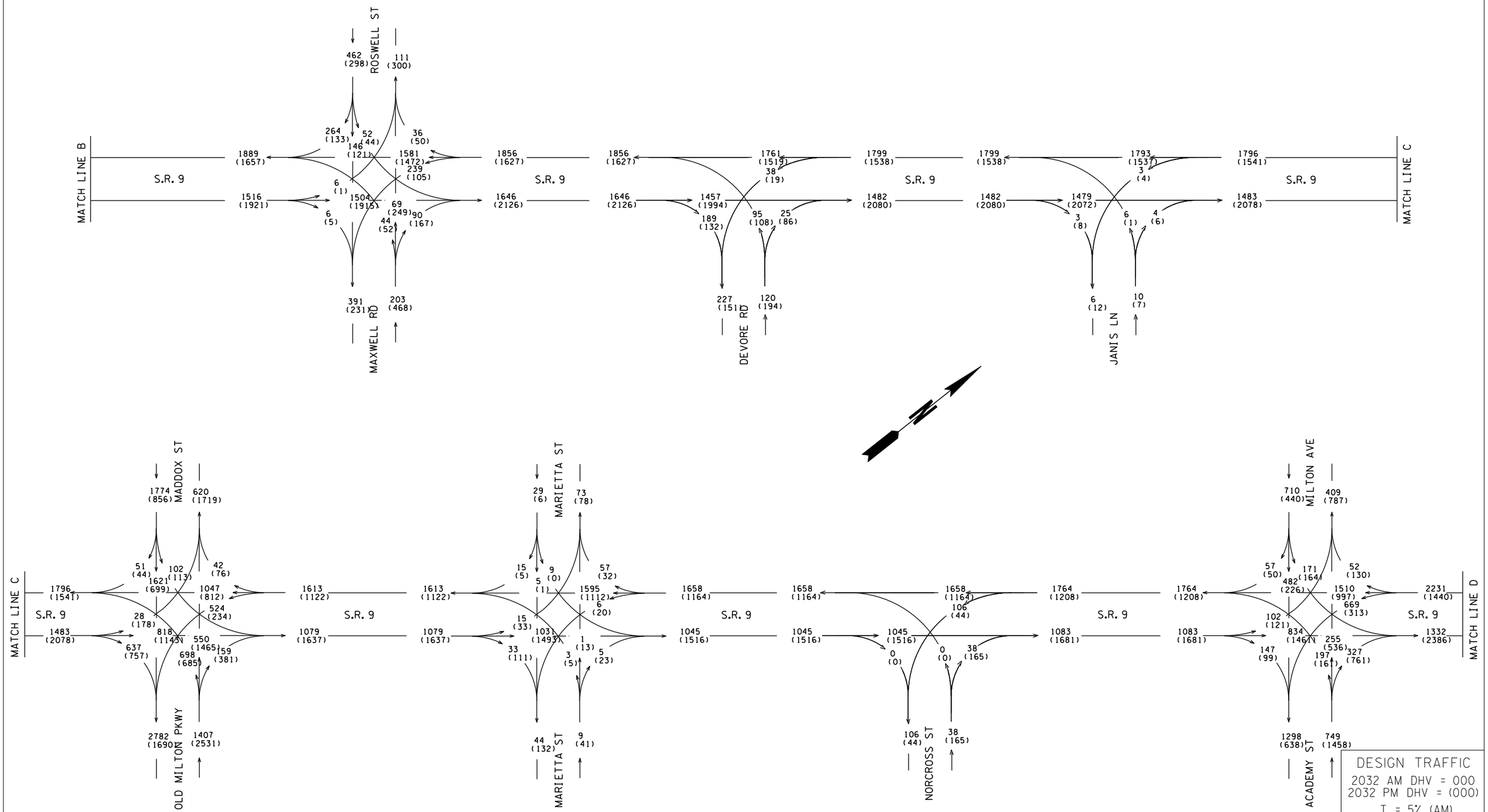
TRAFFIC DIAGRAM

S.R. 9
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-09



DESIGN TRAFFIC
2032 AM DHV = 000
2032 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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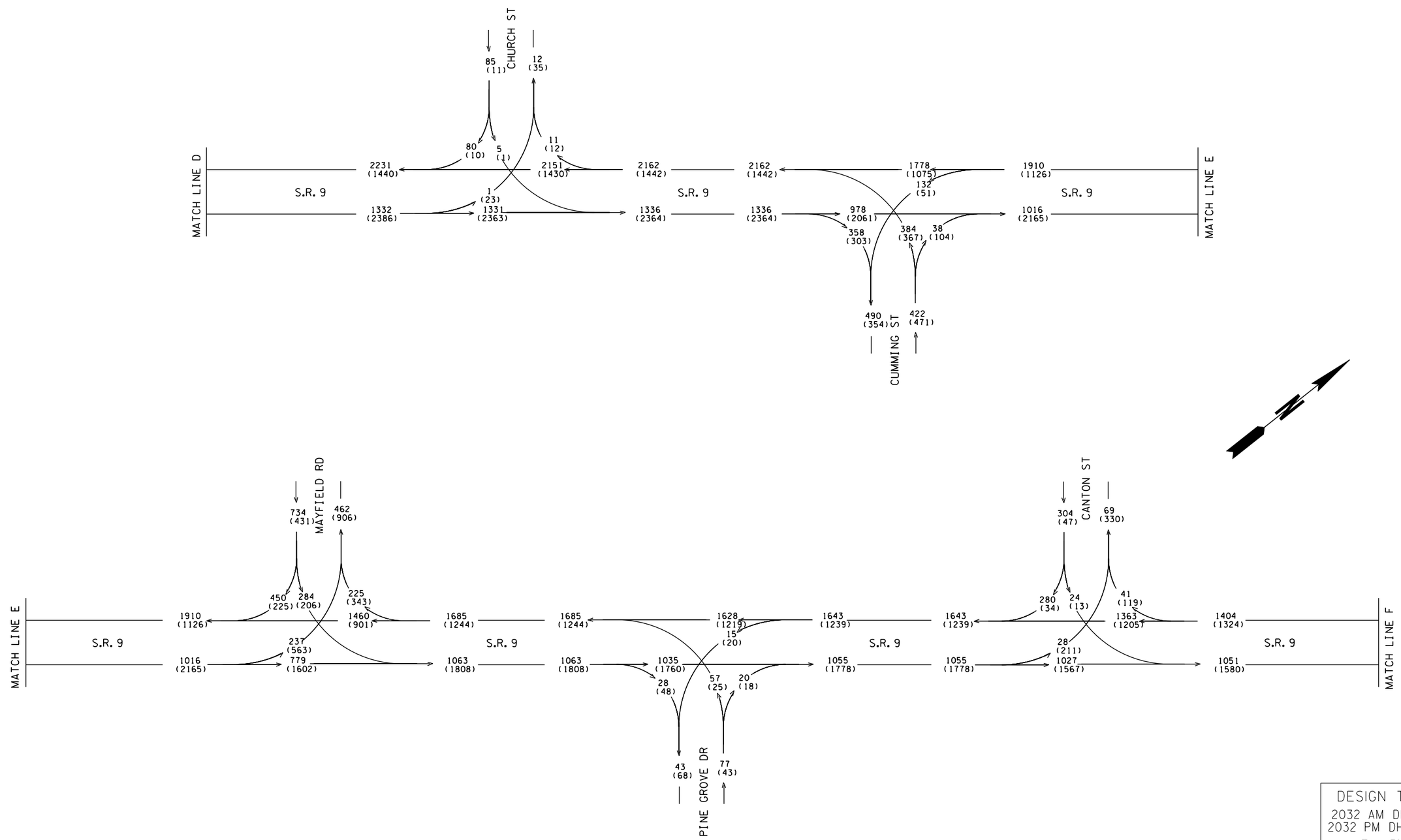
TRAFFIC DIAGRAM

S.R. 9
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-10

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC
2032 AM DHV = 000
2032 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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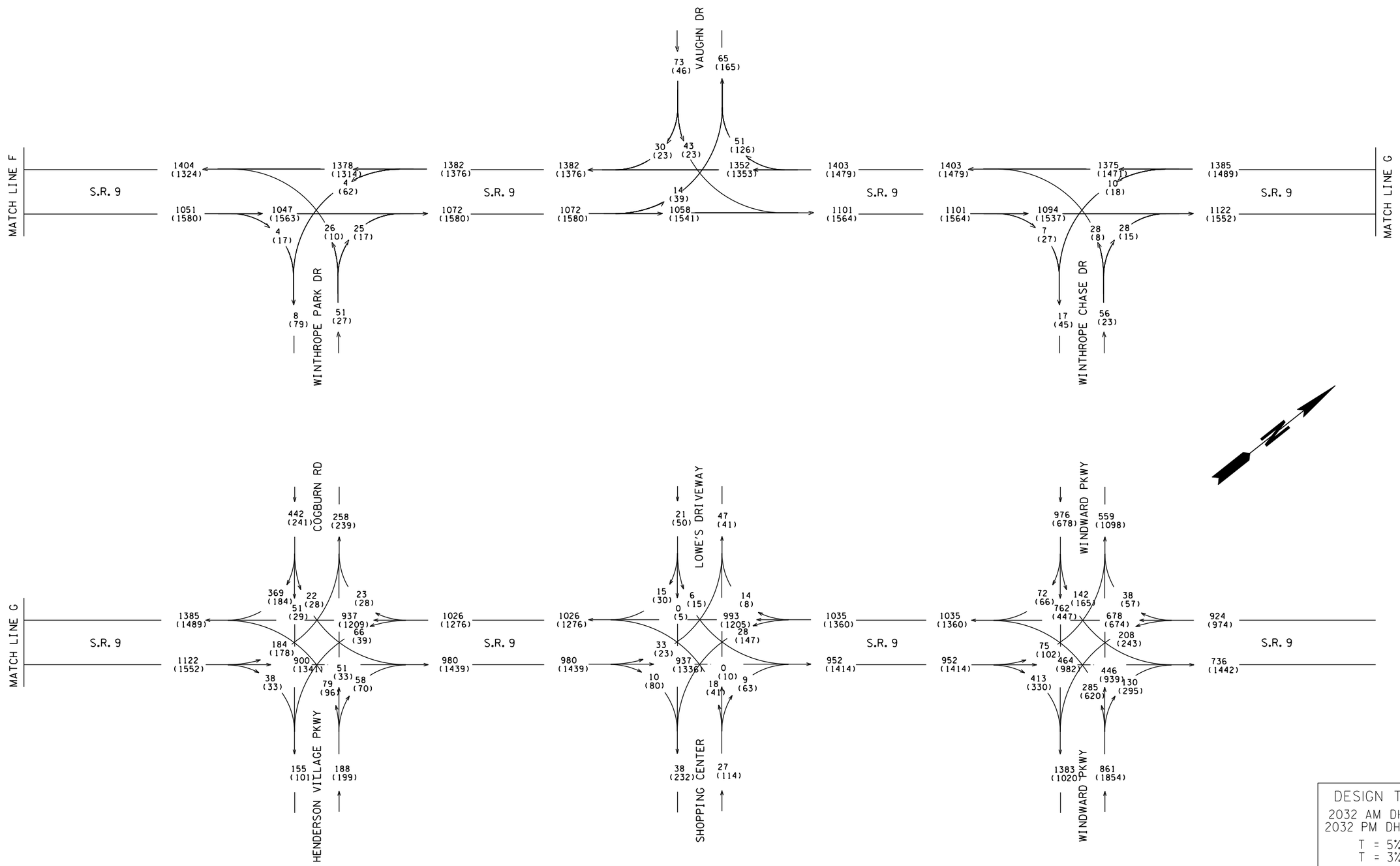
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2032 AM/PM DHV

DRAWING No.
10-11

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC
2032 AM DHV = 000
2032 PM DHV = (000)
T = 5% (AM)
T = 3% (PM)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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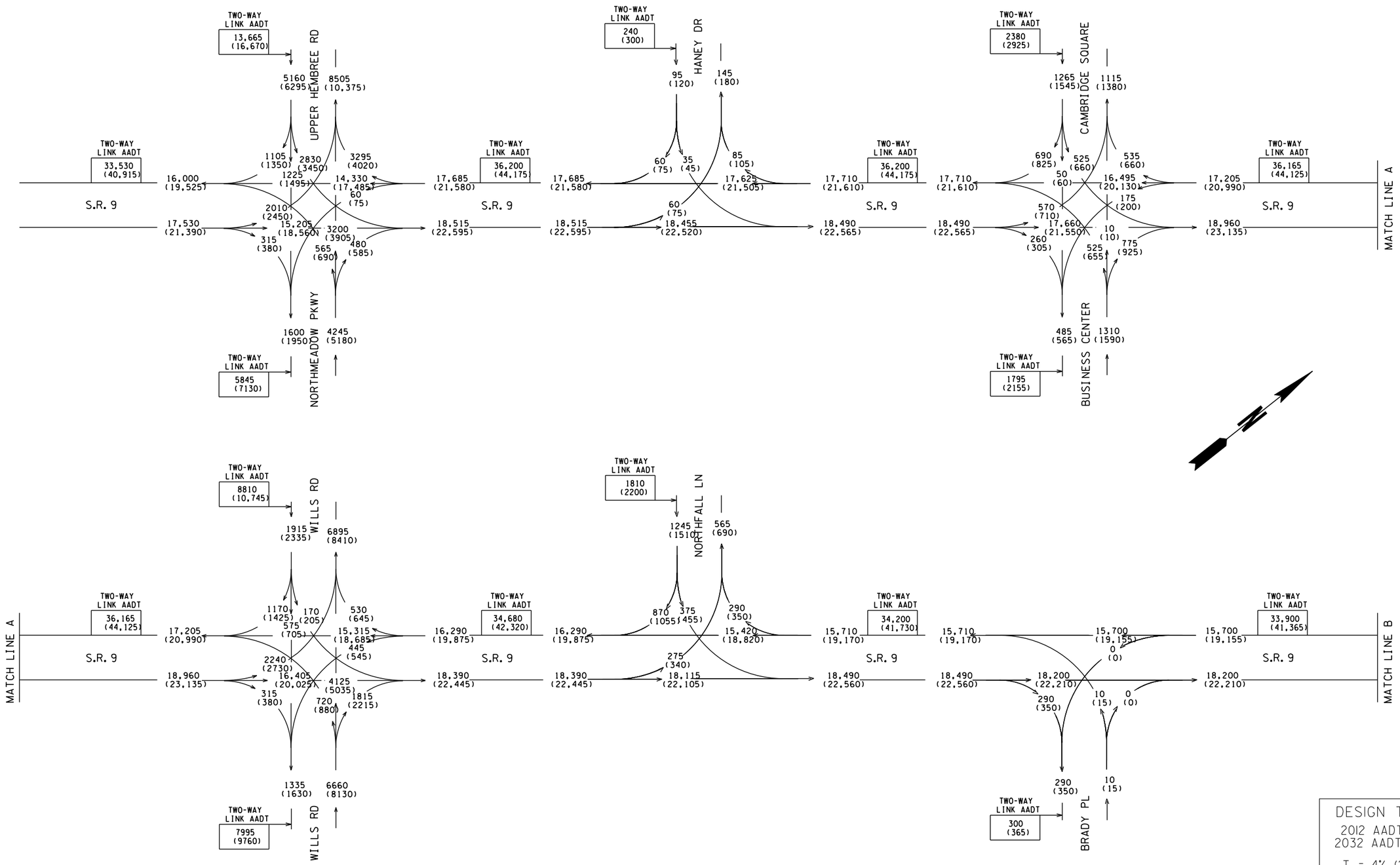
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-12

GPLN

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T = 4% (24-HOUR)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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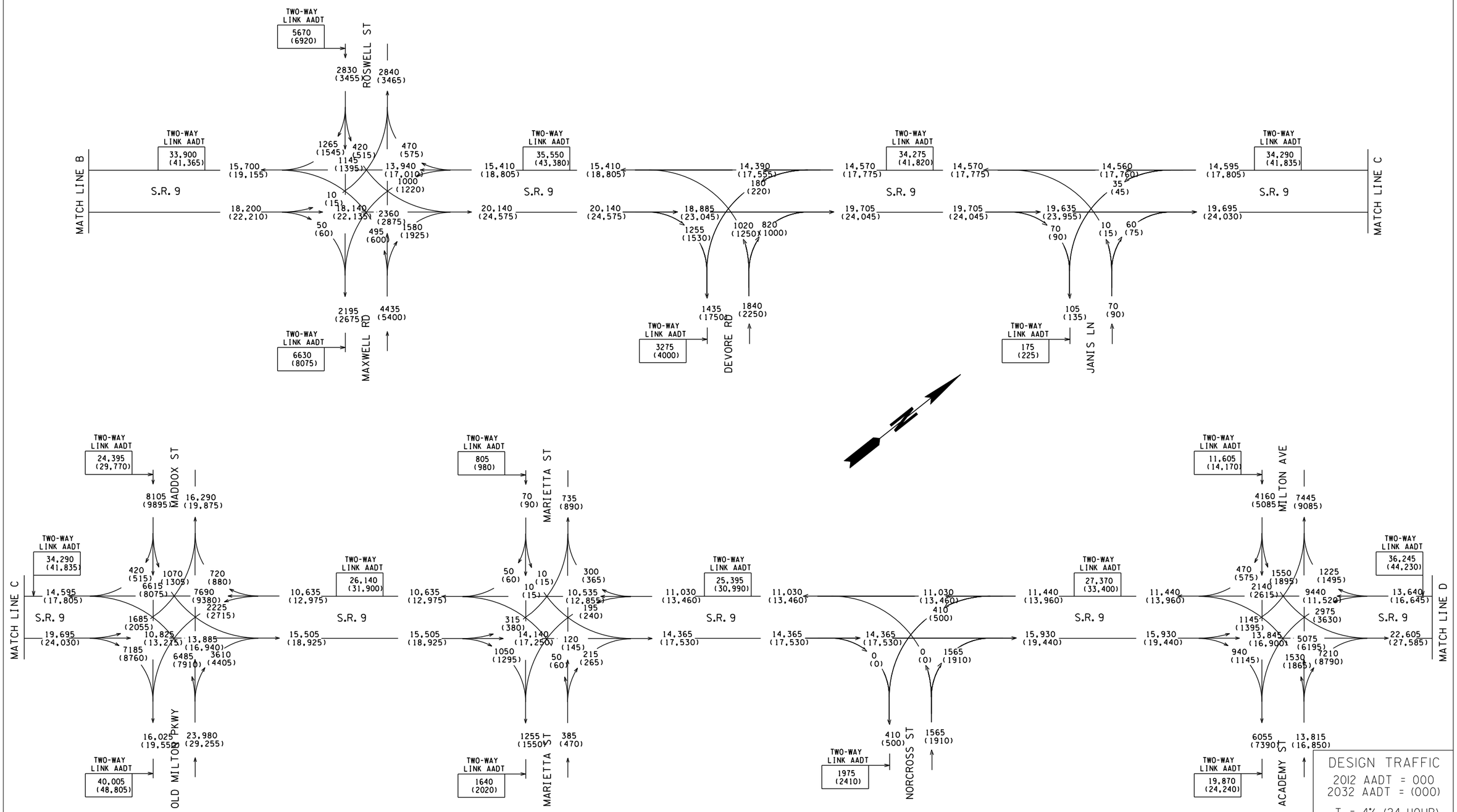
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-13

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T = 4% (24-HOUR)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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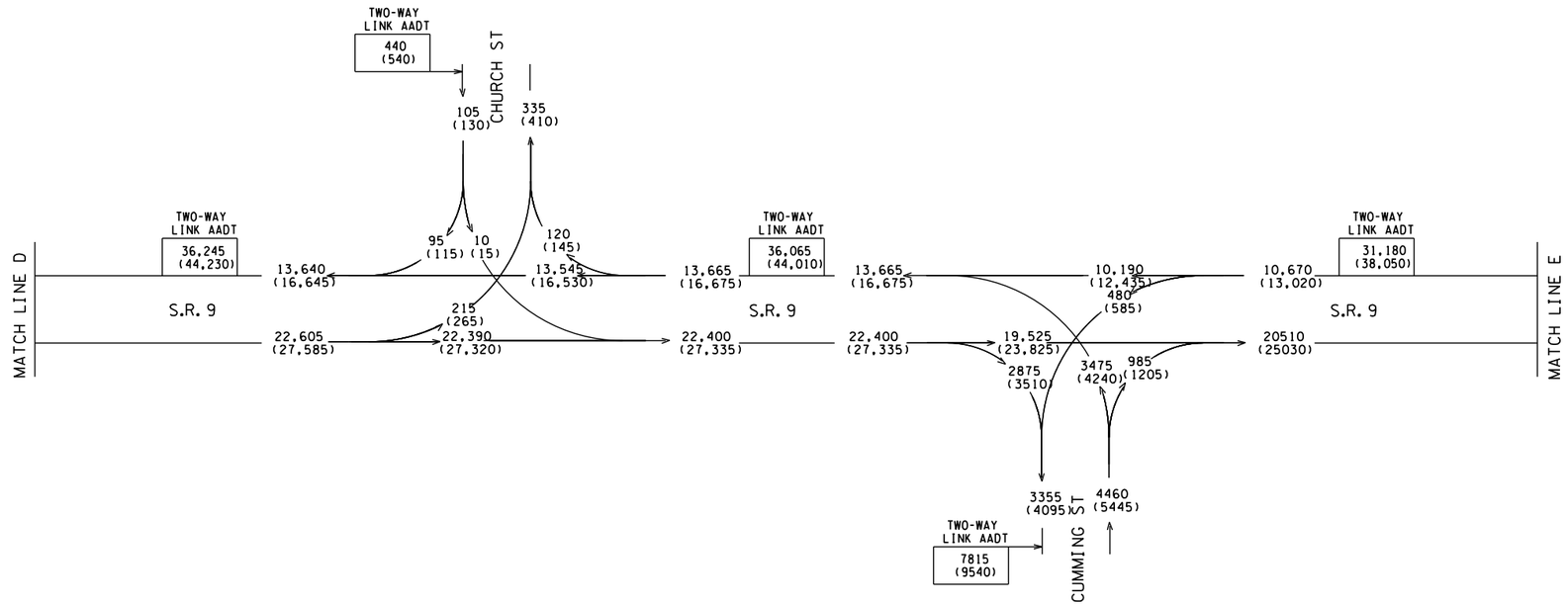
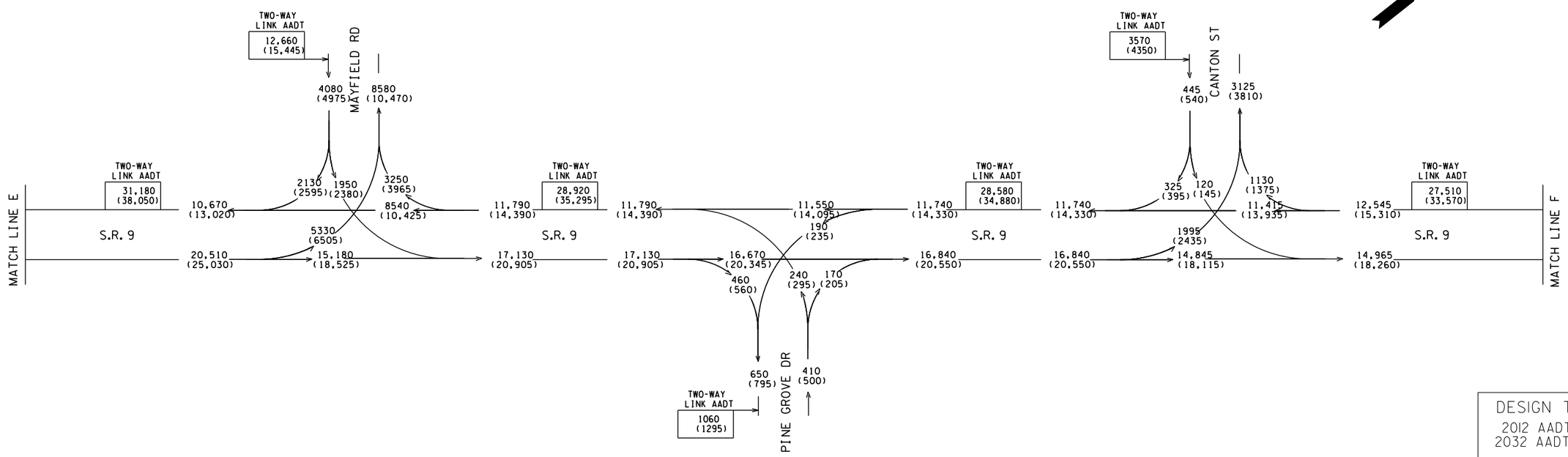
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-14





DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T = 4% (24-HOUR)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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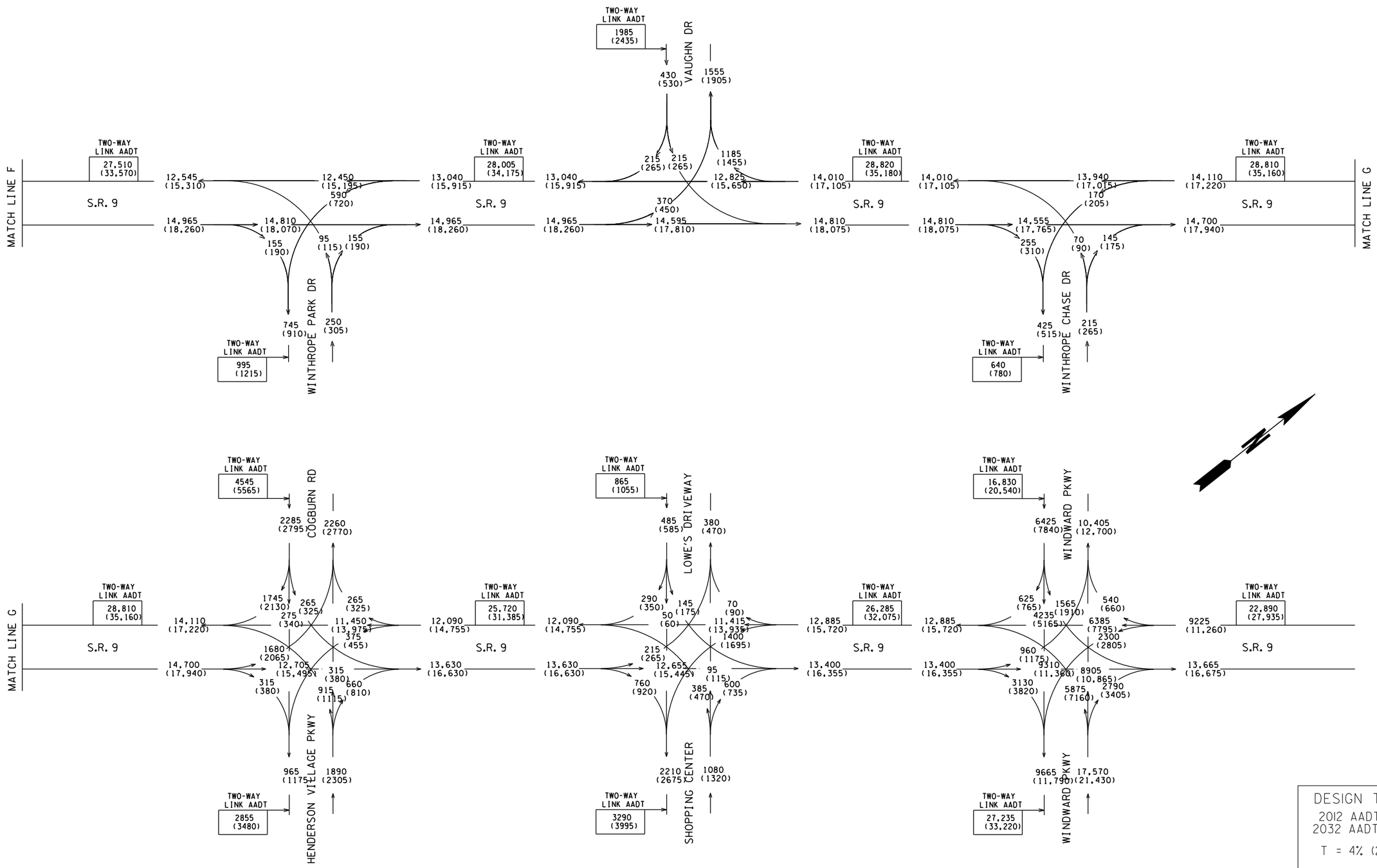
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-15



DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T = 4% (24-HOUR)

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
CDW	4/21/08
CHECKED BY	SCALE
SKB	N.T.S.

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TRAFFIC DIAGRAM
S.R. 9
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-16

APPENDIX C

S.R. 9

Capacity Analysis Information
(Synchro Printouts)

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.872				0.999	
Flt Protected	0.997					
Satd. Flow (prot)	1573	0	0	3438	3435	0
Flt Permitted	0.997					
Satd. Flow (perm)	1573	0	0	3438	3435	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			35	35	
Link Distance (ft)	492			701	375	
Travel Time (s)	11.2			13.7	7.3	
Volume (vph)	4	63	1	1048	1694	9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	4	70	1	1164	1882	10
Lane Group Flow (vph)	74	0	0	1165	1892	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

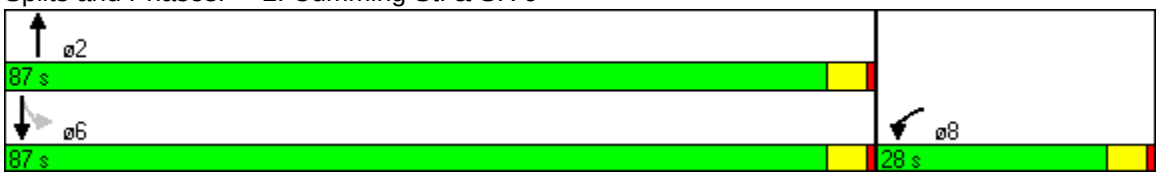
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50		50	50
Trailing Detector (ft)	0		0		0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.988		0.960			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1709	0	3301	0	0	3428
Flt Permitted	0.956					0.682
Satd. Flow (perm)	1709	0	3301	0	0	2345
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	4		117			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		375			960
Travel Time (s)	11.3		7.3			14.5
Volume (vph)	303	30	770	282	104	1400
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	337	33	856	313	116	1556
Lane Group Flow (vph)	370	0	1169	0	0	1672
Turn Type					Perm	
Protected Phases	8		2			6
Permitted Phases					6	
Total Split (s)	28.0	0.0	87.0	0.0	87.0	87.0
Act Effct Green (s)	24.0		83.0			83.0
Actuated g/C Ratio	0.21		0.72			0.72
v/c Ratio	1.03		0.48			0.99
Control Delay	99.5		1.5			26.0
Queue Delay	0.0		0.0			0.0
Total Delay	99.5		1.5			26.0
LOS	F		A			C
Approach Delay	99.5		1.5			26.0
Approach LOS	F		A			C
Queue Length 50th (ft)	~291		18			249
Queue Length 95th (ft)	#482		m11			#819

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		295			880
Turn Bay Length (ft)						
Base Capacity (vph)	360		2415			1692
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	1.03		0.48			0.99

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 79 (69%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 25.5 Intersection LOS: C
Intersection Capacity Utilization 100.6% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



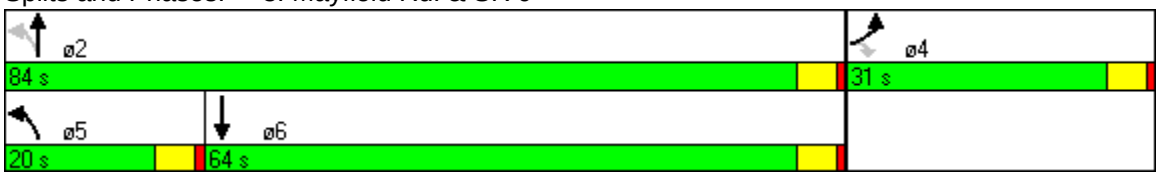
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	0			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.980	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1719	1810	3369	0
Flt Permitted	0.950		0.062			
Satd. Flow (perm)	1719	1538	112	1810	3369	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		253			22	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	482	
Travel Time (s)	10.6			14.5	7.3	
Volume (vph)	224	354	187	613	1150	177
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	249	393	208	681	1278	197
Lane Group Flow (vph)	249	393	208	681	1475	0
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Total Split (s)	31.0	31.0	20.0	84.0	64.0	0.0
Act Effct Green (s)	22.2	22.2	84.8	84.8	66.2	
Actuated g/C Ratio	0.19	0.19	0.74	0.74	0.58	
v/c Ratio	0.75	0.78	0.72	0.51	0.76	
Control Delay	50.1	22.4	47.9	5.3	16.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.1	22.4	47.9	5.3	16.0	
LOS	D	C	D	A	B	
Approach Delay	33.1			15.3	16.0	
Approach LOS	C			B	B	
Queue Length 50th (ft)	173	98	122	70	368	
Queue Length 95th (ft)	255	212	m#200	m147	493	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	402	
Turn Bay Length (ft)		230				
Base Capacity (vph)	404	555	310	1335	1947	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.62	0.71	0.67	0.51	0.76	

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 73 (63%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 19.5	Intersection LOS: B
Intersection Capacity Utilization 70.2%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		0	300		275
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.984				0.850		0.977				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1781	0	1719	1810	1538	1719	3359	0	1719	3438	1538
Flt Permitted	0.396			0.148			0.182			0.125		
Satd. Flow (perm)	717	1781	0	268	1810	1538	329	3359	0	226	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				286		17				46
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			575			701	
Travel Time (s)		11.4			10.2			11.2			13.7	
Volume (vph)	135	380	45	155	201	257	80	657	116	527	1189	41
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	150	422	50	172	223	286	89	730	129	586	1321	46
Lane Group Flow (vph)	150	472	0	172	223	286	89	859	0	586	1321	46
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Total Split (s)	14.0	33.0	0.0	12.0	31.0	31.0	9.0	32.0	0.0	38.0	61.0	61.0
Act Effct Green (s)	38.8	29.0		35.2	27.2	27.2	33.0	28.0		66.0	58.8	58.8
Actuated g/C Ratio	0.34	0.25		0.31	0.24	0.24	0.29	0.24		0.57	0.51	0.51
v/c Ratio	0.46	1.04		0.94	0.52	0.49	0.57	1.03		1.03	0.75	0.06
Control Delay	31.2	95.6		83.8	43.5	7.3	44.8	64.8		55.6	25.0	4.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	31.2	95.6		83.8	43.5	7.3	44.8	64.8		55.6	25.0	4.3
LOS	C	F		F	D	A	D	E		E	C	A
Approach Delay		80.1			38.5			63.0			33.7	
Approach LOS		F			D			E			C	
Queue Length 50th (ft)	78	~376		90	145	0	52	~361		~411	461	2
Queue Length 95th (ft)	130	#585		#215	225	70	m64	m#485		m#424	m459	m3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			495			621	
Turn Bay Length (ft)	225			150		150	200			300		275
Base Capacity (vph)	330	453		183	428	582	155	831		571	1758	809
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.45	1.04		0.94	0.52	0.49	0.57	1.03		1.03	0.75	0.06

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 61 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 48.0 Intersection LOS: D
Intersection Capacity Utilization 95.7% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			0
Storage Lanes	1	0	1			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.876				0.996	
Flt Protected	0.996		0.950			
Satd. Flow (prot)	1579	0	1719	1810	3424	0
Flt Permitted	0.996		0.950			
Satd. Flow (perm)	1579	0	1719	1810	3424	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2269	199	
Travel Time (s)	8.7			34.4	3.0	
Volume (vph)	19	220	22	809	1074	32
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	21	244	24	899	1193	36
Lane Group Flow (vph)	265	0	24	899	1229	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	1	0		0	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.964		0.997			
Flt Protected	0.965				0.950	
Satd. Flow (prot)	1683	0	1804	0	1719	3438
Flt Permitted	0.965				0.950	
Satd. Flow (perm)	1683	0	1804	0	1719	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	437		482			2269
Travel Time (s)	9.9		7.3			34.4
Volume (vph)	45	16	815	22	12	1282
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	50	18	906	24	13	1424
Lane Group Flow (vph)	68	0	930	0	13	1424
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	150	
Storage Lanes	1	0		1	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.934			0.850		
Flt Protected	0.975					
Satd. Flow (prot)	1648	0	1810	1538	0	3438
Flt Permitted	0.975					
Satd. Flow (perm)	1648	0	1810	1538	0	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	365		199			854
Travel Time (s)	8.3		3.0			12.9
Volume (vph)	21	20	825	3	3	1085
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	23	22	917	3	3	1206
Lane Group Flow (vph)	45	0	917	3	0	1209
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.944	
Flt Protected		0.999			0.972	
Satd. Flow (prot)	0	1808	1800	0	1660	0
Flt Permitted		0.999			0.972	
Satd. Flow (perm)	0	1808	1800	0	1660	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		854	312		342	
Travel Time (s)		12.9	4.7		7.8	
Volume (vph)	11	834	1064	40	34	24
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	12	927	1182	44	38	27
Lane Group Flow (vph)	0	939	1226	0	65	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.932	
Flt Protected					0.976	
Satd. Flow (prot)	1810	1538	0	1810	1646	0
Flt Permitted					0.976	
Satd. Flow (perm)	1810	1538	0	1810	1646	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	312			1975	374	
Travel Time (s)	4.7			29.9	8.5	
Volume (vph)	862	6	8	1082	22	22
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	958	7	9	1202	24	24
Lane Group Flow (vph)	958	7	0	1211	48	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.3%		ICU Level of Service D	
Analysis Period (min) 15			

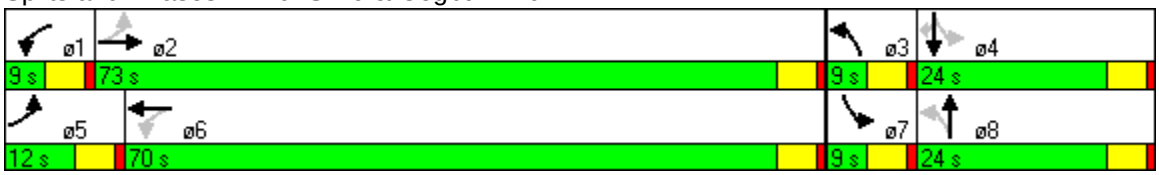
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	150		0	150		0	150		150
Storage Lanes	1		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.996			0.919				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1799	0	1719	1802	0	1719	1663	0	1719	1810	1538
Flt Permitted	0.138			0.186			0.728			0.651		
Satd. Flow (perm)	250	1799	0	337	1802	0	1317	1663	0	1178	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			44				245
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1975			1605			331			313	
Travel Time (s)		29.9			24.3			7.5			7.1	
Volume (vph)	145	709	30	52	738	18	62	40	46	17	40	290
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	161	788	33	58	820	20	69	44	51	19	44	322
Lane Group Flow (vph)	161	821	0	58	840	0	69	95	0	19	44	322
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Total Split (s)	12.0	73.0	0.0	9.0	70.0	0.0	9.0	24.0	0.0	9.0	24.0	24.0
Act Effct Green (s)	77.2	70.8		71.1	66.1		27.4	25.4		25.8	21.8	21.8
Actuated g/C Ratio	0.67	0.62		0.62	0.57		0.24	0.22		0.22	0.19	0.19
v/c Ratio	0.60	0.74		0.22	0.81		0.21	0.24		0.07	0.13	0.66
Control Delay	15.1	16.0		3.2	11.6		35.9	24.2		33.4	41.5	18.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	15.1	16.0		3.2	11.6		35.9	24.2		33.4	41.5	18.8
LOS	B	B		A	B		D	C		C	D	B
Approach Delay		15.9			11.0			29.1			22.1	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	16	402		1	109		40	29		11	28	50
Queue Length 95th (ft)	57	557		m4	364		79	82		30	62	152

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1895			1525			251			233	
Turn Bay Length (ft)	150			150			150			150		150
Base Capacity (vph)	270	1109		268	1036		332	402		288	343	490
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.60	0.74		0.22	0.81		0.21	0.24		0.07	0.13	0.66

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 91 (79%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 16.0 Intersection LOS: B
Intersection Capacity Utilization 71.3% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



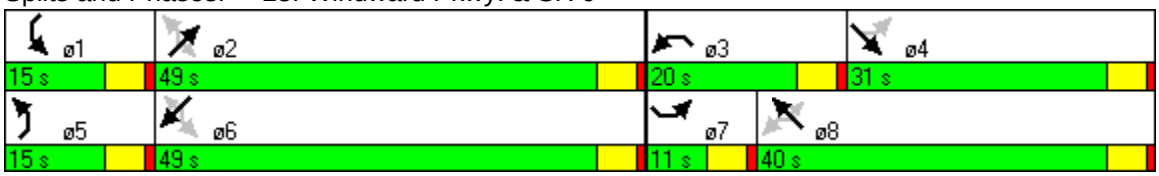
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	250		500	325		350
Storage Lanes	1		0	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.987				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3393	0	1719	3438	1538	1719	1810	1538	1719	1810	1538
Flt Permitted	0.521			0.129			0.143			0.332		
Satd. Flow (perm)	943	3393	0	233	3438	1538	259	1810	1538	601	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				113			337			33
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	112	600	57	224	351	102	59	366	325	164	534	30
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	124	667	63	249	390	113	66	407	361	182	593	33
Lane Group Flow (vph)	124	730	0	249	390	113	66	407	361	182	593	33
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	11.0	31.0	0.0	20.0	40.0	40.0	15.0	49.0	49.0	15.0	49.0	49.0
Act Effct Green (s)	33.6	26.6		46.2	35.2	35.2	56.8	45.0	45.0	56.8	45.0	45.0
Actuated g/C Ratio	0.29	0.23		0.40	0.31	0.31	0.49	0.39	0.39	0.49	0.39	0.39
v/c Ratio	0.38	0.92		0.84	0.37	0.21	0.24	0.57	0.45	0.44	0.84	0.05
Control Delay	27.3	59.1		51.2	32.2	6.2	14.8	25.5	7.3	18.3	44.0	7.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	59.1		51.2	32.2	6.2	14.8	25.5	7.3	18.3	44.0	7.5
LOS	C	E		D	C	A	B	C	A	B	D	A
Approach Delay		54.5			34.6			16.8			36.7	
Approach LOS		D			C			B			D	
Queue Length 50th (ft)	58	275		129	117	0	22	135	59	69	392	0
Queue Length 95th (ft)	99	#387		#266	161	41	m0	207	84	111	#588	20

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	250		500	325		350
Base Capacity (vph)	323	803		300	1076	559	278	708	807	412	708	622
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.91		0.83	0.36	0.20	0.24	0.57	0.45	0.44	0.84	0.05

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 59 (51%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 35.8 Intersection LOS: D
Intersection Capacity Utilization 75.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Windward Pkwy. & SR 9



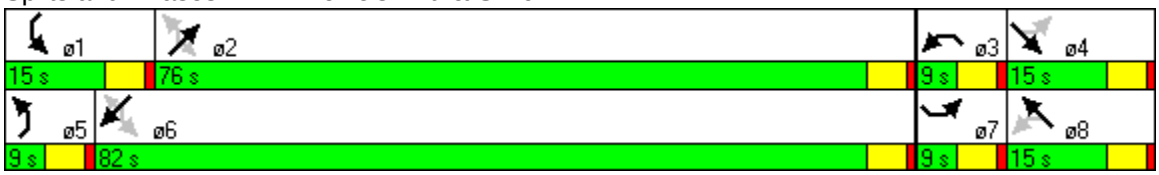
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1538	0	1719	1538	0	1719	1810	1538	1719	1810	1538
Flt Permitted	0.752			0.749			0.225			0.188		
Satd. Flow (perm)	1361	1538	0	1355	1538	0	407	1810	1538	340	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		284			294				7			12
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	5	0	12	14	0	7	26	738	8	22	782	11
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	0	13	16	0	8	29	820	9	24	869	12
Lane Group Flow (vph)	6	13	0	16	8	0	29	820	9	24	869	12
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Total Split (s)	9.0	15.0	0.0	9.0	15.0	0.0	9.0	76.0	76.0	15.0	82.0	82.0
Act Effct Green (s)	18.4	16.4		19.2	18.2		83.5	80.5	80.5	85.7	81.6	81.6
Actuated g/C Ratio	0.16	0.14		0.17	0.16		0.73	0.70	0.70	0.75	0.71	0.71
v/c Ratio	0.03	0.03		0.07	0.02		0.08	0.65	0.01	0.07	0.68	0.01
Control Delay	40.0	0.1		40.6	0.0		6.8	19.5	8.5	1.7	4.5	0.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.4	0.0
Total Delay	40.0	0.1		40.6	0.0		6.8	19.5	8.5	1.7	4.9	0.5
LOS	D	A		D	A		A	B	A	A	A	A
Approach Delay		12.7			27.0			18.9			4.7	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	4	0		10	0		9	381	1	2	97	0
Queue Length 95th (ft)	16	0		31	0		m11	525	m3	m2	m105	m0

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	233	463		242	491		353	1268	1079	389	1284	1095
Starvation Cap Reductn	0	0		0	0		0	0	0	0	101	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03		0.07	0.02		0.08	0.65	0.01	0.06	0.73	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 63 (55%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 11.9 Intersection LOS: B
Intersection Capacity Utilization 55.3% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



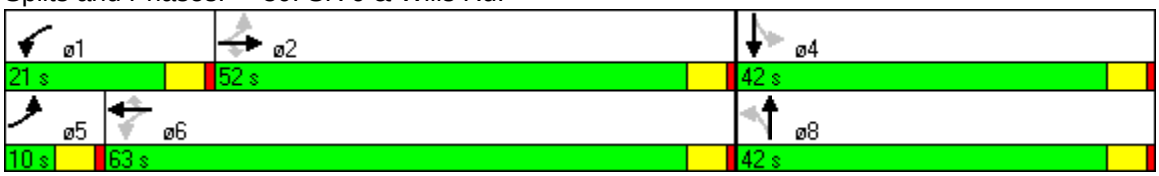
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.946			0.961	
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1712	0	0	1732	0
Flt Permitted	0.115			0.077			0.269				0.971	
Satd. Flow (perm)	208	3438	1538	139	3438	1538	487	1712	0	0	1689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			48			19		26			19	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			1600			480			507	
Travel Time (s)		16.5			24.2			10.9			11.5	
Volume (vph)	67	1170	43	239	1204	17	24	55	31	35	285	132
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	74	1300	48	266	1338	19	27	61	34	39	317	147
Lane Group Flow (vph)	74	1300	48	266	1338	19	27	95	0	0	503	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Total Split (s)	10.0	52.0	52.0	21.0	63.0	63.0	42.0	42.0	0.0	42.0	42.0	0.0
Act Effct Green (s)	55.1	49.1	49.1	69.0	61.0	61.0	38.0	38.0			38.0	
Actuated g/C Ratio	0.48	0.43	0.43	0.60	0.53	0.53	0.33	0.33			0.33	
v/c Ratio	0.41	0.89	0.07	0.88	0.73	0.02	0.17	0.16			0.88	
Control Delay	20.7	36.1	10.3	48.4	18.1	1.6	30.8	20.6			53.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	20.7	36.1	10.3	48.4	18.1	1.6	30.8	20.6			53.4	
LOS	C	D	B	D	B	A	C	C			D	
Approach Delay		34.4			22.8			22.8			53.4	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)	23	353	2	110	494	1	14	35			339	
Queue Length 95th (ft)	m42	#454	m13	m#269	595	m2	39	76			#536	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			1520			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	179	1468	684	317	1824	824	161	583			571	
Starvation Cap Reductn	0	0	0	0	0	0	0	0			0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	
Reduced v/c Ratio	0.41	0.89	0.07	0.84	0.73	0.02	0.17	0.16			0.88	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 111 (97%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 31.5 Intersection LOS: C
Intersection Capacity Utilization 87.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.995			0.926			0.936	
Flt Protected	0.950			0.950				0.980			0.980	
Satd. Flow (prot)	1719	3431	0	1719	3421	0	0	1642	0	0	1660	0
Flt Permitted	0.950			0.950				0.980			0.980	
Satd. Flow (perm)	1719	3431	0	1719	3421	0	0	1642	0	0	1660	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		241			1088			359			497	
Travel Time (s)		3.7			16.5			8.2			11.3	
Volume (vph)	39	1260	14	17	1298	45	11	1	14	6	2	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	43	1400	16	19	1442	50	12	1	16	7	2	8
Lane Group Flow (vph)	43	1416	0	19	1492	0	0	29	0	0	17	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 47.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	3438	3435	0	1719	0
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1719	3438	3435	0	1719	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		604	241		485	
Travel Time (s)		9.2	3.7		11.0	
Volume (vph)	3	1312	1305	11	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	3	1458	1450	12	1	0
Lane Group Flow (vph)	3	1458	1462	0	1	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.989		0.950		
Satd. Flow (prot)	1719	3428	0	1719	3438	1538	0	1790	1538	1719	1810	1538
Flt Permitted	0.084			0.161				0.894		0.528		
Satd. Flow (perm)	152	3428	0	291	3438	1538	0	1618	1538	955	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				193			17			100
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			604			473			529	
Travel Time (s)		7.4			9.2			10.8			12.0	
Volume (vph)	95	938	18	36	1095	174	11	40	15	362	188	90
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	106	1042	20	40	1217	193	12	44	17	402	209	100
Lane Group Flow (vph)	106	1062	0	40	1217	193	0	56	17	402	209	100
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	pm+pt		Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Total Split (s)	12.0	58.0	0.0	9.0	55.0	55.0	15.0	15.0	15.0	33.0	48.0	48.0
Act Effct Green (s)	62.4	57.6		56.1	51.1	51.1		14.2	14.2	44.0	44.0	44.0
Actuated g/C Ratio	0.54	0.50		0.49	0.44	0.44		0.12	0.12	0.38	0.38	0.38
v/c Ratio	0.56	0.62		0.20	0.80	0.24		0.28	0.08	0.75	0.30	0.15
Control Delay	26.3	23.4		12.6	17.7	2.9		52.2	21.3	37.2	26.3	5.1
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	23.4		12.6	17.7	2.9		52.2	21.3	37.2	26.3	5.1
LOS	C	C		B	B	A		D	C	D	C	A
Approach Delay		23.6			15.6			45.0			29.5	
Approach LOS		C			B			D			C	
Queue Length 50th (ft)	36	308		8	142	0		39	0	237	107	0
Queue Length 95th (ft)	78	383		m15	m231	m25		83	23	344	168	35

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			524			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	191	1718		204	1529	790		199	204	558	693	650
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.55	0.62		0.20	0.80	0.24		0.28	0.08	0.72	0.30	0.15

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 21.9 Intersection LOS: C
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.942	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1719	3438	3438	1538	1657	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1719	3438	3438	1538	1657	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1600	691		468	
Travel Time (s)		24.2	10.5		10.6	
Volume (vph)	20	1216	1457	31	4	3
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	22	1351	1619	34	4	3
Lane Group Flow (vph)	22	1351	1619	34	7	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.3%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.997					
Flt Protected					0.950	
Satd. Flow (prot)	3428	0	0	3438	1719	0
Flt Permitted					0.950	
Satd. Flow (perm)	3428	0	0	3438	1719	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	691			1122	514	
Travel Time (s)	10.5			17.0	11.7	
Volume (vph)	1194	26	1	1487	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1327	29	1	1652	1	0
Lane Group Flow (vph)	1356	0	0	1653	1	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.8%		ICU Level of Service A	
Analysis Period (min) 15			

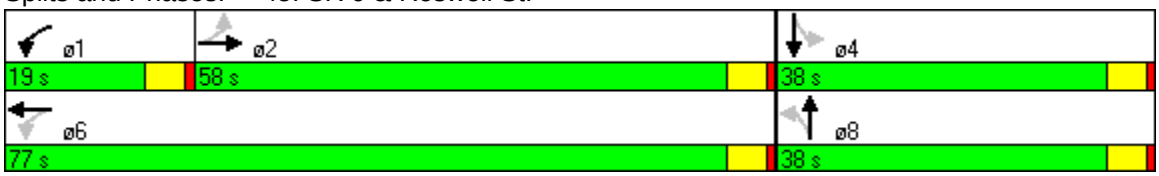
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.997			0.940			0.923	
Flt Protected				0.950				0.989			0.994	
Satd. Flow (prot)	0	3435	0	1719	3428	0	0	1682	0	0	1660	0
Flt Permitted		0.947		0.069				0.773			0.949	
Satd. Flow (perm)	0	3253	0	125	3428	0	0	1315	0	0	1585	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			4			35			59	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			35			30			30	
Link Distance (ft)		1122			617			499			505	
Travel Time (s)		17.0			12.0			11.3			11.5	
Volume (vph)	5	1184	5	188	1246	28	35	54	71	41	115	207
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	1316	6	209	1384	31	39	60	79	46	128	230
Lane Group Flow (vph)	0	1328	0	209	1415	0	0	178	0	0	404	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	58.0	58.0	0.0	19.0	77.0	0.0	38.0	38.0	0.0	38.0	38.0	0.0
Act Effct Green (s)		55.0		73.0	73.0			34.0			34.0	
Actuated g/C Ratio		0.48		0.63	0.63			0.30			0.30	
v/c Ratio		0.85		0.77	0.65			0.43			0.79	
Control Delay		11.9		33.2	14.2			29.8			44.4	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		11.9		33.2	14.2			29.8			44.4	
LOS		B		C	B			C			D	
Approach Delay		11.9			16.7			29.8			44.4	
Approach LOS		B			B			C			D	
Queue Length 50th (ft)		385		100	361			85			238	
Queue Length 95th (ft)		615		m124	m370			153			#391	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1042			537			419			425	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1557		287	2177			413			510	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.85		0.73	0.65			0.43			0.79	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 54 (47%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 18.7 Intersection LOS: B
Intersection Capacity Utilization 102.4% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Roswell St.



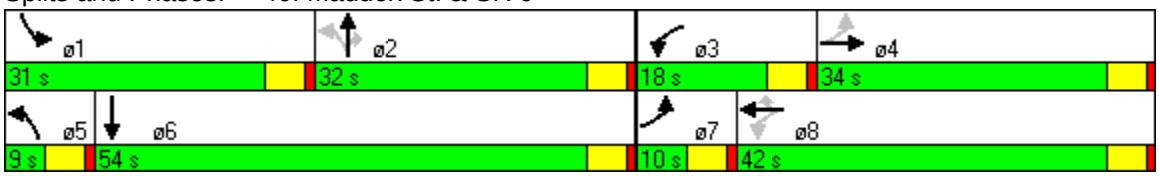
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	400		225	200		360	125		0
Storage Lanes	1		0	2		1	1		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.91	0.91	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.995				0.850			0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	4915	0	3335	3438	1538	1719	3438	1538	1719	3417	0
Flt Permitted	0.468			0.118			0.300			0.950		
Satd. Flow (perm)	847	4915	0	414	3438	1538	543	3438	1538	1719	3417	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				139			180		4	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			673			700	
Travel Time (s)		11.1			16.8			13.1			13.6	
Volume (vph)	80	1277	40	550	433	125	22	645	501	413	824	33
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	89	1419	44	611	481	139	24	717	557	459	916	37
Lane Group Flow (vph)	89	1463	0	611	481	139	24	717	557	459	953	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2			
Total Split (s)	10.0	34.0	0.0	18.0	42.0	42.0	9.0	32.0	32.0	31.0	54.0	0.0
Act Effct Green (s)	36.0	30.0		48.0	40.0	40.0	33.0	28.0	28.0	27.0	53.6	
Actuated g/C Ratio	0.31	0.26		0.42	0.35	0.35	0.29	0.24	0.24	0.23	0.47	
v/c Ratio	0.29	1.14		1.16	0.40	0.22	0.12	0.86	1.09	1.14	0.60	
Control Delay	24.3	111.4		119.5	30.3	5.5	11.1	28.9	78.7	108.5	20.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	24.3	111.4		119.5	30.3	5.5	11.1	28.9	78.7	108.5	20.1	
LOS	C	F		F	C	A	B	C	E	F	C	
Approach Delay		106.4			71.8			49.9			48.8	
Approach LOS		F			E			D			D	
Queue Length 50th (ft)	40	~464		~226	145	0	8	277	~372	~402	345	
Queue Length 95th (ft)	74	#562		#342	194	44	m8	m#304	m#506	m#566	m415	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		407			658			593			620	
Turn Bay Length (ft)	150			400		225	200		360	125		
Base Capacity (vph)	311	1285		528	1196	625	207	837	511	404	1595	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.29	1.14		1.16	0.40	0.22	0.12	0.86	1.09	1.14	0.60	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 70.5 Intersection LOS: E
Intersection Capacity Utilization 95.3% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.955			0.850		
Flt Protected	0.968					
Satd. Flow (prot)	1673	0	3438	1538	0	3438
Flt Permitted	0.968					
Satd. Flow (perm)	1673	0	3438	1538	0	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			35
Link Distance (ft)	481		564			673
Travel Time (s)	10.9		11.0			13.1
Volume (vph)	5	3	1165	2	2	1412
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	6	3	1294	2	2	1569
Lane Group Flow (vph)	9	0	1294	2	0	1571
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.983					0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3380	0	0	3435	1719	1538
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3380	0	0	3435	1719	1538
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	30	
Link Distance (ft)	617			564	527	
Travel Time (s)	12.0			11.0	12.0	
Volume (vph)	1147	149	30	1387	75	20
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1274	166	33	1541	83	22
Lane Group Flow (vph)	1440	0	0	1574	83	22
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.930			0.923				0.850		0.995	
Flt Protected		0.984			0.986			0.999				
Satd. Flow (prot)	0	1656	0	0	1647	0	0	3435	1538	0	3421	0
Flt Permitted		0.984			0.986			0.999				
Satd. Flow (perm)	0	1656	0	0	1647	0	0	3435	1538	0	3421	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		482			205			700			517	
Travel Time (s)		11.0			4.7			13.6			10.1	
Volume (vph)	7	4	12	2	1	4	12	812	26	5	1256	45
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	4	13	2	1	4	13	902	29	6	1396	50
Lane Group Flow (vph)	0	25	0	0	7	0	0	915	29	0	1452	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 53.0%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1810	1719	1461	3335	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1810	1719	1461	3335	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	35		35	
Link Distance (ft)		267	575		517	
Travel Time (s)		6.1	11.2		10.1	
Volume (vph)	0	30	83	1306	823	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	33	92	1451	914	0
Lane Group Flow (vph)	0	33	92	1451	914	0
Sign Control		Stop	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.878				0.999	
Flt Protected	0.995					
Satd. Flow (prot)	1612	0	0	3505	3501	0
Flt Permitted	0.995					
Satd. Flow (perm)	1612	0	0	3505	3501	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			35	35	
Link Distance (ft)	492			701	375	
Travel Time (s)	11.2			13.7	7.3	
Volume (vph)	1	8	18	1861	1126	10
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1	9	20	2068	1251	11
Lane Group Flow (vph)	10	0	0	2088	1262	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

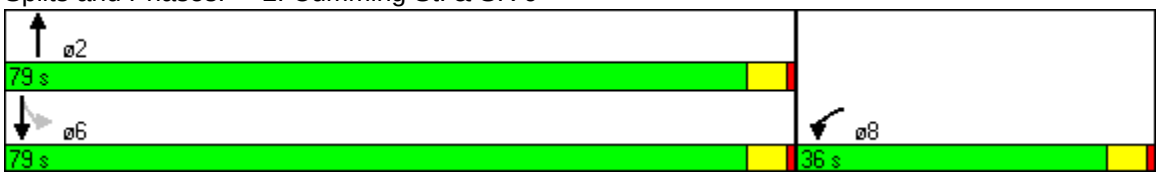
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50		50	50
Trailing Detector (ft)	0		0		0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.970		0.981			
Flt Protected	0.963					0.998
Satd. Flow (prot)	1723	0	3438	0	0	3498
Flt Permitted	0.963					0.630
Satd. Flow (perm)	1723	0	3438	0	0	2208
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	12		29			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		375			960
Travel Time (s)	11.3		7.3			14.5
Volume (vph)	289	82	1623	239	40	847
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	321	91	1803	266	44	941
Lane Group Flow (vph)	412	0	2069	0	0	985
Turn Type					Perm	
Protected Phases	8		2			6
Permitted Phases					6	
Total Split (s)	36.0	0.0	79.0	0.0	79.0	79.0
Act Effct Green (s)	29.8		77.2			77.2
Actuated g/C Ratio	0.26		0.67			0.67
v/c Ratio	0.90		0.89			0.66
Control Delay	56.4		11.1			5.3
Queue Delay	0.0		0.2			0.0
Total Delay	56.4		11.3			5.3
LOS	E		B			A
Approach Delay	56.4		11.3			5.3
Approach LOS	E		B			A
Queue Length 50th (ft)	281		297			33
Queue Length 95th (ft)	#449		m284			43

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		295			880
Turn Bay Length (ft)						
Base Capacity (vph)	488		2317			1482
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		18			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.84		0.90			0.66

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 86 (75%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 14.9 Intersection LOS: B
Intersection Capacity Utilization 80.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



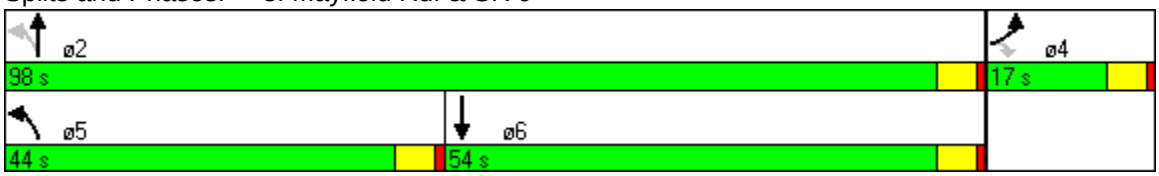
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	0			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.959	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1568	1752	1845	3361	0
Flt Permitted	0.950		0.115			
Satd. Flow (perm)	1752	1568	212	1845	3361	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		197			61	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	482	
Travel Time (s)	10.6			14.5	7.3	
Volume (vph)	162	177	443	1262	710	270
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	180	197	492	1402	789	300
Lane Group Flow (vph)	180	197	492	1402	1089	0
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Total Split (s)	17.0	17.0	44.0	98.0	54.0	0.0
Act Effct Green (s)	13.0	13.0	94.0	94.0	58.0	
Actuated g/C Ratio	0.11	0.11	0.82	0.82	0.50	
v/c Ratio	0.91	0.56	0.82	0.93	0.63	
Control Delay	95.1	13.2	28.4	23.2	13.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	95.1	13.2	28.4	23.2	13.5	
LOS	F	B	C	C	B	
Approach Delay	52.3			24.6	13.5	
Approach LOS	D			C	B	
Queue Length 50th (ft)	134	0	318	755	194	
Queue Length 95th (ft)	#268	69	m366	m#898	m340	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	402	
Turn Bay Length (ft)		230				
Base Capacity (vph)	198	352	709	1508	1725	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.91	0.56	0.69	0.93	0.63	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 88 (77%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 82.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



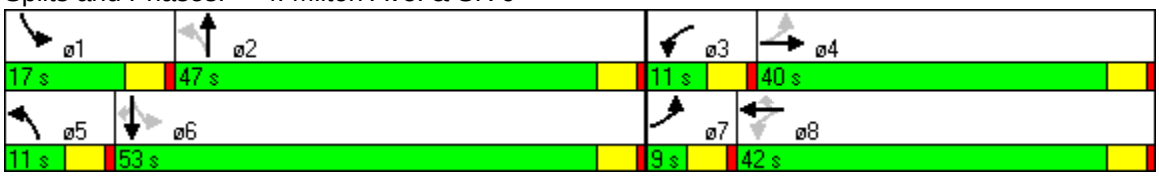
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		0	300		275
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.973				0.850		0.990				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1795	0	1752	1845	1568	1752	3470	0	1752	3505	1568
Flt Permitted	0.204			0.445			0.230			0.085		
Satd. Flow (perm)	376	1795	0	821	1845	1568	424	3470	0	157	3505	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				167		7				113
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			575			701	
Travel Time (s)		11.4			10.2			11.2			13.7	
Volume (vph)	129	178	39	127	422	599	95	1151	78	247	785	102
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	143	198	43	141	469	666	106	1279	87	274	872	113
Lane Group Flow (vph)	143	241	0	141	469	666	106	1366	0	274	872	113
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Total Split (s)	9.0	40.0	0.0	11.0	42.0	42.0	11.0	47.0	0.0	17.0	53.0	53.0
Act Effct Green (s)	41.0	36.0		45.0	38.0	38.0	50.0	43.0		60.0	49.0	49.0
Actuated g/C Ratio	0.36	0.31		0.39	0.33	0.33	0.43	0.37		0.52	0.43	0.43
v/c Ratio	0.74	0.42		0.37	0.77	1.06	0.40	1.05		1.05	0.58	0.15
Control Delay	49.1	32.7		25.4	44.4	80.8	12.5	58.5		91.7	27.9	7.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	49.1	32.7		25.4	44.4	80.8	12.5	58.5		91.7	27.9	7.0
LOS	D	C		C	D	F	B	E		F	C	A
Approach Delay		38.8			61.3			55.2			39.9	
Approach LOS		D			E			E			D	
Queue Length 50th (ft)	67	135		66	310	~453	16	~590		~169	224	4
Queue Length 95th (ft)	#141	211		111	440	#685	m24	m#713		m#320	330	m27

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			495			621	
Turn Bay Length (ft)	225			150		150	200			300		275
Base Capacity (vph)	194	569		378	610	630	265	1302		262	1494	733
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.74	0.42		0.37	0.77	1.06	0.40	1.05		1.05	0.58	0.15

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 94 (82%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 51.2 Intersection LOS: D
Intersection Capacity Utilization 90.7% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			0
Storage Lanes	1	0	1			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.901				0.987	
Flt Protected	0.987		0.950			
Satd. Flow (prot)	1640	0	1752	1845	3459	0
Flt Permitted	0.987		0.950			
Satd. Flow (perm)	1640	0	1752	1845	3459	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2269	199	
Travel Time (s)	8.7			34.4	3.0	
Volume (vph)	10	27	166	1234	949	94
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	11	30	184	1371	1054	104
Lane Group Flow (vph)	41	0	184	1371	1158	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.9%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	1	0		0	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.943		0.996			
Flt Protected	0.972				0.950	
Satd. Flow (prot)	1691	0	1837	0	1752	3505
Flt Permitted	0.972				0.950	
Satd. Flow (perm)	1691	0	1837	0	1752	3505
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	437		482			2269
Travel Time (s)	9.9		7.3			34.4
Volume (vph)	20	14	1386	38	16	960
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	22	16	1540	42	18	1067
Lane Group Flow (vph)	38	0	1582	0	18	1067
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	150	
Storage Lanes	1	0		1	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.918			0.850		
Flt Protected	0.981					0.998
Satd. Flow (prot)	1661	0	1845	1568	0	3498
Flt Permitted	0.981					0.998
Satd. Flow (perm)	1661	0	1845	1568	0	3498
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	365		199			854
Travel Time (s)	8.3		3.0			12.9
Volume (vph)	8	13	1231	13	49	1035
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	9	14	1368	14	54	1150
Lane Group Flow (vph)	23	0	1368	14	0	1204
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.989		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1843	1824	0	1678	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1843	1824	0	1678	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		854	312		342	
Travel Time (s)		12.9	4.7		7.8	
Volume (vph)	31	1213	1066	99	18	18
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	34	1348	1184	110	20	20
Lane Group Flow (vph)	0	1382	1294	0	40	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 98.8%		ICU Level of Service F	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.912	
Flt Protected				0.999	0.983	
Satd. Flow (prot)	1845	1568	0	1843	1654	0
Flt Permitted				0.999	0.983	
Satd. Flow (perm)	1845	1568	0	1843	1654	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	312			1975	374	
Travel Time (s)	4.7			29.9	8.5	
Volume (vph)	1210	21	14	1159	6	12
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1344	23	16	1288	7	13
Lane Group Flow (vph)	1344	23	0	1304	20	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 82.2%		ICU Level of Service E	
Analysis Period (min) 15			

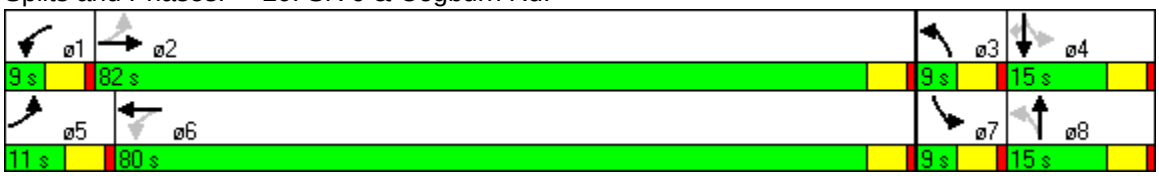
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	150		0	150		0	150		150
Storage Lanes	1		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.997			0.898				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1837	0	1752	1839	0	1752	1657	0	1752	1845	1568
Flt Permitted	0.076			0.053			0.740			0.605		
Satd. Flow (perm)	140	1837	0	98	1839	0	1365	1657	0	1116	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2			61				161
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1975			1605			331			313	
Travel Time (s)		29.9			24.3			7.5			7.1	
Volume (vph)	140	1056	26	31	952	22	76	26	55	22	23	145
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	156	1173	29	34	1058	24	84	29	61	24	26	161
Lane Group Flow (vph)	156	1202	0	34	1082	0	84	90	0	24	26	161
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Total Split (s)	11.0	82.0	0.0	9.0	80.0	0.0	9.0	15.0	0.0	9.0	15.0	15.0
Act Effct Green (s)	85.8	81.6		81.0	76.0		17.6	14.6		16.8	12.8	12.8
Actuated g/C Ratio	0.75	0.71		0.70	0.66		0.15	0.13		0.15	0.11	0.11
v/c Ratio	0.77	0.92		0.24	0.89		0.37	0.34		0.13	0.13	0.51
Control Delay	27.9	22.8		8.2	24.0		47.4	23.6		41.6	49.5	13.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	27.9	22.8		8.2	24.0		47.4	23.6		41.6	49.5	13.6
LOS	C	C		A	C		D	C		D	D	B
Approach Delay		23.4			23.6			35.1			21.2	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	36	652		4	404		55	20		15	18	0
Queue Length 95th (ft)	m50	m#1042		m10	#972		102	71		40	47	64

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1895			1525			251			233	
Turn Bay Length (ft)	150			150			150			150		150
Base Capacity (vph)	203	1304		141	1216		226	264		191	205	318
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.77	0.92		0.24	0.89		0.37	0.34		0.13	0.13	0.51

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 92 (80%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 24.0 Intersection LOS: C
Intersection Capacity Utilization 81.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



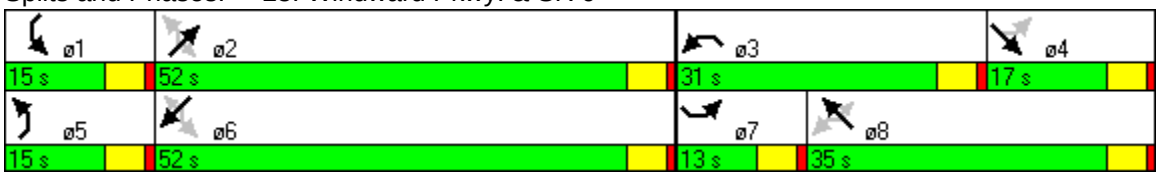
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	250		500	325		350
Storage Lanes	1		0	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.981				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3438	0	1752	3505	1568	1752	1845	1568	1752	1845	1568
Flt Permitted	0.308			0.235			0.178			0.083		
Satd. Flow (perm)	568	3438	0	433	3505	1568	328	1845	1568	153	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				244			289			50
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	130	352	52	488	740	232	80	774	260	191	531	45
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	144	391	58	542	822	258	89	860	289	212	590	50
Lane Group Flow (vph)	144	449	0	542	822	258	89	860	289	212	590	50
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	13.0	17.0	0.0	31.0	35.0	35.0	15.0	52.0	52.0	15.0	52.0	52.0
Act Effct Green (s)	22.0	13.0		44.0	31.0	31.0	59.0	48.0	48.0	59.0	48.0	48.0
Actuated g/C Ratio	0.19	0.11		0.38	0.27	0.27	0.51	0.42	0.42	0.51	0.42	0.42
v/c Ratio	0.72	1.13		1.14	0.87	0.43	0.29	1.12	0.35	0.92	0.77	0.07
Control Delay	48.1	128.9		117.2	51.3	7.5	8.7	81.0	1.5	70.1	36.7	6.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0
Total Delay	48.1	128.9		117.2	51.3	7.5	8.7	81.0	1.5	70.1	37.5	6.0
LOS	D	F		F	D	A	A	F	A	E	D	A
Approach Delay		109.2			66.4			57.2			43.7	
Approach LOS		F			E			E			D	
Queue Length 50th (ft)	71	~198		~420	306	8	13	~723	9	106	367	0
Queue Length 95th (ft)	#146	#306		#637	#409	72	m14	m#743	m9	#252	515	24

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	250		500	325		350
Base Capacity (vph)	201	399		475	945	601	304	770	823	231	770	684
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	42	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	1.13		1.14	0.87	0.43	0.29	1.12	0.35	0.92	0.81	0.07

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 28 (24%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 65.2 Intersection LOS: E
Intersection Capacity Utilization 103.1% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Windward Pkwy. & SR 9



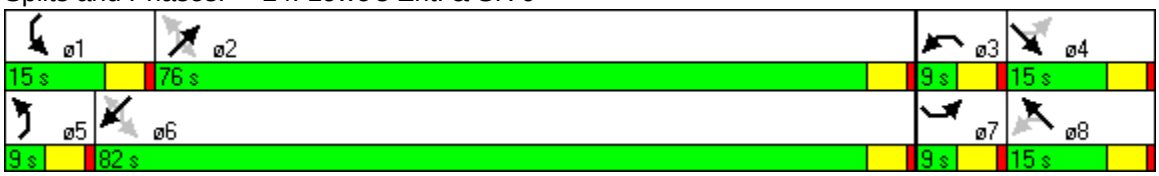
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.869			0.871				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1603	0	1752	1607	0	1752	1845	1568	1752	1845	1568
Flt Permitted	0.715			0.737			0.118			0.053		
Satd. Flow (perm)	1319	1603	0	1360	1607	0	218	1845	1568	98	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			56				40			7
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	12	4	24	32	8	50	18	1052	63	116	949	6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	13	4	27	36	9	56	20	1169	70	129	1054	7
Lane Group Flow (vph)	13	31	0	36	65	0	20	1169	70	129	1054	7
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Total Split (s)	9.0	15.0	0.0	9.0	15.0	0.0	9.0	76.0	76.0	15.0	82.0	82.0
Act Effct Green (s)	17.6	14.6		18.4	16.4		78.2	73.2	73.2	87.0	83.4	83.4
Actuated g/C Ratio	0.15	0.13		0.16	0.14		0.68	0.64	0.64	0.76	0.73	0.73
v/c Ratio	0.06	0.14		0.15	0.23		0.09	1.00	0.07	0.60	0.79	0.01
Control Delay	40.5	21.2		42.0	18.1		1.7	27.3	0.3	17.6	14.3	3.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	40.5	21.2		42.0	18.1		1.7	27.3	0.3	17.6	14.8	3.8
LOS	D	C		D	B		A	C	A	B	B	A
Approach Delay		26.9			26.6			25.4			15.1	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	8	3		23	6		1	~570	1	41	454	0
Queue Length 95th (ft)	26	33		53	49		m1	m#1063	m1	m48	m527	m1

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	220	227		235	277		215	1174	1013	232	1338	1139
Starvation Cap Reductn	0	0		0	0		0	0	0	0	68	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.14		0.15	0.23		0.09	1.00	0.07	0.56	0.83	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 4 (3%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 20.8 Intersection LOS: C
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



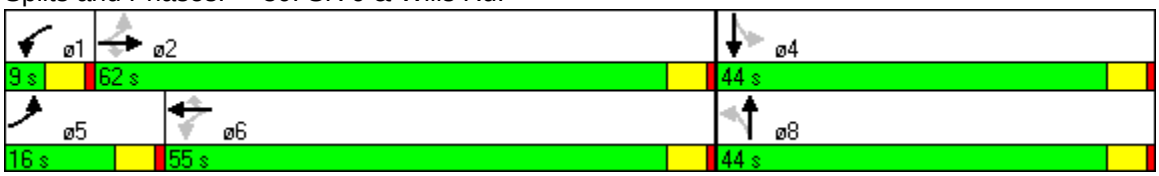
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.954			0.918	
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1752	3505	1568	1752	3505	1568	1752	1760	0	0	1687	0
Flt Permitted	0.073			0.078			0.577				0.701	
Satd. Flow (perm)	135	3505	1568	144	3505	1568	1064	1760	0	0	1187	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			29			49		21			75	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			1600			480			507	
Travel Time (s)		16.5			24.2			10.9			11.5	
Volume (vph)	186	1364	26	37	1273	44	60	343	151	14	48	97
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	207	1516	29	41	1414	49	67	381	168	16	53	108
Lane Group Flow (vph)	207	1516	29	41	1414	49	67	549	0	0	177	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Total Split (s)	16.0	62.0	62.0	9.0	55.0	55.0	44.0	44.0	0.0	44.0	44.0	0.0
Act Effct Green (s)	67.0	61.6	61.6	56.0	51.0	51.0	40.0	40.0			40.0	
Actuated g/C Ratio	0.58	0.54	0.54	0.49	0.44	0.44	0.35	0.35			0.35	
v/c Ratio	0.84	0.81	0.03	0.29	0.91	0.07	0.18	0.88			0.38	
Control Delay	40.6	29.3	5.7	13.1	37.9	5.5	27.8	50.6			18.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	40.6	29.3	5.7	13.1	37.9	5.5	27.8	50.6			18.6	
LOS	D	C	A	B	D	A	C	D			B	
Approach Delay		30.2			36.2			48.1			18.6	
Approach LOS		C			D			D			B	
Queue Length 50th (ft)	95	613	6	9	566	9	34	367			54	
Queue Length 95th (ft)	m#172	683	m7	m15	#668	m19	70	#571			116	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			1520			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	247	1878	853	140	1554	723	370	626			462	
Starvation Cap Reductn	0	0	0	0	0	0	0	0			0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	
Reduced v/c Ratio	0.84	0.81	0.03	0.29	0.91	0.07	0.18	0.88			0.38	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 60 (52%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 34.6 Intersection LOS: C
Intersection Capacity Utilization 82.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.999			0.894			0.926	
Flt Protected	0.950			0.950				0.990			0.979	
Satd. Flow (prot)	1752	3494	0	1752	3501	0	0	1633	0	0	1672	0
Flt Permitted	0.950			0.950				0.990			0.979	
Satd. Flow (perm)	1752	3494	0	1752	3501	0	0	1633	0	0	1672	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		241			1088			392			497	
Travel Time (s)		3.7			16.5			8.9			11.3	
Volume (vph)	12	1498	27	12	1408	10	10	0	37	41	3	54
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	13	1664	30	13	1564	11	11	0	41	46	3	60
Lane Group Flow (vph)	13	1694	0	13	1575	0	0	52	0	0	109	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 59.5%	ICU Level of Service B
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.910	
Flt Protected	0.950				0.984	
Satd. Flow (prot)	1752	3505	3501	0	1652	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1752	3505	3501	0	1652	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		604	241		485	
Travel Time (s)		9.2	3.7		11.0	
Volume (vph)	5	1534	1465	7	3	5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	6	1704	1628	8	3	6
Lane Group Flow (vph)	6	1704	1636	0	9	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			

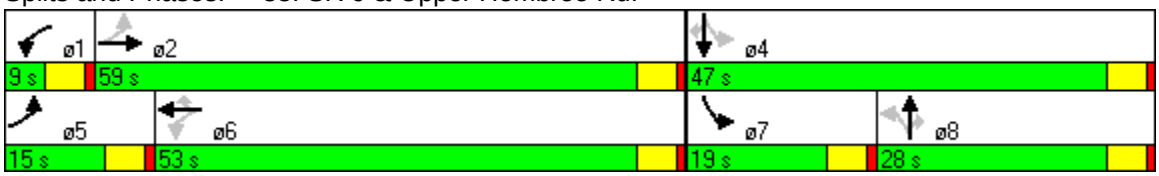
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.991		0.950		
Satd. Flow (prot)	1752	3494	0	1752	3505	1568	0	1828	1568	1752	1845	1568
Flt Permitted	0.075			0.082				0.925		0.197		
Satd. Flow (perm)	138	3494	0	151	3505	1568	0	1706	1568	363	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				304			29			102
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			604			473			529	
Travel Time (s)		7.4			9.2			10.8			12.0	
Volume (vph)	167	1264	26	5	1191	274	47	226	40	235	102	92
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	186	1404	29	6	1323	304	52	251	44	261	113	102
Lane Group Flow (vph)	186	1433	0	6	1323	304	0	303	44	261	113	102
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	pm+pt		Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Total Split (s)	15.0	59.0	0.0	9.0	53.0	53.0	28.0	28.0	28.0	19.0	47.0	47.0
Act Effct Green (s)	64.0	62.2		54.1	49.1	49.1		24.2	24.2	43.0	43.0	43.0
Actuated g/C Ratio	0.56	0.54		0.47	0.43	0.43		0.21	0.21	0.37	0.37	0.37
v/c Ratio	0.81	0.76		0.04	0.88	0.36		0.85	0.12	0.83	0.16	0.16
Control Delay	50.6	24.4		3.8	28.3	5.6		65.6	19.3	49.2	24.9	5.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	24.4		3.8	28.3	5.6		65.6	19.3	49.2	24.9	5.2
LOS	D	C		A	C	A		E	B	D	C	A
Approach Delay		27.4			24.0			59.8			34.0	
Approach LOS		C			C			E			C	
Queue Length 50th (ft)	85	399		1	546	63		218	9	141	55	0
Queue Length 95th (ft)	#206	584		m1	m602	m70		#369	41	#256	97	36

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			524			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	231	1890		141	1497	844		358	352	317	690	650
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.81	0.76		0.04	0.88	0.36		0.85	0.13	0.82	0.16	0.16

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 29.6 Intersection LOS: C
Intersection Capacity Utilization 83.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.905	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1752	3505	3505	1568	1644	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1752	3505	3505	1568	1644	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1600	691		468	
Travel Time (s)		24.2	10.5		10.6	
Volume (vph)	23	1506	1282	24	31	72
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	26	1673	1424	27	34	80
Lane Group Flow (vph)	26	1673	1424	27	114	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998					
Flt Protected					0.950	
Satd. Flow (prot)	3498	0	0	3505	1752	0
Flt Permitted					0.950	
Satd. Flow (perm)	3498	0	0	3505	1752	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	691			1122	514	
Travel Time (s)	10.5			17.0	11.7	
Volume (vph)	1513	24	0	1305	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1681	27	0	1450	1	0
Lane Group Flow (vph)	1708	0	0	1450	1	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.6%		ICU Level of Service A	
Analysis Period (min) 15			

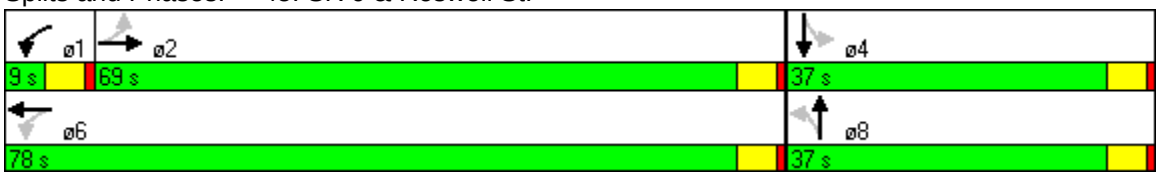
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.995			0.952			0.940	
Flt Protected				0.950				0.994			0.993	
Satd. Flow (prot)	0	3505	0	1752	3487	0	0	1746	0	0	1722	0
Flt Permitted		0.955		0.058				0.916			0.811	
Satd. Flow (perm)	0	3347	0	107	3487	0	0	1609	0	0	1406	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6			24			35	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			35			30			30	
Link Distance (ft)		1122			617			499			505	
Travel Time (s)		17.0			12.0			11.3			11.5	
Volume (vph)	1	1508	4	83	1159	39	41	196	131	35	95	105
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	1676	4	92	1288	43	46	218	146	39	106	117
Lane Group Flow (vph)	0	1681	0	92	1331	0	0	410	0	0	262	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	69.0	69.0	0.0	9.0	78.0	0.0	37.0	37.0	0.0	37.0	37.0	0.0
Act Effct Green (s)		65.0		74.0	74.0			33.0			33.0	
Actuated g/C Ratio		0.57		0.64	0.64			0.29			0.29	
v/c Ratio		0.89		0.66	0.59			0.86			0.61	
Control Delay		14.7		36.5	8.5			54.9			37.6	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		14.7		36.5	8.5			54.9			37.6	
LOS		B		D	A			D			D	
Approach Delay		14.7			10.3			54.9			37.6	
Approach LOS		B			B			D			D	
Queue Length 50th (ft)		77		13	312			272			146	
Queue Length 95th (ft)		86		m48	266			#445			238	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1042			537			419			425	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1892		140	2246			479			428	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.89		0.66	0.59			0.86			0.61	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 102 (89%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 19.0 Intersection LOS: B
Intersection Capacity Utilization 101.1% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Roswell St.



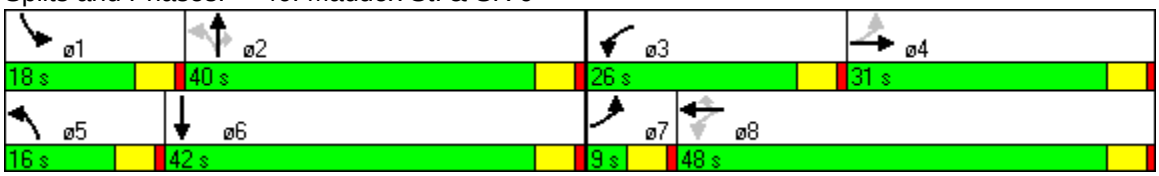
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	400		225	200		360	125		0
Storage Lanes	1		0	2		1	1		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.91	0.91	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.991				0.850			0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	4991	0	3400	3505	1568	1752	3505	1568	1752	3459	0
Flt Permitted	0.148			0.223			0.192			0.950		
Satd. Flow (perm)	273	4991	0	798	3505	1568	354	3505	1568	1752	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				250			369		9	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			673			700	
Travel Time (s)		11.1			16.8			13.1			13.6	
Volume (vph)	89	550	35	539	1154	300	140	900	597	185	639	60
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	99	611	39	599	1282	333	156	1000	663	206	710	67
Lane Group Flow (vph)	99	650	0	599	1282	333	156	1000	663	206	777	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2			
Total Split (s)	9.0	31.0	0.0	26.0	48.0	48.0	16.0	40.0	40.0	18.0	42.0	0.0
Act Effct Green (s)	34.6	29.6		53.0	44.0	44.0	46.0	36.0	36.0	14.0	40.0	
Actuated g/C Ratio	0.30	0.26		0.46	0.38	0.38	0.40	0.31	0.31	0.12	0.35	
v/c Ratio	0.68	0.50		0.74	0.96	0.44	0.59	0.91	0.89	0.97	0.64	
Control Delay	46.0	38.0		25.0	51.1	8.8	15.0	31.0	22.5	87.9	32.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	46.0	38.0		25.0	51.1	8.8	15.0	31.0	22.5	87.9	32.4	
LOS	D	D		C	D	A	B	C	C	F	C	
Approach Delay		39.1			37.7			26.5			44.0	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	41	149		145	480	40	28	392	393	149	298	
Queue Length 95th (ft)	#105	195		190	#633	113	m31	m#463	m#466	#303	363	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		407			658			593			620	
Turn Bay Length (ft)	150			400		225	200		360	125		
Base Capacity (vph)	146	1292		866	1341	754	294	1097	744	213	1210	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.68	0.50		0.69	0.96	0.44	0.53	0.91	0.89	0.97	0.64	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 52 (45%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 35.4 Intersection LOS: D
Intersection Capacity Utilization 85.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.884			0.850		
Flt Protected	0.993					
Satd. Flow (prot)	1619	0	3505	1568	0	3505
Flt Permitted	0.993					
Satd. Flow (perm)	1619	0	3505	1568	0	3505
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			35
Link Distance (ft)	481		564			673
Travel Time (s)	10.9		11.0			13.1
Volume (vph)	1	5	1632	6	3	1210
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	1	6	1813	7	3	1344
Lane Group Flow (vph)	7	0	1813	7	0	1347
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.991					0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3473	0	0	3501	1752	1568
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3473	0	0	3501	1752	1568
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	30	
Link Distance (ft)	617			564	527	
Travel Time (s)	12.0			11.0	12.0	
Volume (vph)	1570	104	15	1196	85	68
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1744	116	17	1329	94	76
Lane Group Flow (vph)	1860	0	0	1346	94	76
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.892			0.923				0.850		0.996	
Flt Protected					0.994			0.999			0.999	
Satd. Flow (prot)	0	1645	0	0	1692	0	0	3501	1568	0	3487	0
Flt Permitted					0.994			0.999			0.999	
Satd. Flow (perm)	0	1645	0	0	1692	0	0	3501	1568	0	3487	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		482			205			700			517	
Travel Time (s)		11.0			4.7			13.6			10.1	
Volume (vph)	0	1	4	4	10	18	26	1176	87	16	876	25
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1	4	4	11	20	29	1307	97	18	973	28
Lane Group Flow (vph)	0	5	0	0	35	0	0	1336	97	0	1019	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1752	1490	3400	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1752	1490	3400	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	35		35	
Link Distance (ft)		262	575		517	
Travel Time (s)		6.0	11.2		10.1	
Volume (vph)	0	130	34	917	1194	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	144	38	1019	1327	0
Lane Group Flow (vph)	0	144	38	1019	1327	0
Sign Control		Stop	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.872				0.999	
Flt Protected	0.997					
Satd. Flow (prot)	1573	0	0	3438	3435	0
Flt Permitted	0.997					
Satd. Flow (perm)	1573	0	0	3438	3435	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			35	35	
Link Distance (ft)	492			701	375	
Travel Time (s)	11.2			13.7	7.3	
Volume (vph)	4	65	1	1091	1763	9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	4	72	1	1212	1959	10
Lane Group Flow (vph)	76	0	0	1213	1969	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.9%		ICU Level of Service B	
Analysis Period (min) 15			

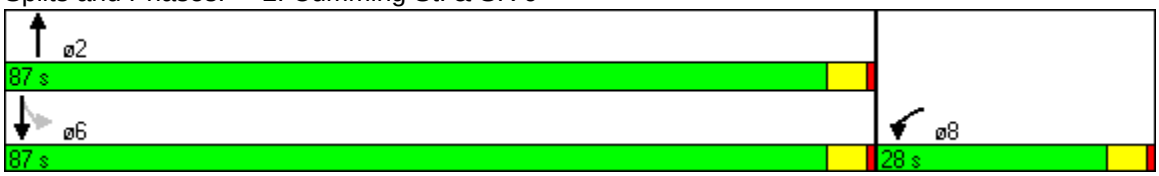
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50		50	50
Trailing Detector (ft)	0		0		0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.988		0.960			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1709	0	3301	0	0	3428
Flt Permitted	0.956					0.666
Satd. Flow (perm)	1709	0	3301	0	0	2290
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	4		117			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		375			960
Travel Time (s)	11.3		7.3			14.5
Volume (vph)	315	31	801	294	108	1457
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	350	34	890	327	120	1619
Lane Group Flow (vph)	384	0	1217	0	0	1739
Turn Type					Perm	
Protected Phases	8		2			6
Permitted Phases					6	
Total Split (s)	28.0	0.0	87.0	0.0	87.0	87.0
Act Effct Green (s)	24.0		83.0			83.0
Actuated g/C Ratio	0.21		0.72			0.72
v/c Ratio	1.07		0.50			1.05
Control Delay	109.8		1.6			45.7
Queue Delay	0.0		0.0			0.0
Total Delay	109.8		1.6			45.7
LOS	F		A			D
Approach Delay	109.8		1.6			45.7
Approach LOS	F		A			D
Queue Length 50th (ft)	~313		20			~745
Queue Length 95th (ft)	#508		m11			#892

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		295			880
Turn Bay Length (ft)						
Base Capacity (vph)	360		2415			1653
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	1.07		0.50			1.05

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 71 (62%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.07
Intersection Signal Delay: 37.0 Intersection LOS: D
Intersection Capacity Utilization 104.3% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



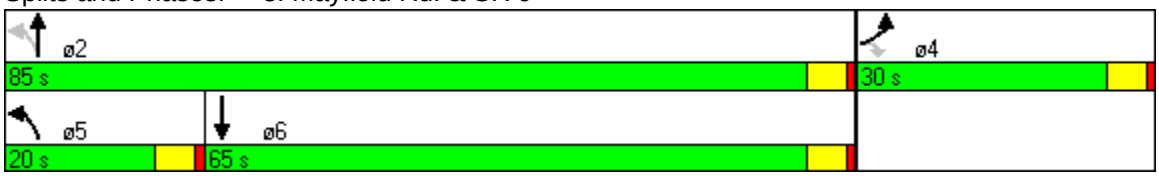
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	0			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.980	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1719	1810	3369	0
Flt Permitted	0.950		0.062			
Satd. Flow (perm)	1719	1538	112	1810	3369	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		248			23	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	482	
Travel Time (s)	10.6			14.5	7.3	
Volume (vph)	234	368	195	637	1197	184
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	260	409	217	708	1330	204
Lane Group Flow (vph)	260	409	217	708	1534	0
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Total Split (s)	30.0	30.0	20.0	85.0	65.0	0.0
Act Effct Green (s)	22.3	22.3	84.7	84.7	65.8	
Actuated g/C Ratio	0.19	0.19	0.74	0.74	0.57	
v/c Ratio	0.78	0.82	0.74	0.53	0.79	
Control Delay	52.5	26.5	48.5	6.3	17.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.5	26.5	48.5	6.3	17.3	
LOS	D	C	D	A	B	
Approach Delay	36.6			16.2	17.3	
Approach LOS	D			B	B	
Queue Length 50th (ft)	181	116	129	91	448	
Queue Length 95th (ft)	269	239	m#206	m166	522	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	402	
Turn Bay Length (ft)		230				
Base Capacity (vph)	389	540	310	1334	1936	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.67	0.76	0.70	0.53	0.79	

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 63 (55%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 21.1	Intersection LOS: C
Intersection Capacity Utilization 72.7%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		0	300		275
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.984				0.850		0.978				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1781	0	1719	1810	1538	1719	3362	0	1719	3438	1538
Flt Permitted	0.381			0.148			0.138			0.121		
Satd. Flow (perm)	689	1781	0	268	1810	1538	250	3362	0	219	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				298		17				48
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			575			701	
Travel Time (s)		11.4			10.2			11.2			13.7	
Volume (vph)	140	396	47	161	209	268	83	684	121	548	1237	43
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	156	440	52	179	232	298	92	760	134	609	1374	48
Lane Group Flow (vph)	156	492	0	179	232	298	92	894	0	609	1374	48
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Total Split (s)	14.0	33.0	0.0	12.0	31.0	31.0	10.0	33.0	0.0	37.0	60.0	60.0
Act Effct Green (s)	38.9	29.0		35.1	27.1	27.1	35.0	29.0		66.0	56.0	56.0
Actuated g/C Ratio	0.34	0.25		0.31	0.24	0.24	0.30	0.25		0.57	0.49	0.49
v/c Ratio	0.49	1.09		0.98	0.54	0.51	0.60	1.04		1.10	0.82	0.06
Control Delay	32.0	108.3		93.1	44.1	7.4	50.2	63.0		74.0	26.9	4.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	32.0	108.3		93.1	44.1	7.4	50.2	63.0		74.0	26.9	4.5
LOS	C	F		F	D	A	D	E		E	C	A
Approach Delay		89.9			41.0			61.8			40.5	
Approach LOS		F			D			E			D	
Queue Length 50th (ft)	81	~408		94	152	0	46	~382		~460	498	2
Queue Length 95th (ft)	134	#618		#231	234	71	m57	m#494		m#421	m458	m2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			495			621	
Turn Bay Length (ft)	225			150		150	200			300		275
Base Capacity (vph)	323	453		183	427	590	153	861		556	1674	774
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.48	1.09		0.98	0.54	0.51	0.60	1.04		1.10	0.82	0.06

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 53 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 52.7 Intersection LOS: D
Intersection Capacity Utilization 99.1% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			0
Storage Lanes	1	0	1			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.876				0.996	
Flt Protected	0.996		0.950			
Satd. Flow (prot)	1579	0	1719	1810	3424	0
Flt Permitted	0.996		0.950			
Satd. Flow (perm)	1579	0	1719	1810	3424	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2269	199	
Travel Time (s)	8.7			34.4	3.0	
Volume (vph)	20	229	23	842	1118	33
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	22	254	26	936	1242	37
Lane Group Flow (vph)	276	0	26	936	1279	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	1	0		0	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.964		0.996			
Flt Protected	0.965				0.950	
Satd. Flow (prot)	1683	0	1802	0	1719	3438
Flt Permitted	0.965				0.950	
Satd. Flow (perm)	1683	0	1802	0	1719	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	437		482			2269
Travel Time (s)	9.9		7.3			34.4
Volume (vph)	47	17	848	23	13	1334
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	52	19	942	26	14	1482
Lane Group Flow (vph)	71	0	968	0	14	1482
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.3%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	150	
Storage Lanes	1	0		1	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.934			0.850		
Flt Protected	0.975					
Satd. Flow (prot)	1648	0	1810	1538	0	3438
Flt Permitted	0.975					
Satd. Flow (perm)	1648	0	1810	1538	0	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	365		199			854
Travel Time (s)	8.3		3.0			12.9
Volume (vph)	22	21	859	3	3	1129
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	24	23	954	3	3	1254
Lane Group Flow (vph)	47	0	954	3	0	1257
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.2%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.944	
Flt Protected		0.999			0.972	
Satd. Flow (prot)	0	1808	1800	0	1660	0
Flt Permitted		0.999			0.972	
Satd. Flow (perm)	0	1808	1800	0	1660	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		854	312		342	
Travel Time (s)		12.9	4.7		7.8	
Volume (vph)	12	868	1107	42	35	25
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	13	964	1230	47	39	28
Lane Group Flow (vph)	0	977	1277	0	67	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.932	
Flt Protected					0.976	
Satd. Flow (prot)	1810	1538	0	1810	1646	0
Flt Permitted					0.976	
Satd. Flow (perm)	1810	1538	0	1810	1646	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	312			1975	374	
Travel Time (s)	4.7			29.9	8.5	
Volume (vph)	897	6	8	1126	23	23
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	997	7	9	1251	26	26
Lane Group Flow (vph)	997	7	0	1260	52	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.6%		ICU Level of Service D	
Analysis Period (min) 15			

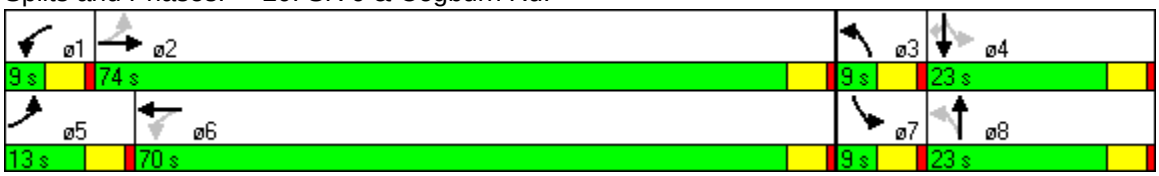
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	150		0	150		0	150		150
Storage Lanes	1		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.996			0.920				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1799	0	1719	1802	0	1719	1665	0	1719	1810	1538
Flt Permitted	0.115			0.175			0.726			0.632		
Satd. Flow (perm)	208	1799	0	317	1802	0	1314	1665	0	1144	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			42				232
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1975			1605			331			313	
Travel Time (s)		29.9			24.3			7.5			7.1	
Volume (vph)	152	737	31	54	768	19	65	42	48	18	42	301
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	169	819	34	60	853	21	72	47	53	20	47	334
Lane Group Flow (vph)	169	853	0	60	874	0	72	100	0	20	47	334
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Total Split (s)	13.0	74.0	0.0	9.0	70.0	0.0	9.0	23.0	0.0	9.0	23.0	23.0
Act Effct Green (s)	78.9	71.8		71.4	66.4		26.4	24.4		24.8	20.8	20.8
Actuated g/C Ratio	0.69	0.62		0.62	0.58		0.23	0.21		0.22	0.18	0.18
v/c Ratio	0.66	0.76		0.23	0.84		0.23	0.26		0.07	0.14	0.71
Control Delay	22.1	15.1		3.5	12.1		37.0	26.2		34.2	42.6	23.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	22.1	15.1		3.5	12.1		37.0	26.2		34.2	42.6	23.9
LOS	C	B		A	B		D	C		C	D	C
Approach Delay		16.2			11.6			30.7			26.6	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)	10	404		2	112		42	34		11	30	69
Queue Length 95th (ft)	m85	567		m4	303		82	89		32	66	#186

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1895			1525			251			233	
Turn Bay Length (ft)	150			150			150			150		150
Base Capacity (vph)	261	1124		258	1042		320	386		272	327	468
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.65	0.76		0.23	0.84		0.23	0.26		0.07	0.14	0.71

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 81 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 17.1 Intersection LOS: B
Intersection Capacity Utilization 73.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



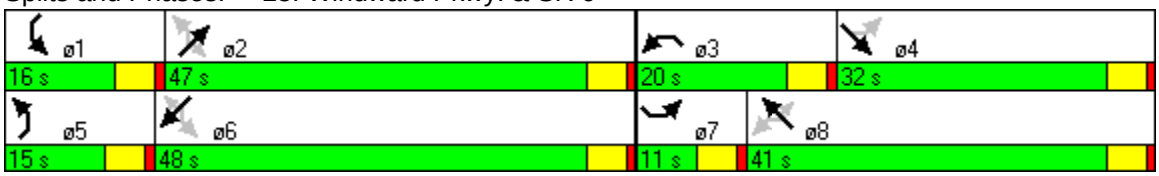
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	250		500	325		350
Storage Lanes	1		0	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.987				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3393	0	1719	3438	1538	1719	1810	1538	1719	1810	1538
Flt Permitted	0.513			0.125			0.109			0.292		
Satd. Flow (perm)	928	3393	0	226	3438	1538	197	1810	1538	528	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				118			322			34
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	117	624	59	233	365	106	61	381	338	171	556	31
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	130	693	66	259	406	118	68	423	376	190	618	34
Lane Group Flow (vph)	130	759	0	259	406	118	68	423	376	190	618	34
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	11.0	32.0	0.0	20.0	41.0	41.0	15.0	47.0	47.0	16.0	48.0	48.0
Act Effct Green (s)	34.6	27.6		47.3	36.3	36.3	54.7	43.0	43.0	56.7	44.0	44.0
Actuated g/C Ratio	0.30	0.24		0.41	0.32	0.32	0.48	0.37	0.37	0.49	0.38	0.38
v/c Ratio	0.40	0.93		0.87	0.37	0.21	0.27	0.62	0.48	0.49	0.89	0.06
Control Delay	26.9	58.6		55.4	31.5	6.0	17.7	28.6	8.7	19.8	50.3	7.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	58.6		55.4	31.5	6.0	17.7	28.6	8.7	19.8	50.3	7.6
LOS	C	E		E	C	A	B	C	A	B	D	A
Approach Delay		54.0			35.6			19.1			41.7	
Approach LOS		D			D			B			D	
Queue Length 50th (ft)	60	286		138	121	0	23	141	67	74	424	0
Queue Length 95th (ft)	103	#401		#283	165	41	m40	255	102	119	#641	21

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	250		500	325		350
Base Capacity (vph)	328	832		301	1106	575	248	677	777	391	693	609
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.91		0.86	0.37	0.21	0.27	0.62	0.48	0.49	0.89	0.06

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 51 (44%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 37.7 Intersection LOS: D
Intersection Capacity Utilization 78.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Windward Pkwy. & SR 9



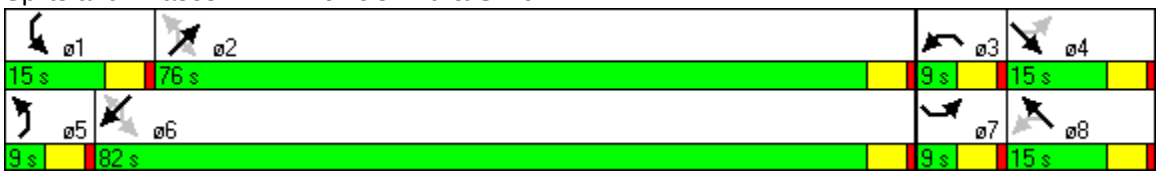
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1538	0	1719	1538	0	1719	1810	1538	1719	1810	1538
Flt Permitted	0.752			0.749			0.205			0.170		
Satd. Flow (perm)	1361	1538	0	1355	1538	0	371	1810	1538	308	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		272			282				7			12
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	5	0	12	15	0	7	27	768	8	23	814	11
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	0	13	17	0	8	30	853	9	26	904	12
Lane Group Flow (vph)	6	13	0	17	8	0	30	853	9	26	904	12
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Total Split (s)	9.0	15.0	0.0	9.0	15.0	0.0	9.0	76.0	76.0	15.0	82.0	82.0
Act Effct Green (s)	18.4	16.4		19.2	18.2		83.5	80.5	80.5	85.7	81.6	81.6
Actuated g/C Ratio	0.16	0.14		0.17	0.16		0.73	0.70	0.70	0.75	0.71	0.71
v/c Ratio	0.03	0.03		0.07	0.02		0.09	0.67	0.01	0.08	0.70	0.01
Control Delay	40.0	0.1		40.6	0.0		6.7	19.6	8.1	1.7	4.6	0.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	40.0	0.1		40.6	0.0		6.7	19.6	8.1	1.7	5.1	0.5
LOS	D	A		D	A		A	B	A	A	A	A
Approach Delay		12.7			27.6			19.0			4.9	
Approach LOS		B			C			B			A	
Queue Length 50th (ft)	4	0		11	0		9	396	1	2	99	0
Queue Length 95th (ft)	16	0		32	0		m11	543	m3	m2	m105	m0

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	233	452		242	480		328	1267	1079	368	1284	1095
Starvation Cap Reductn	0	0		0	0		0	0	0	0	101	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.03		0.07	0.02		0.09	0.67	0.01	0.07	0.76	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 53 (46%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 12.0 Intersection LOS: B
Intersection Capacity Utilization 57.0% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



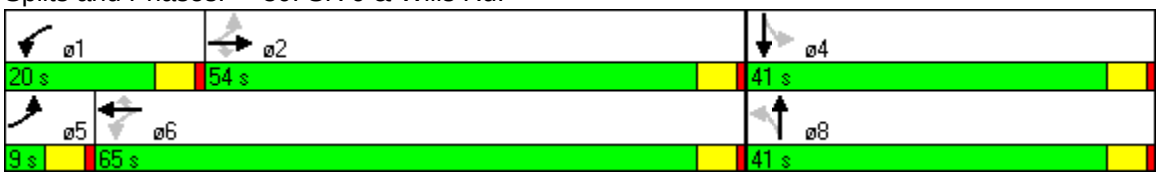
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.945			0.961	
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1710	0	0	1732	0
Flt Permitted	0.108			0.074			0.247				0.971	
Satd. Flow (perm)	195	3438	1538	134	3438	1538	447	1710	0	0	1689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			50			20		26			19	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			1600			480			507	
Travel Time (s)		16.5			24.2			10.9			11.5	
Volume (vph)	69	1218	45	248	1253	18	25	57	32	36	297	137
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	77	1353	50	276	1392	20	28	63	36	40	330	152
Lane Group Flow (vph)	77	1353	50	276	1392	20	28	99	0	0	522	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Total Split (s)	9.0	54.0	54.0	20.0	65.0	65.0	41.0	41.0	0.0	41.0	41.0	0.0
Act Effct Green (s)	55.3	50.3	50.3	70.0	62.8	62.8	37.0	37.0			37.0	
Actuated g/C Ratio	0.48	0.44	0.44	0.61	0.55	0.55	0.32	0.32			0.32	
v/c Ratio	0.48	0.90	0.07	0.93	0.74	0.02	0.19	0.17			0.94	
Control Delay	23.1	35.1	9.2	57.7	20.0	1.8	32.7	21.5			63.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	23.1	35.1	9.2	57.7	20.0	1.8	32.7	21.5			63.1	
LOS	C	D	A	E	B	A	C	C			E	
Approach Delay		33.6			25.9			23.9			63.1	
Approach LOS		C			C			C			E	
Queue Length 50th (ft)	22	353	2	127	543	1	15	38			363	
Queue Length 95th (ft)	m43	#455	m12	m#294	624	m2	41	80			#580	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			1520			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	160	1504	701	302	1878	849	144	568			556	
Starvation Cap Reductn	0	0	0	0	0	0	0	0			0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	
Reduced v/c Ratio	0.48	0.90	0.07	0.91	0.74	0.02	0.19	0.17			0.94	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 111 (97%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 33.9 Intersection LOS: C
Intersection Capacity Utilization 90.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.995			0.926			0.936	
Flt Protected	0.950			0.950				0.979			0.980	
Satd. Flow (prot)	1719	3431	0	1719	3421	0	0	1640	0	0	1660	0
Flt Permitted	0.950			0.950				0.979			0.980	
Satd. Flow (perm)	1719	3431	0	1719	3421	0	0	1640	0	0	1660	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		241			1088			377			497	
Travel Time (s)		3.7			16.5			8.6			11.3	
Volume (vph)	40	1311	15	18	1350	47	12	1	15	6	2	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	44	1457	17	20	1500	52	13	1	17	7	2	8
Lane Group Flow (vph)	44	1474	0	20	1552	0	0	31	0	0	17	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	3438	3435	0	1719	0
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1719	3438	3435	0	1719	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		604	241		485	
Travel Time (s)		9.2	3.7		11.0	
Volume (vph)	3	1365	1358	11	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	3	1517	1509	12	1	0
Lane Group Flow (vph)	3	1517	1521	0	1	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.9%		ICU Level of Service A	
Analysis Period (min) 15			

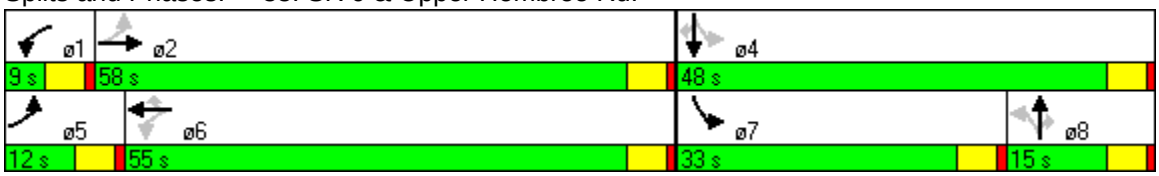
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.990		0.950		
Satd. Flow (prot)	1719	3428	0	1719	3438	1538	0	1791	1538	1719	1810	1538
Flt Permitted	0.074			0.146				0.897		0.527		
Satd. Flow (perm)	134	3428	0	264	3438	1538	0	1623	1538	954	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				201			18			102
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			604			473			529	
Travel Time (s)		7.4			9.2			10.8			12.0	
Volume (vph)	99	976	19	37	1140	181	11	42	16	376	197	94
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	110	1084	21	41	1267	201	12	47	18	418	219	104
Lane Group Flow (vph)	110	1105	0	41	1267	201	0	59	18	418	219	104
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	pm+pt		Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Total Split (s)	12.0	58.0	0.0	9.0	55.0	55.0	15.0	15.0	15.0	33.0	48.0	48.0
Act Effct Green (s)	62.4	57.6		56.1	51.1	51.1		13.6	13.6	44.0	44.0	44.0
Actuated g/C Ratio	0.54	0.50		0.49	0.44	0.44		0.12	0.12	0.38	0.38	0.38
v/c Ratio	0.60	0.64		0.21	0.83	0.25		0.31	0.09	0.77	0.32	0.16
Control Delay	31.3	24.0		13.6	19.9	3.3		53.2	20.6	38.8	26.5	5.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	31.3	24.0		13.6	19.9	3.3		53.2	20.6	38.8	26.5	5.3
LOS	C	C		B	B	A		D	C	D	C	A
Approach Delay		24.6			17.5			45.6			30.5	
Approach LOS		C			B			D			C	
Queue Length 50th (ft)	38	327		9	162	3		42	0	249	113	1
Queue Length 95th (ft)	#96	405		m16	m251	m30		86	23	361	175	36

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			524			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	183	1718		192	1527	795		191	197	558	693	651
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.60	0.64		0.21	0.83	0.25		0.31	0.09	0.75	0.32	0.16

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 23.3 Intersection LOS: C
Intersection Capacity Utilization 74.5% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.942	
Flt Protected	0.950				0.972	
Satd. Flow (prot)	1719	3438	3438	1538	1657	0
Flt Permitted	0.950				0.972	
Satd. Flow (perm)	1719	3438	3438	1538	1657	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1600	691		468	
Travel Time (s)		24.2	10.5		10.6	
Volume (vph)	21	1265	1516	32	4	3
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	23	1406	1684	36	4	3
Lane Group Flow (vph)	23	1406	1684	36	7	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.9%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.997					
Flt Protected					0.950	
Satd. Flow (prot)	3428	0	0	3438	1719	0
Flt Permitted					0.950	
Satd. Flow (perm)	3428	0	0	3438	1719	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	691			1122	514	
Travel Time (s)	10.5			17.0	11.7	
Volume (vph)	1242	27	1	1547	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1380	30	1	1719	1	0
Lane Group Flow (vph)	1410	0	0	1720	1	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.5%		ICU Level of Service A	
Analysis Period (min) 15			

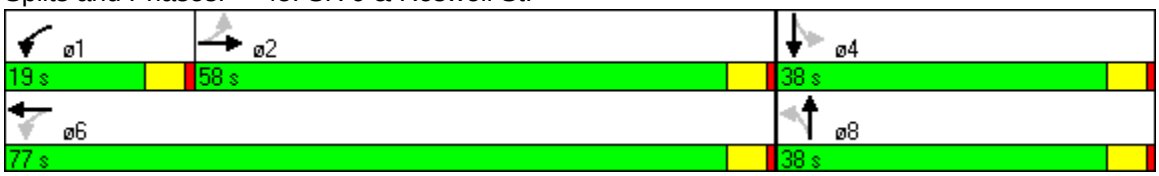
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.997			0.940			0.923	
Flt Protected				0.950				0.989			0.994	
Satd. Flow (prot)	0	3435	0	1719	3428	0	0	1682	0	0	1660	0
Flt Permitted		0.947		0.069				0.758			0.947	
Satd. Flow (perm)	0	3253	0	125	3428	0	0	1289	0	0	1582	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					4			36			52	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			35			30			30	
Link Distance (ft)		1122			617			499			505	
Travel Time (s)		17.0			12.0			11.3			11.5	
Volume (vph)	5	1232	5	196	1296	29	36	56	74	43	120	216
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	1369	6	218	1440	32	40	62	82	48	133	240
Lane Group Flow (vph)	0	1381	0	218	1472	0	0	184	0	0	421	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	58.0	58.0	0.0	19.0	77.0	0.0	38.0	38.0	0.0	38.0	38.0	0.0
Act Effct Green (s)		54.8		73.0	73.0			34.0			34.0	
Actuated g/C Ratio		0.48		0.63	0.63			0.30			0.30	
v/c Ratio		0.89		0.79	0.68			0.45			0.84	
Control Delay		11.6		34.9	14.6			30.4			49.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		11.6		34.9	14.6			30.4			49.0	
LOS		B		C	B			C			D	
Approach Delay		11.6			17.2			30.4			49.0	
Approach LOS		B			B			C			D	
Queue Length 50th (ft)		363		105	373			88			259	
Queue Length 95th (ft)		m#637		m132	m375			159			#430	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1042			537			419			425	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1549		287	2177			406			504	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.89		0.76	0.68			0.45			0.84	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 52 (45%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 19.4 Intersection LOS: B
Intersection Capacity Utilization 106.3% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Roswell St.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	400		225	200		360	125		0
Storage Lanes	1		0	2		1	1		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.91	0.91	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.995				0.850			0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	4915	0	3335	3438	1538	1719	3438	1538	1719	3417	0
Flt Permitted	0.449			0.118			0.274			0.950		
Satd. Flow (perm)	812	4915	0	414	3438	1538	496	3438	1538	1719	3417	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				144			176		4	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			673			700	
Travel Time (s)		11.1			16.8			13.1			13.6	
Volume (vph)	83	1329	42	572	451	130	23	672	520	430	858	34
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	92	1477	47	636	501	144	26	747	578	478	953	38
Lane Group Flow (vph)	92	1524	0	636	501	144	26	747	578	478	991	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2			
Total Split (s)	10.0	34.0	0.0	18.0	42.0	42.0	9.0	33.0	33.0	30.0	54.0	0.0
Act Effct Green (s)	36.0	30.0		48.0	38.0	38.0	34.0	29.0	29.0	26.0	53.6	
Actuated g/C Ratio	0.31	0.26		0.42	0.33	0.33	0.30	0.25	0.25	0.23	0.47	
v/c Ratio	0.30	1.19		1.20	0.44	0.24	0.13	0.86	1.11	1.23	0.62	
Control Delay	24.7	129.9		137.8	31.7	5.5	10.8	27.0	85.0	142.6	21.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	24.7	129.9		137.8	31.7	5.5	10.8	27.0	85.0	142.6	21.6	
LOS	C	F		F	C	A	B	C	F	F	C	
Approach Delay		123.9			81.4			51.5			60.9	
Approach LOS		F			F			D			E	
Queue Length 50th (ft)	41	~499		~246	152	0	8	270	~398	~443	374	
Queue Length 95th (ft)	76	#597		#363	202	44	m8	m288	m#501	m#568	m430	

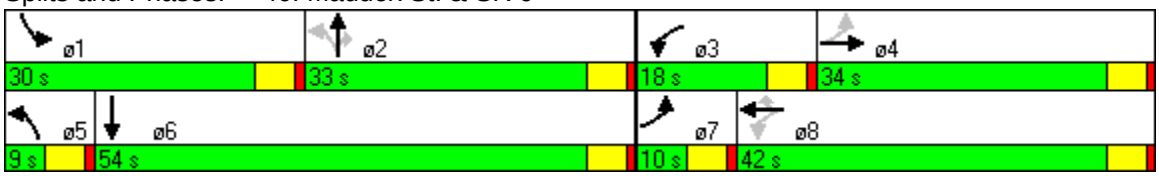
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		407			658			593			620	
Turn Bay Length (ft)	150			400		225	200		360	125		
Base Capacity (vph)	302	1285		528	1136	605	200	867	519	389	1595	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.30	1.19		1.20	0.44	0.24	0.13	0.86	1.11	1.23	0.62	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 114 (99%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.23
Intersection Signal Delay: 81.1 Intersection LOS: F
Intersection Capacity Utilization 98.7% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.955			0.850		
Flt Protected	0.968					
Satd. Flow (prot)	1673	0	3438	1538	0	3438
Flt Permitted	0.968					
Satd. Flow (perm)	1673	0	3438	1538	0	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			35
Link Distance (ft)	481		564			673
Travel Time (s)	10.9		11.0			13.1
Volume (vph)	5	3	1212	2	2	1470
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	6	3	1347	2	2	1633
Lane Group Flow (vph)	9	0	1347	2	0	1635
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.983					0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3380	0	0	3435	1719	1538
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3380	0	0	3435	1719	1538
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	30	
Link Distance (ft)	617			564	527	
Travel Time (s)	12.0			11.0	12.0	
Volume (vph)	1193	156	32	1443	78	21
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1326	173	36	1603	87	23
Lane Group Flow (vph)	1499	0	0	1639	87	23
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.7%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.927			0.923				0.850		0.995	
Flt Protected		0.985			0.986			0.999				
Satd. Flow (prot)	0	1652	0	0	1647	0	0	3435	1538	0	3421	0
Flt Permitted		0.985			0.986			0.999				
Satd. Flow (perm)	0	1652	0	0	1647	0	0	3435	1538	0	3421	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		482			205			700			517	
Travel Time (s)		11.0			4.7			13.6			10.1	
Volume (vph)	7	4	13	2	1	4	13	845	27	5	1307	47
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	4	14	2	1	4	14	939	30	6	1452	52
Lane Group Flow (vph)	0	26	0	0	7	0	0	953	30	0	1510	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 54.4%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1810	1719	1461	3335	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1810	1719	1461	3335	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	35		35	
Link Distance (ft)		267	575		517	
Travel Time (s)		6.1	11.2		10.1	
Volume (vph)	0	32	86	1359	856	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	36	96	1510	951	0
Lane Group Flow (vph)	0	36	96	1510	951	0
Sign Control		Stop	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.5%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.878				0.999	
Flt Protected	0.995					
Satd. Flow (prot)	1612	0	0	3505	3501	0
Flt Permitted	0.995					
Satd. Flow (perm)	1612	0	0	3505	3501	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			35	35	
Link Distance (ft)	492			701	375	
Travel Time (s)	11.2			13.7	7.3	
Volume (vph)	1	8	19	1936	1172	10
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1	9	21	2151	1302	11
Lane Group Flow (vph)	10	0	0	2172	1313	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.9%		ICU Level of Service D	
Analysis Period (min) 15			

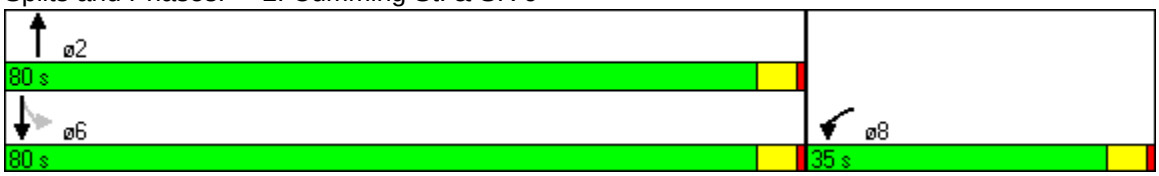
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50		50	50
Trailing Detector (ft)	0		0		0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.970		0.981			
Flt Protected	0.963					0.998
Satd. Flow (prot)	1723	0	3438	0	0	3498
Flt Permitted	0.963					0.609
Satd. Flow (perm)	1723	0	3438	0	0	2134
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	12		30			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		375			960
Travel Time (s)	11.3		7.3			14.5
Volume (vph)	301	86	1688	249	42	881
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	334	96	1876	277	47	979
Lane Group Flow (vph)	430	0	2153	0	0	1026
Turn Type					Perm	
Protected Phases	8		2			6
Permitted Phases					6	
Total Split (s)	35.0	0.0	80.0	0.0	80.0	80.0
Act Effct Green (s)	30.1		76.9			76.9
Actuated g/C Ratio	0.26		0.67			0.67
v/c Ratio	0.93		0.93			0.72
Control Delay	64.8		11.1			19.1
Queue Delay	0.0		0.0			0.0
Total Delay	64.8		11.1			19.1
LOS	E		B			B
Approach Delay	64.8		11.1			19.1
Approach LOS	E		B			B
Queue Length 50th (ft)	301		283			160
Queue Length 95th (ft)	#493		m265			261

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		295			880
Turn Bay Length (ft)						
Base Capacity (vph)	473		2309			1427
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.91		0.93			0.72

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 90 (78%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 84.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



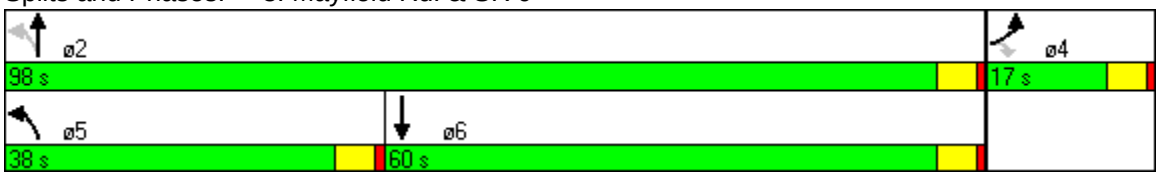
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	0			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.959	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1568	1752	1845	3361	0
Flt Permitted	0.950		0.129			
Satd. Flow (perm)	1752	1568	238	1845	3361	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		204			67	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	482	
Travel Time (s)	10.6			14.5	7.3	
Volume (vph)	169	184	461	1313	739	281
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	188	204	512	1459	821	312
Lane Group Flow (vph)	188	204	512	1459	1133	0
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Total Split (s)	17.0	17.0	38.0	98.0	60.0	0.0
Act Effct Green (s)	13.0	13.0	94.0	94.0	62.2	
Actuated g/C Ratio	0.11	0.11	0.82	0.82	0.54	
v/c Ratio	0.95	0.57	0.91	0.97	0.61	
Control Delay	103.5	13.3	39.6	18.1	10.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	103.5	13.3	39.6	18.1	10.4	
LOS	F	B	D	B	B	
Approach Delay	56.5			23.7	10.4	
Approach LOS	E			C	B	
Queue Length 50th (ft)	140	0	254	812	163	
Queue Length 95th (ft)	#284	70	m260	m#942	m268	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	402	
Turn Bay Length (ft)		230				
Base Capacity (vph)	198	358	642	1508	1849	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.95	0.57	0.80	0.97	0.61	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 8 (7%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 23.0 Intersection LOS: C
Intersection Capacity Utilization 85.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



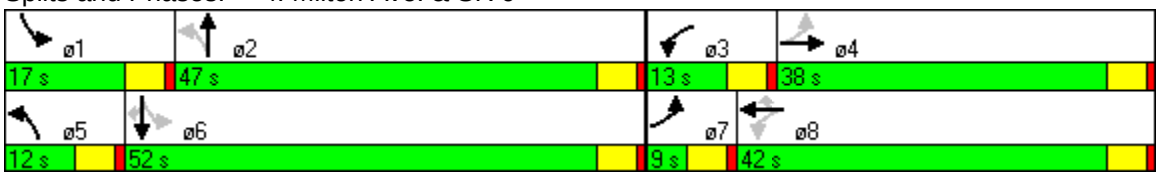
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		0	300		275
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.973				0.850		0.990				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1795	0	1752	1845	1568	1752	3470	0	1752	3505	1568
Flt Permitted	0.191			0.394			0.203			0.085		
Satd. Flow (perm)	352	1795	0	727	1845	1568	374	3470	0	157	3505	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				163		7				118
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			575			701	
Travel Time (s)		11.4			10.2			11.2			13.7	
Volume (vph)	134	185	41	132	439	623	99	1198	81	257	817	106
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	149	206	46	147	488	692	110	1331	90	286	908	118
Lane Group Flow (vph)	149	252	0	147	488	692	110	1421	0	286	908	118
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Total Split (s)	9.0	38.0	0.0	13.0	42.0	42.0	12.0	47.0	0.0	17.0	52.0	52.0
Act Effct Green (s)	39.0	34.0		47.0	38.0	38.0	50.6	43.0		60.0	48.4	48.4
Actuated g/C Ratio	0.34	0.30		0.41	0.33	0.33	0.44	0.37		0.52	0.42	0.42
v/c Ratio	0.83	0.47		0.39	0.80	1.10	0.43	1.09		1.09	0.62	0.16
Control Delay	62.3	35.2		25.4	46.5	96.5	13.9	74.2		101.8	25.9	5.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	62.3	35.2		25.4	46.5	96.5	13.9	74.2		101.8	25.9	5.2
LOS	E	D		C	D	F	B	E		F	C	A
Approach Delay		45.3			70.2			69.9			40.6	
Approach LOS		D			E			E			D	
Queue Length 50th (ft)	70	146		69	327	~498	14	~626		~188	265	10
Queue Length 95th (ft)	#163	226		116	#489	#732	m22	m#703		m#329	m313	m14

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			495			621	
Turn Bay Length (ft)	225			150		150	200			300		275
Base Capacity (vph)	180	538		377	610	627	262	1302		262	1475	728
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.83	0.47		0.39	0.80	1.10	0.42	1.09		1.09	0.62	0.16

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 94 (82%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 59.4 Intersection LOS: E
Intersection Capacity Utilization 93.8% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			0
Storage Lanes	1	0	1			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.900				0.987	
Flt Protected	0.987		0.950			
Satd. Flow (prot)	1639	0	1752	1845	3459	0
Flt Permitted	0.987		0.950			
Satd. Flow (perm)	1639	0	1752	1845	3459	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2269	199	
Travel Time (s)	8.7			34.4	3.0	
Volume (vph)	10	28	172	1285	988	97
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	11	31	191	1428	1098	108
Lane Group Flow (vph)	42	0	191	1428	1206	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 77.6%	ICU Level of Service D
Analysis Period (min) 15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	1	0		0	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.943		0.996			
Flt Protected	0.972				0.950	
Satd. Flow (prot)	1691	0	1837	0	1752	3505
Flt Permitted	0.972				0.950	
Satd. Flow (perm)	1691	0	1837	0	1752	3505
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	437		482			2269
Travel Time (s)	9.9		7.3			34.4
Volume (vph)	21	15	1442	40	17	999
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	23	17	1602	44	19	1110
Lane Group Flow (vph)	40	0	1646	0	19	1110
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	150	
Storage Lanes	1	0		1	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.914			0.850		
Flt Protected	0.982					0.998
Satd. Flow (prot)	1656	0	1845	1568	0	3498
Flt Permitted	0.982					0.998
Satd. Flow (perm)	1656	0	1845	1568	0	3498
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	365		199			854
Travel Time (s)	8.3		3.0			12.9
Volume (vph)	8	14	1281	14	51	1077
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	9	16	1423	16	57	1197
Lane Group Flow (vph)	25	0	1423	16	0	1254
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.4%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.989		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1843	1824	0	1678	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1843	1824	0	1678	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		854	312		342	
Travel Time (s)		12.9	4.7		7.8	
Volume (vph)	32	1263	1109	103	19	19
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	36	1403	1232	114	21	21
Lane Group Flow (vph)	0	1439	1346	0	42	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 102.2%	ICU Level of Service G
Analysis Period (min) 15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.912	
Flt Protected				0.999	0.983	
Satd. Flow (prot)	1845	1568	0	1843	1654	0
Flt Permitted				0.999	0.983	
Satd. Flow (perm)	1845	1568	0	1843	1654	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	312			1975	374	
Travel Time (s)	4.7			29.9	8.5	
Volume (vph)	1260	22	15	1206	6	12
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1400	24	17	1340	7	13
Lane Group Flow (vph)	1400	24	0	1357	20	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

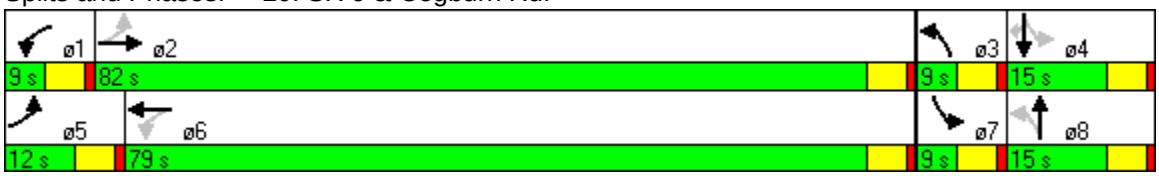
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	150		0	150		0	150		150
Storage Lanes	1		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.997			0.898				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1837	0	1752	1839	0	1752	1657	0	1752	1845	1568
Flt Permitted	0.051			0.053			0.740			0.591		
Satd. Flow (perm)	94	1837	0	98	1839	0	1365	1657	0	1090	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2			63				168
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1975			1605			331			313	
Travel Time (s)		29.9			24.3			7.5			7.1	
Volume (vph)	146	1099	27	32	991	23	79	27	57	23	24	151
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	162	1221	30	36	1101	26	88	30	63	26	27	168
Lane Group Flow (vph)	162	1251	0	36	1127	0	88	93	0	26	27	168
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Total Split (s)	12.0	82.0	0.0	9.0	79.0	0.0	9.0	15.0	0.0	9.0	15.0	15.0
Act Effct Green (s)	86.4	81.6		80.0	75.0		17.6	14.6		16.8	12.8	12.8
Actuated g/C Ratio	0.75	0.71		0.70	0.65		0.15	0.13		0.15	0.11	0.11
v/c Ratio	0.87	0.96		0.26	0.94		0.39	0.35		0.14	0.13	0.52
Control Delay	45.3	28.5		8.8	29.4		47.9	23.6		41.9	49.5	13.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	45.3	28.5		8.8	29.4		47.9	23.6		41.9	49.5	13.6
LOS	D	C		A	C		D	C		D	D	B
Approach Delay		30.5			28.7			35.5			21.3	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	67	~906		4	429		57	21		16	19	0
Queue Length 95th (ft)	m77	m#1046		m10	#1056		107	73		42	48	65

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1895			1525			251			233	
Turn Bay Length (ft)	150			150			150			150		150
Base Capacity (vph)	186	1304		140	1200		226	265		188	205	324
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.87	0.96		0.26	0.94		0.39	0.35		0.14	0.13	0.52

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 14 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 29.4 Intersection LOS: C
Intersection Capacity Utilization 83.9% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



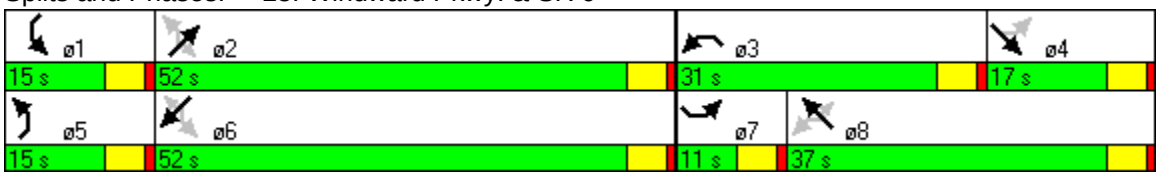
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	250		500	325		350
Storage Lanes	1		0	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.981				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3438	0	1752	3505	1568	1752	1845	1568	1752	1845	1568
Flt Permitted	0.308			0.235			0.156			0.083		
Satd. Flow (perm)	568	3438	0	433	3505	1568	288	1845	1568	153	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				233			301			52
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	135	367	53	508	770	241	83	805	271	199	553	47
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	150	408	59	564	856	268	92	894	301	221	614	52
Lane Group Flow (vph)	150	467	0	564	856	268	92	894	301	221	614	52
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	11.0	17.0	0.0	31.0	37.0	37.0	15.0	52.0	52.0	15.0	52.0	52.0
Act Effct Green (s)	20.0	13.0		44.0	33.0	33.0	59.0	48.0	48.0	59.0	48.0	48.0
Actuated g/C Ratio	0.17	0.11		0.38	0.29	0.29	0.51	0.42	0.42	0.51	0.42	0.42
v/c Ratio	0.88	1.17		1.19	0.85	0.44	0.32	1.16	0.36	0.96	0.80	0.08
Control Delay	74.3	145.2		134.4	48.2	8.7	9.7	99.3	1.5	78.8	38.5	5.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0
Total Delay	74.3	145.2		134.4	48.2	8.7	9.7	99.3	1.5	78.8	40.2	5.9
LOS	E	F		F	D	A	A	F	A	E	D	A
Approach Delay		128.0			70.7			70.0			47.8	
Approach LOS		F			E			E			D	
Queue Length 50th (ft)	74	~214		~455	314	19	15	~775	9	114	390	0
Queue Length 95th (ft)	#181	#323		#676	#400	87	m16	m#740	m8	#270	546	24

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	250		500	325		350
Base Capacity (vph)	171	398		475	1006	616	288	770	830	231	770	685
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	55	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	1.17		1.19	0.85	0.44	0.32	1.16	0.36	0.96	0.86	0.08

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 64 (56%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.19
Intersection Signal Delay: 73.8 Intersection LOS: E
Intersection Capacity Utilization 106.7% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Windward Pkwy. & SR 9



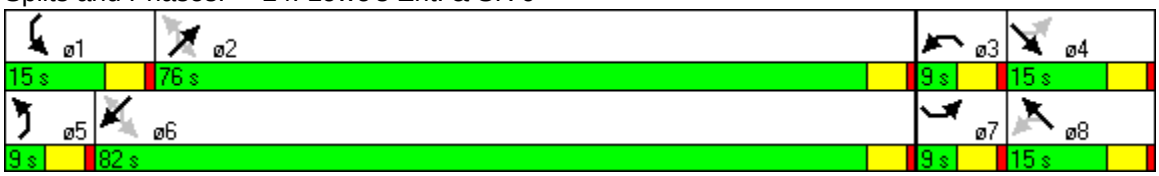
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.869			0.870				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1603	0	1752	1605	0	1752	1845	1568	1752	1845	1568
Flt Permitted	0.712			0.736			0.092			0.053		
Satd. Flow (perm)	1313	1603	0	1358	1605	0	170	1845	1568	98	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28			58				40			7
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	12	4	25	33	8	52	19	1095	65	120	988	6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	13	4	28	37	9	58	21	1217	72	133	1098	7
Lane Group Flow (vph)	13	32	0	37	67	0	21	1217	72	133	1098	7
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Total Split (s)	9.0	15.0	0.0	9.0	15.0	0.0	9.0	76.0	76.0	15.0	82.0	82.0
Act Effct Green (s)	17.6	14.6		18.4	16.4		78.1	73.1	73.1	87.0	83.4	83.4
Actuated g/C Ratio	0.15	0.13		0.16	0.14		0.68	0.64	0.64	0.76	0.73	0.73
v/c Ratio	0.06	0.14		0.16	0.24		0.11	1.04	0.07	0.61	0.82	0.01
Control Delay	40.5	21.2		42.1	17.8		1.7	40.1	0.4	17.6	15.2	4.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.8	0.0
Total Delay	40.5	21.2		42.1	17.8		1.7	40.1	0.4	17.6	16.0	4.2
LOS	D	C		D	B		A	D	A	B	B	A
Approach Delay		26.8			26.4			37.3			16.1	
Approach LOS		C			C			D			B	
Queue Length 50th (ft)	8	3		23	6		1	~982	1	46	476	1
Queue Length 95th (ft)	26	34		55	50		m1	m#1075	m0	m49	m522	m1

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	220	228		234	279		184	1172	1011	232	1338	1139
Starvation Cap Reductn	0	0		0	0		0	0	0	0	67	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.14		0.16	0.24		0.11	1.04	0.07	0.57	0.86	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 42 (37%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 27.0 Intersection LOS: C
Intersection Capacity Utilization 82.8% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



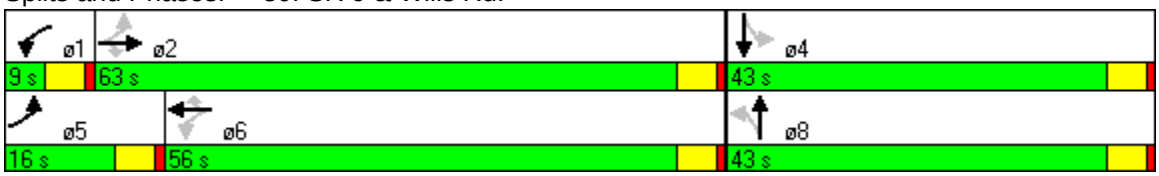
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.954			0.918	
Flt Protected	0.950			0.950			0.950				0.995	
Satd. Flow (prot)	1752	3505	1568	1752	3505	1568	1752	1760	0	0	1685	0
Flt Permitted	0.071			0.077			0.562				0.614	
Satd. Flow (perm)	131	3505	1568	142	3505	1568	1037	1760	0	0	1040	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			30			51		21			73	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			1600			480			507	
Travel Time (s)		16.5			24.2			10.9			11.5	
Volume (vph)	194	1419	27	39	1324	46	62	357	157	15	50	102
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	216	1577	30	43	1471	51	69	397	174	17	56	113
Lane Group Flow (vph)	216	1577	30	43	1471	51	69	571	0	0	186	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Total Split (s)	16.0	63.0	63.0	9.0	56.0	56.0	43.0	43.0	0.0	43.0	43.0	0.0
Act Effct Green (s)	68.0	60.8	60.8	57.0	52.0	52.0	39.0	39.0			39.0	
Actuated g/C Ratio	0.59	0.53	0.53	0.50	0.45	0.45	0.34	0.34			0.34	
v/c Ratio	0.87	0.85	0.04	0.31	0.93	0.07	0.20	0.93			0.46	
Control Delay	44.3	30.0	4.7	13.5	40.1	5.8	28.9	59.7			22.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	44.3	30.0	4.7	13.5	40.1	5.8	28.9	59.7			22.0	
LOS	D	C	A	B	D	A	C	E			C	
Approach Delay		31.3			38.2			56.4			22.0	
Approach LOS		C			D			E			C	
Queue Length 50th (ft)	92	638	6	10	593	9	36	395			63	
Queue Length 95th (ft)	m#162	m711	m6	m16	m#703	m19	73	#619			135	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			1520			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	247	1853	843	140	1585	737	352	611			401	
Starvation Cap Reductn	0	0	0	0	0	0	0	0			0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	
Reduced v/c Ratio	0.87	0.85	0.04	0.31	0.93	0.07	0.20	0.93			0.46	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 58 (50%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 37.3 Intersection LOS: D
Intersection Capacity Utilization 85.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.999			0.893			0.925	
Flt Protected	0.950			0.950				0.990			0.979	
Satd. Flow (prot)	1752	3494	0	1752	3501	0	0	1631	0	0	1670	0
Flt Permitted	0.950			0.950				0.990			0.979	
Satd. Flow (perm)	1752	3494	0	1752	3501	0	0	1631	0	0	1670	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		241			1088			384			497	
Travel Time (s)		3.7			16.5			8.7			11.3	
Volume (vph)	13	1558	28	13	1465	10	10	0	39	43	3	57
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	14	1731	31	14	1628	11	11	0	43	48	3	63
Lane Group Flow (vph)	14	1762	0	14	1639	0	0	54	0	0	114	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 62.0%	ICU Level of Service B
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.910	
Flt Protected	0.950				0.984	
Satd. Flow (prot)	1752	3505	3501	0	1652	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1752	3505	3501	0	1652	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		604	241		485	
Travel Time (s)		9.2	3.7		11.0	
Volume (vph)	5	1596	1525	7	3	5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	6	1773	1694	8	3	6
Lane Group Flow (vph)	6	1773	1702	0	9	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.1%		ICU Level of Service A	
Analysis Period (min) 15			

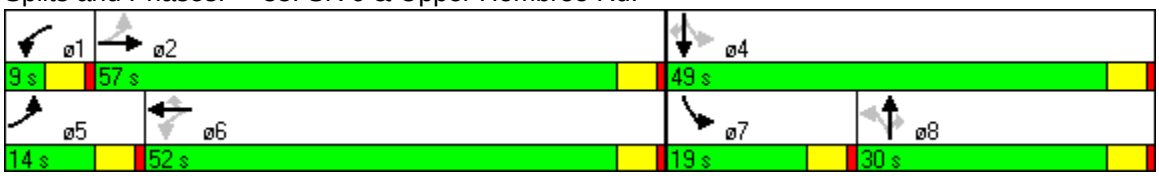
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1752	3494	0	1752	3505	1568	0	1832	1568	1752	1845	1568
Flt Permitted	0.077			0.083				0.933		0.140		
Satd. Flow (perm)	142	3494	0	153	3505	1568	0	1721	1568	258	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				318			26			96
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			604			473			529	
Travel Time (s)		7.4			9.2			10.8			12.0	
Volume (vph)	174	1315	27	5	1239	286	49	276	42	244	106	96
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	193	1461	30	6	1377	318	54	307	47	271	118	107
Lane Group Flow (vph)	193	1491	0	6	1377	318	0	361	47	271	118	107
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	pm+pt		Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Total Split (s)	14.0	57.0	0.0	9.0	52.0	52.0	30.0	30.0	30.0	19.0	49.0	49.0
Act Effct Green (s)	62.0	60.2		53.0	48.0	48.0		26.0	26.0	45.0	45.0	45.0
Actuated g/C Ratio	0.54	0.52		0.46	0.42	0.42		0.23	0.23	0.39	0.39	0.39
v/c Ratio	0.89	0.81		0.04	0.94	0.38		0.93	0.13	0.92	0.16	0.16
Control Delay	64.6	27.9		4.4	33.7	6.1		75.1	20.7	64.3	23.6	6.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	27.9		4.4	33.7	6.1		75.1	20.7	64.3	23.6	6.2
LOS	E	C		A	C	A		E	C	E	C	A
Approach Delay		32.1			28.5			68.8			42.1	
Approach LOS		C			C			E			D	
Queue Length 50th (ft)	92	446		1	571	69		263	12	146	56	5
Queue Length 95th (ft)	#229	#694		m1	m#633	m76		#443	44	#308	98	40

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			524			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	217	1830		140	1463	840		389	375	296	722	672
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.89	0.81		0.04	0.94	0.38		0.93	0.13	0.92	0.16	0.16

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 35.3 Intersection LOS: D
Intersection Capacity Utilization 88.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.906	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1752	3505	3505	1568	1646	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1752	3505	3505	1568	1646	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1600	691		468	
Travel Time (s)		24.2	10.5		10.6	
Volume (vph)	24	1567	1334	25	32	75
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	27	1741	1482	28	36	83
Lane Group Flow (vph)	27	1741	1482	28	119	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.4%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998					
Flt Protected					0.950	
Satd. Flow (prot)	3498	0	0	3505	1752	0
Flt Permitted					0.950	
Satd. Flow (perm)	3498	0	0	3505	1752	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	691			1122	514	
Travel Time (s)	10.5			17.0	11.7	
Volume (vph)	1574	25	0	1358	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1749	28	0	1509	1	0
Lane Group Flow (vph)	1777	0	0	1509	1	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

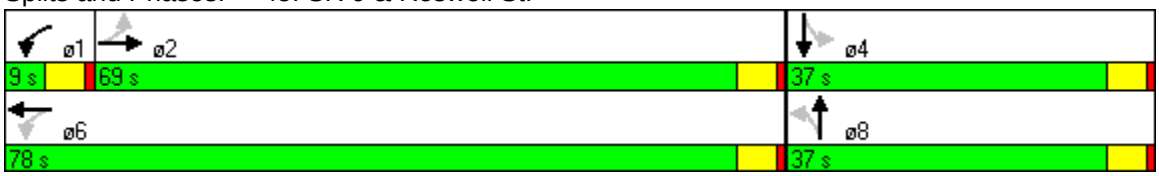
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.995			0.952			0.940	
Flt Protected				0.950				0.994			0.993	
Satd. Flow (prot)	0	3505	0	1752	3487	0	0	1746	0	0	1722	0
Flt Permitted		0.955		0.058				0.908			0.798	
Satd. Flow (perm)	0	3347	0	107	3487	0	0	1595	0	0	1384	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6			24			35	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			35			30			30	
Link Distance (ft)		1122			617			499			505	
Travel Time (s)		17.0			12.0			11.3			11.5	
Volume (vph)	1	1569	4	86	1206	41	43	204	137	36	99	109
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	1743	4	96	1340	46	48	227	152	40	110	121
Lane Group Flow (vph)	0	1748	0	96	1386	0	0	427	0	0	271	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	69.0	69.0	0.0	9.0	78.0	0.0	37.0	37.0	0.0	37.0	37.0	0.0
Act Effct Green (s)		65.0		74.0	74.0			33.0			33.0	
Actuated g/C Ratio		0.57		0.64	0.64			0.29			0.29	
v/c Ratio		0.92		0.69	0.62			0.90			0.64	
Control Delay		13.1		39.6	8.5			60.6			39.1	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		13.1		39.6	8.5			60.6			39.1	
LOS		B		D	A			E			D	
Approach Delay		13.1			10.5			60.6			39.1	
Approach LOS		B			B			E			D	
Queue Length 50th (ft)		81		16	323			289			153	
Queue Length 95th (ft)		m#100		m#52	253			#478			250	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1042			537			419			425	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1892		140	2246			475			422	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.92		0.69	0.62			0.90			0.64	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 98 (85%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 19.1 Intersection LOS: B
Intersection Capacity Utilization 104.8% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Roswell St.



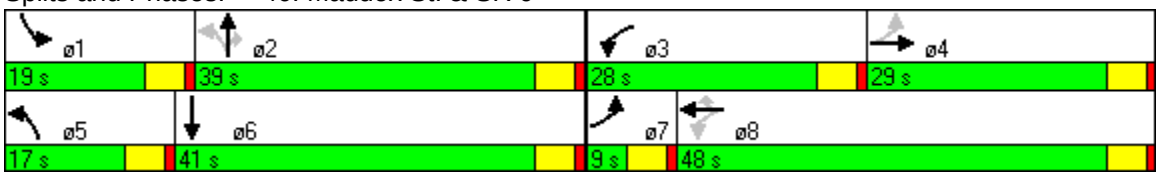
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	400		225	200		360	125		0
Storage Lanes	1		0	2		1	1		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.91	0.91	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.991				0.850			0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	4991	0	3400	3505	1568	1752	3505	1568	1752	3459	0
Flt Permitted	0.160			0.194			0.168			0.950		
Satd. Flow (perm)	295	4991	0	694	3505	1568	310	3505	1568	1752	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				251			401		9	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			673			700	
Travel Time (s)		11.1			16.8			13.1			13.6	
Volume (vph)	93	572	36	562	1201	312	146	936	622	193	664	62
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	103	636	40	624	1334	347	162	1040	691	214	738	69
Lane Group Flow (vph)	103	676	0	624	1334	347	162	1040	691	214	807	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2			
Total Split (s)	9.0	29.0	0.0	28.0	48.0	48.0	17.0	39.0	39.0	19.0	41.0	0.0
Act Effct Green (s)	33.4	28.4		53.0	44.0	44.0	45.5	35.0	35.0	15.0	39.5	
Actuated g/C Ratio	0.29	0.25		0.46	0.38	0.38	0.40	0.30	0.30	0.13	0.34	
v/c Ratio	0.69	0.55		0.78	0.99	0.46	0.64	0.97	0.91	0.93	0.68	
Control Delay	47.7	39.8		26.2	59.2	9.5	19.1	38.1	23.2	74.3	31.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	47.7	39.8		26.2	59.2	9.5	19.1	38.1	23.2	74.3	31.2	
LOS	D	D		C	E	A	B	D	C	E	C	
Approach Delay		40.8			42.8			31.0			40.2	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	43	160		153	511	46	27	396	406	155	292	
Queue Length 95th (ft)	#111	208		209	#675	123	m38	m#477	m449	#311	384	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		407			658			593			620	
Turn Bay Length (ft)	150			400		225	200		360	125		
Base Capacity (vph)	149	1238		885	1341	755	292	1067	756	229	1194	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.69	0.55		0.71	0.99	0.46	0.55	0.97	0.91	0.93	0.68	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 48 (42%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 38.4 Intersection LOS: D
Intersection Capacity Utilization 88.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.884			0.850		
Flt Protected	0.993					
Satd. Flow (prot)	1619	0	3505	1568	0	3505
Flt Permitted	0.993					
Satd. Flow (perm)	1619	0	3505	1568	0	3505
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			35
Link Distance (ft)	481		564			673
Travel Time (s)	10.9		11.0			13.1
Volume (vph)	1	5	1699	6	3	1259
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	1	6	1888	7	3	1399
Lane Group Flow (vph)	7	0	1888	7	0	1402
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.991					0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3473	0	0	3501	1752	1568
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3473	0	0	3501	1752	1568
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	30	
Link Distance (ft)	617			564	527	
Travel Time (s)	12.0			11.0	12.0	
Volume (vph)	1634	108	16	1244	89	71
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1816	120	18	1382	99	79
Lane Group Flow (vph)	1936	0	0	1400	99	79
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.892			0.921				0.850		0.996	
Flt Protected					0.994			0.999			0.999	
Satd. Flow (prot)	0	1645	0	0	1689	0	0	3501	1568	0	3487	0
Flt Permitted					0.994			0.999			0.999	
Satd. Flow (perm)	0	1645	0	0	1689	0	0	3501	1568	0	3487	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		482			205			700			517	
Travel Time (s)		11.0			4.7			13.6			10.1	
Volume (vph)	0	1	4	4	10	19	27	1223	91	17	911	26
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1	4	4	11	21	30	1359	101	19	1012	29
Lane Group Flow (vph)	0	5	0	0	36	0	0	1389	101	0	1060	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1752	1490	3400	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1752	1490	3400	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	35		35	
Link Distance (ft)		262	575		517	
Travel Time (s)		6.0	11.2		10.1	
Volume (vph)	0	136	36	954	1242	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	151	40	1060	1380	0
Lane Group Flow (vph)	0	151	40	1060	1380	0
Sign Control		Stop	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			

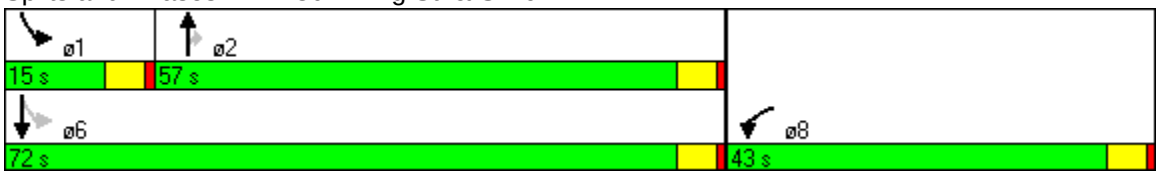
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		250	200	
Storage Lanes	1	0		1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50	50
Trailing Detector (ft)	0		0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.988			0.850		
Flt Protected	0.956				0.950	
Satd. Flow (prot)	1709	0	3438	1538	1719	3438
Flt Permitted	0.956				0.216	
Satd. Flow (perm)	1709	0	3438	1538	391	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			311		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		1076			960
Travel Time (s)	11.3		21.0			14.5
Volume (vph)	316	31	801	295	108	1457
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	333	33	843	311	114	1534
Lane Group Flow (vph)	366	0	843	311	114	1534
Turn Type				Perm	pm+pt	
Protected Phases	8		2		1	6
Permitted Phases				2	6	
Total Split (s)	43.0	0.0	57.0	57.0	15.0	72.0
Act Effct Green (s)	29.4		65.8	65.8	77.6	77.6
Actuated g/C Ratio	0.26		0.57	0.57	0.67	0.67
v/c Ratio	0.83		0.43	0.31	0.32	0.66
Control Delay	44.1		14.7	3.6	5.6	7.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	44.1		14.7	3.6	5.6	7.3
LOS	D		B	A	A	A
Approach Delay	44.1		11.7			7.2
Approach LOS	D		B			A
Queue Length 50th (ft)	254		142	2	12	93
Queue Length 95th (ft)	328		m174	m18	m23	477

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		996			880
Turn Bay Length (ft)				250	200	
Base Capacity (vph)	583		1968	1013	391	2320
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.63		0.43	0.31	0.29	0.66

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 54 (47%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9

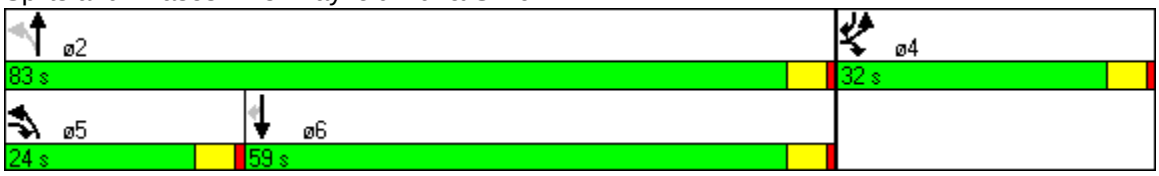


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	200			200
Storage Lanes	1	1	1			1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1719	3438	3438	1538
Flt Permitted	0.950		0.090			
Satd. Flow (perm)	1719	1538	163	3438	3438	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		31				207
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	2751	
Travel Time (s)	10.6			14.5	41.7	
Volume (vph)	247	368	195	637	1197	197
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	260	387	205	671	1260	207
Lane Group Flow (vph)	260	387	205	671	1260	207
Turn Type		pt+ov	pm+pt			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Total Split (s)	32.0	56.0	24.0	83.0	59.0	32.0
Act Effct Green (s)	26.0	46.7	81.0	81.0	60.3	90.4
Actuated g/C Ratio	0.23	0.41	0.70	0.70	0.52	0.79
v/c Ratio	0.67	0.60	0.60	0.28	0.70	0.17
Control Delay	47.3	27.3	25.5	7.2	14.4	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.3	27.3	25.5	7.2	14.4	0.4
LOS	D	C	C	A	B	A
Approach Delay	35.3			11.5	12.4	
Approach LOS	D			B	B	
Queue Length 50th (ft)	172	195	121	145	188	0
Queue Length 95th (ft)	263	283	220	216	232	4

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	2671	
Turn Bay Length (ft)		230	200			200
Base Capacity (vph)	419	683	386	2420	1803	1276
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.57	0.53	0.28	0.70	0.16

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 24 (21%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 17.1	Intersection LOS: B
Intersection Capacity Utilization 67.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Mayfield Rd. & SR 9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		200	300		275
Storage Lanes	1		0	1		2	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.980				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1773	0	1719	1810	2707	1719	3438	1538	1719	3438	1538
Flt Permitted	0.444			0.133			0.174			0.138		
Satd. Flow (perm)	803	1773	0	241	1810	2707	315	3438	1538	250	3438	1538
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		7							127			45
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			1804			1076	
Travel Time (s)		11.4			10.2			35.1			21.0	
Volume (vph)	140	396	63	161	209	272	99	684	121	552	1237	43
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	147	417	66	169	220	286	104	720	127	581	1302	45
Lane Group Flow (vph)	147	483	0	169	220	286	104	720	127	581	1302	45
Turn Type	pm+pt			pm+pt		pt+ov	pm+pt		pt+ov	pm+pt		pt+ov
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Total Split (s)	13.0	35.0	0.0	12.0	34.0	73.0	10.0	29.0	41.0	39.0	58.0	71.0
Act Effct Green (s)	40.0	31.0		38.0	30.0	69.0	31.0	25.0	37.0	64.0	54.0	67.0
Actuated g/C Ratio	0.35	0.27		0.33	0.26	0.60	0.27	0.22	0.32	0.56	0.47	0.58
v/c Ratio	0.42	1.00		0.93	0.47	0.18	0.66	0.96	0.22	0.99	0.81	0.05
Control Delay	29.0	83.0		80.2	39.6	10.6	45.0	45.5	3.0	69.4	22.4	2.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	83.0		80.2	39.6	10.6	45.0	45.5	3.0	69.4	22.4	2.2
LOS	C	F		F	D	B	D	D	A	E	C	A
Approach Delay		70.4			37.5			39.8			36.1	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	74	354		86	137	50	36	276	18	327	205	0
Queue Length 95th (ft)	124	#579		#212	214	73	m49	m#353	m23	#620	361	m3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			1724			996	
Turn Bay Length (ft)	225			150		150	200		200	300		275
Base Capacity (vph)	351	483		182	472	1624	158	747	581	586	1614	915
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.00		0.93	0.47	0.18	0.66	0.96	0.22	0.99	0.81	0.05

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 66 (57%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 42.3 Intersection LOS: D
Intersection Capacity Utilization 96.4% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			150
Storage Lanes	1	0	1			1
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.875					0.850
Flt Protected	0.996		0.950			
Satd. Flow (prot)	1577	0	1719	3438	3438	1538
Flt Permitted	0.996		0.950			
Satd. Flow (perm)	1577	0	1719	3438	3438	1538
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2751	1050	
Travel Time (s)	8.7			41.7	15.9	
Volume (vph)	23	276	70	842	1118	36
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	24	291	74	886	1177	38
Lane Group Flow (vph)	315	0	74	886	1177	38
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			200	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.930	
Flt Protected	0.950				0.977	
Satd. Flow (prot)	1719	3438	3438	1538	1644	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1719	3438	3438	1538	1644	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1050	2284		342	
Travel Time (s)		15.9	34.6		7.8	
Volume (vph)	34	868	1107	50	43	47
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	36	914	1165	53	45	49
Lane Group Flow (vph)	36	914	1165	53	94	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		150	150		0	150		150
Storage Lanes	1		1	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.919				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1663	0	1719	1810	1538
Flt Permitted	0.176			0.319			0.700			0.695		
Satd. Flow (perm)	318	3438	1538	577	3438	1538	1267	1663	0	1258	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			33			20		47				187
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2284			1605			331			313	
Travel Time (s)		34.6			24.3			7.5			7.1	
Volume (vph)	175	737	31	54	768	19	65	42	48	18	42	324
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	184	776	33	57	808	20	68	44	51	19	44	341
Lane Group Flow (vph)	184	776	33	57	808	20	68	95	0	19	44	341
Turn Type	pm+pt		pt+ov	pm+pt		pt+ov	pm+pt			pm+pt		pt+ov
Protected Phases	5	2	2 3	1	6	6 7	3	8		7	4	4 5
Permitted Phases	2			6			8			4		
Total Split (s)	25.0	56.0	71.0	15.0	46.0	60.0	15.0	30.0	0.0	14.0	29.0	54.0
Act Effct Green (s)	66.9	58.3	71.6	57.6	50.8	62.2	39.1	32.8		35.0	28.9	45.1
Actuated g/C Ratio	0.58	0.51	0.62	0.50	0.44	0.54	0.34	0.29		0.30	0.25	0.39
v/c Ratio	0.55	0.45	0.03	0.16	0.53	0.02	0.15	0.19		0.05	0.10	0.48
Control Delay	15.0	8.7	1.1	4.6	8.6	0.2	26.5	19.7		25.3	36.5	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	15.0	8.7	1.1	4.6	8.6	0.2	26.5	19.7		25.3	36.5	13.2
LOS	B	A	A	A	A	A	C	B		C	D	B
Approach Delay		9.6			8.2			22.5			16.3	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)	49	117	2	5	35	0	34	28		9	26	82
Queue Length 95th (ft)	75	141	m2	7	32	m0	67	73		26	59	158

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		2204			1525			251			233	
Turn Bay Length (ft)	200		150	200		150	150			150		150
Base Capacity (vph)	441	1743	992	419	1518	875	478	508		443	454	820
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.42	0.45	0.03	0.14	0.53	0.02	0.14	0.19		0.04	0.10	0.42

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 66 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 11.1	Intersection LOS: B
Intersection Capacity Utilization 54.9%	ICU Level of Service A
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

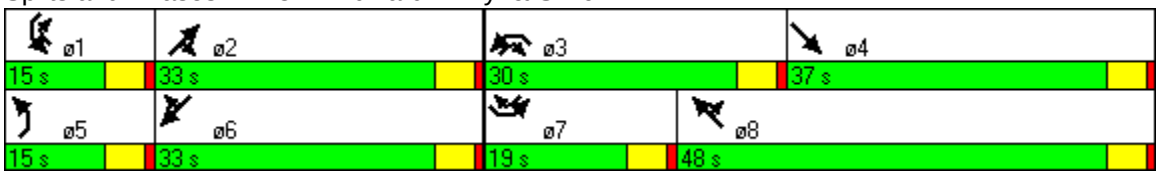
Splits and Phases: 20: SR 9 & Cogburn Rd.

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	200		150	200		150
Storage Lanes	1		0	1		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor												
Frt		0.987				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3393	0	1719	3438	1538	3335	3438	1538	3335	3438	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3393	0	1719	3438	1538	3335	3438	1538	3335	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				112			60			33
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	117	624	59	233	365	106	61	381	338	171	556	31
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	123	657	62	245	384	112	64	401	356	180	585	33
Lane Group Flow (vph)	123	719	0	245	384	112	64	401	356	180	585	33
Turn Type	Prot			Prot		pt+ov	Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases												
Total Split (s)	19.0	37.0	0.0	30.0	48.0	63.0	15.0	33.0	63.0	15.0	33.0	52.0
Act Effct Green (s)	13.2	29.4		23.0	39.2	60.8	17.7	29.0	56.0	17.7	29.0	46.2
Actuated g/C Ratio	0.11	0.26		0.20	0.34	0.53	0.15	0.25	0.49	0.15	0.25	0.40
v/c Ratio	0.62	0.82		0.71	0.33	0.13	0.12	0.46	0.46	0.35	0.67	0.05
Control Delay	57.8	44.5		50.3	28.1	3.0	66.5	37.8	6.5	48.3	43.3	6.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.8	44.5		50.3	28.1	3.0	66.5	37.8	6.5	48.3	43.3	6.8
LOS	E	D		D	C	A	E	D	A	D	D	A
Approach Delay		46.4			31.6			26.5			42.9	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)	87	259		165	106	0	26	91	0	64	206	0
Queue Length 95th (ft)	150	321		253	141	28	51	92	7	104	269	19

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	200		150	200		150
Base Capacity (vph)	224	980		389	1315	862	513	867	818	513	867	661
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.73		0.63	0.29	0.13	0.12	0.46	0.44	0.35	0.67	0.05

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 42 (37%), Referenced to phase 2:NET and 6:SWT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 37.0	Intersection LOS: D
Intersection Capacity Utilization 64.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 23: Windward Pkwy. & SR 9



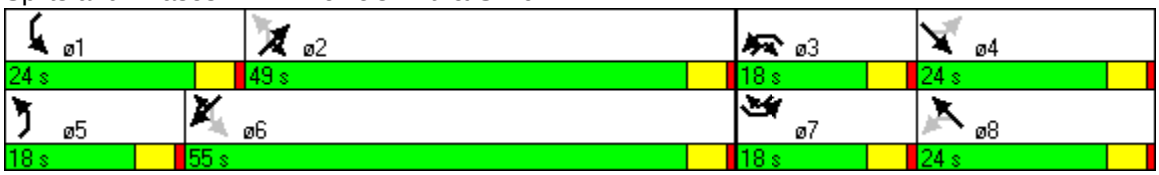
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1538	0	1719	1538	0	1719	3438	1538	1719	3438	1538
Flt Permitted	0.753			0.749			0.247			0.193		
Satd. Flow (perm)	1363	1538	0	1355	1538	0	447	3438	1538	349	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		437			453				8			12
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	5	0	12	15	0	7	27	768	8	23	814	11
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	5	0	13	16	0	7	28	808	8	24	857	12
Lane Group Flow (vph)	5	13	0	16	7	0	28	808	8	24	857	12
Turn Type	pm+pt			pm+pt			pm+pt		pt+ov	pm+pt		pt+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Total Split (s)	18.0	24.0	0.0	18.0	24.0	0.0	18.0	49.0	67.0	24.0	55.0	73.0
Act Effct Green (s)	36.0	33.2		36.8	33.5		67.1	62.3	73.6	66.1	61.8	72.6
Actuated g/C Ratio	0.31	0.29		0.32	0.29		0.58	0.54	0.64	0.57	0.54	0.63
v/c Ratio	0.01	0.02		0.04	0.01		0.08	0.43	0.01	0.08	0.46	0.01
Control Delay	26.2	0.1		26.4	0.0		12.1	20.6	6.9	8.7	12.1	1.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	0.1		26.4	0.0		12.1	20.6	6.9	8.7	12.1	1.1
LOS	C	A		C	A		B	C	A	A	B	A
Approach Delay		7.3			18.4			20.2			11.8	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	3	0		8	0		11	187	1	5	94	0
Queue Length 95th (ft)	12	0		24	0		m27	236	m3	m7	123	m1

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	494	755		492	770		423	1863	1076	448	1848	1071
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02		0.03	0.01		0.07	0.43	0.01	0.05	0.46	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 46 (40%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.46
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 36.7% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



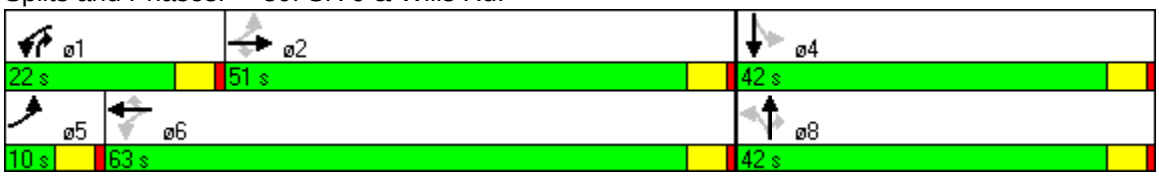
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850		0.961	
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1810	1538	0	1732	0
Flt Permitted	0.123			0.078			0.274				0.975	
Satd. Flow (perm)	223	3438	1538	141	3438	1538	496	1810	1538	0	1695	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			47			19			15		19	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			3241			480			507	
Travel Time (s)		16.5			49.1			10.9			11.5	
Volume (vph)	69	1218	45	253	1253	18	25	57	37	36	297	137
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	73	1282	47	266	1319	19	26	60	39	38	313	144
Lane Group Flow (vph)	73	1282	47	266	1319	19	26	60	39	0	495	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm		pm+ov	Perm		
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2		2	6		6	8		8	4		
Total Split (s)	10.0	51.0	51.0	22.0	63.0	63.0	42.0	42.0	22.0	42.0	42.0	0.0
Act Effct Green (s)	54.3	48.3	48.3	69.0	61.0	61.0	38.0	38.0	58.7		38.0	
Actuated g/C Ratio	0.47	0.42	0.42	0.60	0.53	0.53	0.33	0.33	0.51		0.33	
v/c Ratio	0.40	0.89	0.07	0.85	0.72	0.02	0.16	0.10	0.05		0.86	
Control Delay	22.1	42.1	12.7	55.8	13.5	3.7	30.5	27.4	9.6		51.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay	22.1	42.1	12.7	55.8	13.5	3.7	30.5	27.4	9.6		51.4	
LOS	C	D	B	E	B	A	C	C	A		D	
Approach Delay		40.0			20.4			22.5			51.4	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)	24	377	4	160	156	0	14	31	8		331	
Queue Length 95th (ft)	m47	#486	m19	#281	314	m7	38	62	25		#521	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			3161			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	184	1445	673	332	1824	824	164	598	810		573	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Reduced v/c Ratio	0.40	0.89	0.07	0.80	0.72	0.02	0.16	0.10	0.05		0.86	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 32.3 Intersection LOS: C
Intersection Capacity Utilization 90.3% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		150	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.928			0.937	
Flt Protected	0.950			0.950				0.979			0.980	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1644	0	0	1662	0
Flt Permitted	0.950			0.950				0.979			0.980	
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	0	1644	0	0	1662	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		843			1088			397			497	
Travel Time (s)		12.8			16.5			9.0			11.3	
Volume (vph)	40	1315	15	18	1353	47	12	1	15	6	2	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	42	1384	16	19	1424	49	13	1	16	6	2	7
Lane Group Flow (vph)	42	1384	16	19	1424	49	0	30	0	0	15	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.4%		ICU Level of Service A	
Analysis Period (min) 15			

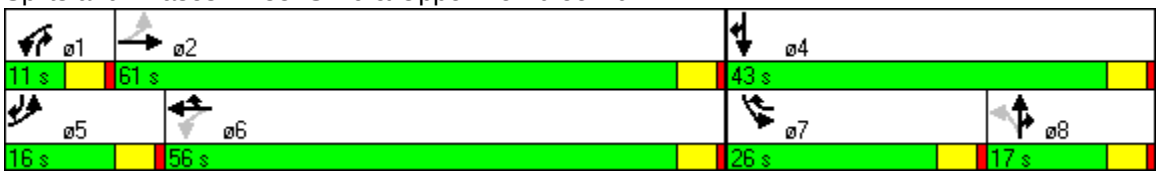
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.989		0.950		
Satd. Flow (prot)	1719	3428	0	1719	3438	1538	0	1790	1538	3335	1810	1538
Flt Permitted	0.092			0.186				0.903		0.950		
Satd. Flow (perm)	166	3428	0	337	3438	1538	0	1634	1538	3335	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				191			18			30
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			843			473			529	
Travel Time (s)		7.4			12.8			10.8			12.0	
Volume (vph)	99	976	19	38	1140	181	11	42	17	376	197	94
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	104	1027	20	40	1200	191	12	44	18	396	207	99
Lane Group Flow (vph)	104	1047	0	40	1200	191	0	56	18	396	207	99
Turn Type	pm+pt			pm+pt		pt+ov	Perm		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6	6 7		8	8 1	7	4	4 5
Permitted Phases	2			6			8					
Total Split (s)	16.0	61.0	0.0	11.0	56.0	82.0	17.0	17.0	28.0	26.0	43.0	59.0
Act Effct Green (s)	67.2	59.3		61.3	54.4	77.4		16.0	26.9	19.0	39.0	52.6
Actuated g/C Ratio	0.58	0.52		0.53	0.47	0.67		0.14	0.23	0.17	0.34	0.46
v/c Ratio	0.46	0.59		0.15	0.74	0.17		0.25	0.05	0.72	0.34	0.14
Control Delay	15.8	21.7		10.1	18.5	0.2		49.0	15.3	49.7	30.3	12.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	21.7		10.1	18.5	0.2		49.0	15.3	49.7	30.3	12.7
LOS	B	C		B	B	A		D	B	D	C	B
Approach Delay		21.2			15.8			40.8			38.8	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	32	285		9	163	0		38	0	143	114	28
Queue Length 95th (ft)	62	355		m11	173	m0		81	20	192	178	59

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			763			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	260	1767		264	1627	1133		228	375	638	614	751
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.40	0.59		0.15	0.74	0.17		0.25	0.05	0.62	0.34	0.13

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 23.0 Intersection LOS: C
Intersection Capacity Utilization 64.4% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



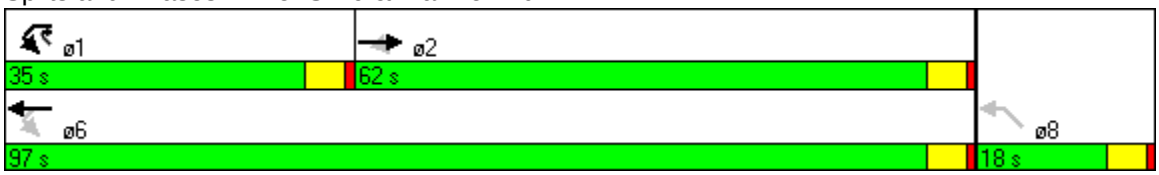
Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	100		0	100
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3438	1538	1719	3438	1719	1538
Flt Permitted			0.092			
Satd. Flow (perm)	3438	1538	166	3438	1810	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				137
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			35	30	
Link Distance (ft)	3241			799	548	
Travel Time (s)	49.1			15.6	12.5	
Volume (vph)	1237	27	298	1512	58	130
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1302	28	314	1592	61	137
Lane Group Flow (vph)	1302	28	314	1592	61	137
Turn Type		Perm	pm+pt			Over
Protected Phases	2		1	6		1
Permitted Phases		2	6		8	
Total Split (s)	62.0	62.0	35.0	97.0	18.0	35.0
Act Effct Green (s)	75.4	75.4	99.0	99.8	10.1	19.6
Actuated g/C Ratio	0.66	0.66	0.86	0.87	0.09	0.17
v/c Ratio	0.58	0.03	0.77	0.53	0.38	0.36
Control Delay	3.5	0.3	29.6	2.1	51.8	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.5	0.3	29.6	2.2	51.8	7.2
LOS	A	A	C	A	D	A
Approach Delay	3.5			6.7	21.0	
Approach LOS	A			A	C	
Queue Length 50th (ft)	12	0	136	8	43	0
Queue Length 95th (ft)	m600	m1	252	215	85	49

Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Internal Link Dist (ft)	3161			719	468	
Turn Bay Length (ft)		200	100			100
Base Capacity (vph)	2253	1016	562	2984	220	515
Starvation Cap Reductn	0	0	0	191	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.03	0.56	0.57	0.28	0.27

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 50 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 6.3	Intersection LOS: A
Intersection Capacity Utilization 64.0%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Maxwell Rd.



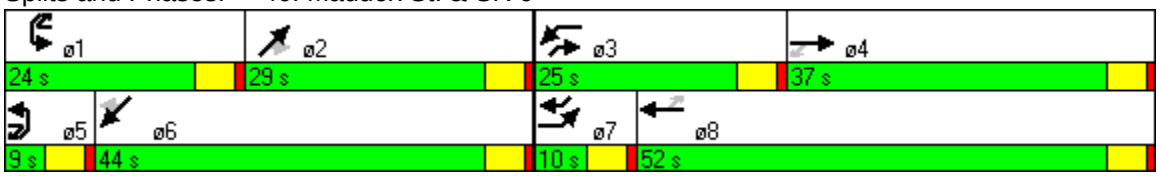
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		150	400		225	250		250	250		200
Storage Lanes	2		1	2		1	2		2	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3335	4940	1538	3335	3438	1538	3335	3438	2707	3335	3438	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3335	4940	1538	3335	3438	1538	3335	3438	2707	3335	3438	1538
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			26			31						36
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			1217			1804	
Travel Time (s)		11.1			16.8			23.7			35.1	
Volume (vph)	83	1329	47	572	451	232	28	672	520	532	858	34
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	87	1399	49	602	475	244	29	707	547	560	903	36
Lane Group Flow (vph)	87	1399	49	602	475	244	29	707	547	560	903	36
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Total Split (s)	10.0	37.0	9.0	25.0	52.0	24.0	9.0	29.0	25.0	24.0	44.0	10.0
Act Effct Green (s)	6.0	33.0	42.0	21.0	50.0	74.0	5.0	25.0	50.0	20.0	41.8	51.8
Actuated g/C Ratio	0.05	0.29	0.37	0.18	0.43	0.64	0.04	0.22	0.43	0.17	0.36	0.45
v/c Ratio	0.50	0.99	0.08	0.99	0.32	0.24	0.20	0.95	0.46	0.97	0.72	0.05
Control Delay	63.3	62.0	14.2	81.1	22.6	8.7	49.6	63.3	36.8	54.3	34.9	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.3	62.0	14.2	81.1	22.6	8.7	49.6	63.3	36.8	54.3	34.9	11.7
LOS	E	E	B	F	C	A	D	E	D	D	C	B
Approach Delay		60.6			46.7			51.7			41.6	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	32	377	11	231	122	64	10	296	233	217	364	9
Queue Length 95th (ft)	60	#486	37	#350	164	104	m20	#405	279	m#315	m425	m13

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		407			658			1137			1724	
Turn Bay Length (ft)	150		150	400		225	250		250	250		200
Base Capacity (vph)	174	1418	578	609	1495	1001	145	747	1177	580	1250	713
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.99	0.08	0.99	0.32	0.24	0.20	0.95	0.46	0.97	0.72	0.05

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 18 (16%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 50.3 Intersection LOS: D
Intersection Capacity Utilization 89.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



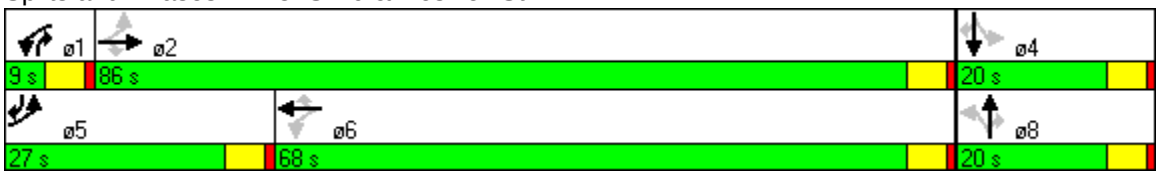
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		200	200		150	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.956			0.966	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1730	1538	0	1748	1538
Flt Permitted	0.068			0.222				0.699			0.747	
Satd. Flow (perm)	123	3438	1538	402	3438	1538	0	1265	1538	0	1352	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			19			24			27
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		799			1217			507			781	
Travel Time (s)		15.6			23.7			11.5			17.8	
Volume (vph)	53	1193	156	34	1443	29	78	8	23	43	18	318
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	56	1256	164	36	1519	31	82	8	24	45	19	335
Lane Group Flow (vph)	56	1256	164	36	1519	31	0	90	24	0	64	335
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm		pm+ov	Perm		pm+ov
Protected Phases	5	2		1	6			8	1		4	5
Permitted Phases	2		2	6		6	8		8	4		4
Total Split (s)	27.0	86.0	86.0	9.0	68.0	68.0	20.0	20.0	9.0	20.0	20.0	27.0
Act Effct Green (s)	93.7	85.9	85.9	81.1	75.2	75.2		13.3	23.2		13.3	31.8
Actuated g/C Ratio	0.81	0.75	0.75	0.71	0.65	0.65		0.12	0.20		0.12	0.28
v/c Ratio	0.19	0.49	0.14	0.10	0.68	0.03		0.62	0.07		0.41	0.75
Control Delay	12.5	1.5	0.2	3.9	11.6	2.4		58.3	13.9		51.4	38.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	12.5	1.5	0.2	3.9	11.6	2.4		58.3	13.9		51.4	38.5
LOS	B	A	A	A	B	A		E	B		D	D
Approach Delay		1.8			11.2			48.9			40.6	
Approach LOS		A			B			D			D	
Queue Length 50th (ft)	2	20	0	3	374	2		64	0		44	211
Queue Length 95th (ft)	m31	35	0	m10	m675	m6		117	23		88	275

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		719			1137			427			701	
Turn Bay Length (ft)	200		200	200		150			100			100
Base Capacity (vph)	420	2568	1191	351	2248	1012		176	329		188	556
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.13	0.49	0.14	0.10	0.68	0.03		0.51	0.07		0.34	0.60

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 50 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 11.8	Intersection LOS: B
Intersection Capacity Utilization 74.3%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 48: SR 9 & Roswell St.



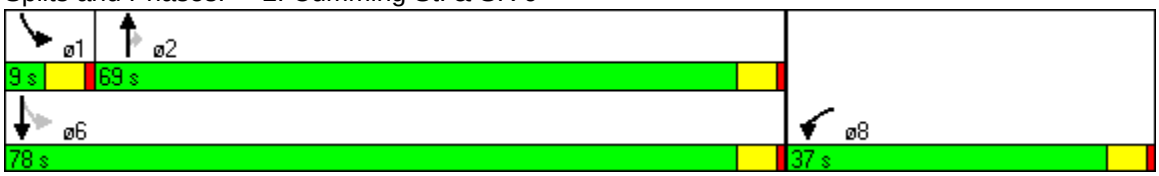
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		250	200	
Storage Lanes	1	0		1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50	50
Trailing Detector (ft)	0		0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.971			0.850		
Flt Protected	0.962				0.950	
Satd. Flow (prot)	1690	0	3438	1538	1719	3438
Flt Permitted	0.962				0.058	
Satd. Flow (perm)	1690	0	3438	1538	105	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	12			239		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		1076			960
Travel Time (s)	11.3		21.0			14.5
Volume (vph)	320	86	1688	268	42	881
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	337	91	1777	282	44	927
Lane Group Flow (vph)	428	0	1777	282	44	927
Turn Type				Perm	pm+pt	
Protected Phases	8		2		1	6
Permitted Phases				2	6	
Total Split (s)	37.0	0.0	69.0	69.0	9.0	78.0
Act Effct Green (s)	31.2		68.3	68.3	75.8	75.8
Actuated g/C Ratio	0.27		0.59	0.59	0.66	0.66
v/c Ratio	0.91		0.87	0.28	0.30	0.41
Control Delay	57.9		17.6	2.5	14.3	16.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	57.9		17.6	2.5	14.3	16.3
LOS	E		B	A	B	B
Approach Delay	57.9		15.6			16.3
Approach LOS	E		B			B
Queue Length 50th (ft)	294		306	19	19	325
Queue Length 95th (ft)	#472		m337	m24	m29	398

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		996			880
Turn Bay Length (ft)				250	200	
Base Capacity (vph)	494		2041	1010	148	2265
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.87		0.87	0.28	0.30	0.41

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 44 (38%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 21.0 Intersection LOS: C
Intersection Capacity Utilization 76.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



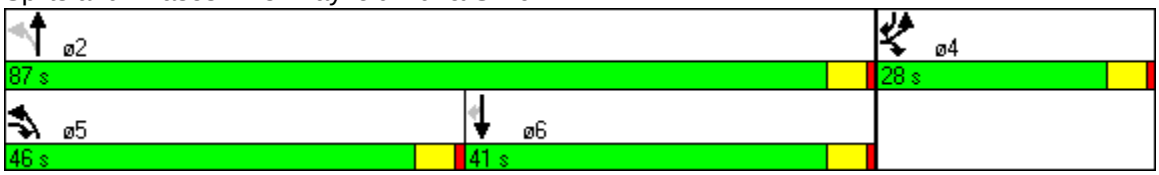
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	200			200
Storage Lanes	1	1	1			1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1719	3438	3438	1538
Flt Permitted	0.950		0.157			
Satd. Flow (perm)	1719	1538	284	3438	3438	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		42				246
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	2751	
Travel Time (s)	10.6			14.5	41.7	
Volume (vph)	186	184	461	1313	739	298
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	196	194	485	1382	778	314
Lane Group Flow (vph)	196	194	485	1382	778	314
Turn Type		pt+ov	pm+pt			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Total Split (s)	28.0	74.0	46.0	87.0	41.0	28.0
Act Effct Green (s)	19.4	55.1	87.6	87.6	51.9	75.3
Actuated g/C Ratio	0.17	0.48	0.76	0.76	0.45	0.65
v/c Ratio	0.68	0.26	0.79	0.53	0.50	0.29
Control Delay	50.1	12.0	11.4	4.6	31.1	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	12.0	11.4	4.6	31.1	7.1
LOS	D	B	B	A	C	A
Approach Delay	31.2			6.3	24.2	
Approach LOS	C			A	C	
Queue Length 50th (ft)	133	56	78	193	197	0
Queue Length 95th (ft)	208	81	m114	287	317	87

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	2671	
Turn Bay Length (ft)		230	200			200
Base Capacity (vph)	359	882	741	2619	1550	1143
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.22	0.65	0.53	0.50	0.27

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 15.1	Intersection LOS: B
Intersection Capacity Utilization 66.3%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		200	300		275
Storage Lanes	1		0	1		2	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.954				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1726	0	1719	1810	2707	1719	3438	1538	1719	3438	1538
Flt Permitted	0.129			0.369			0.249			0.080		
Satd. Flow (perm)	233	1726	0	668	1810	2707	451	3438	1538	145	3438	1538
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		19							70			112
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			1804			1076	
Travel Time (s)		11.4			10.2			35.1			21.0	
Volume (vph)	134	185	82	132	439	624	140	1198	81	258	817	106
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	141	195	86	139	462	657	147	1261	85	272	860	112
Lane Group Flow (vph)	141	281	0	139	462	657	147	1261	85	272	860	112
Turn Type	pm+pt			pm+pt		pt+ov	pm+pt		pt+ov	pm+pt		pt+ov
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Total Split (s)	10.0	35.0	0.0	10.0	35.0	55.0	14.0	50.0	60.0	20.0	56.0	66.0
Act Effct Green (s)	36.9	30.9		36.9	30.9	51.0	54.8	46.0	56.0	66.1	53.3	63.3
Actuated g/C Ratio	0.32	0.27		0.32	0.27	0.44	0.48	0.40	0.49	0.57	0.46	0.55
v/c Ratio	0.93	0.59		0.51	0.95	0.55	0.47	0.92	0.11	0.90	0.54	0.12
Control Delay	87.8	39.7		34.9	71.4	25.8	10.8	27.1	1.2	69.6	8.6	0.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.8	39.7		34.9	71.4	25.8	10.8	27.1	1.2	69.6	8.6	0.5
LOS	F	D		C	E	C	B	C	A	E	A	A
Approach Delay		55.8			43.6			24.0			21.2	
Approach LOS		E			D			C			C	
Queue Length 50th (ft)	73	169		72	336	198	28	398	1	149	80	1
Queue Length 95th (ft)	#178	261		121	#540	261	m38	m#601	m2	m#279	m108	m4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			1724			996	
Turn Bay Length (ft)	225			150		150	200		200	300		275
Base Capacity (vph)	152	479		270	488	1182	330	1376	785	302	1592	896
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.59		0.51	0.95	0.56	0.45	0.92	0.11	0.90	0.54	0.13

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 44 (38%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 31.8 Intersection LOS: C
Intersection Capacity Utilization 91.3% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			150
Storage Lanes	1	0	1			1
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.939					0.850
Flt Protected	0.973		0.950			
Satd. Flow (prot)	1653	0	1719	3438	3438	1538
Flt Permitted	0.973		0.950			
Satd. Flow (perm)	1653	0	1719	3438	3438	1538
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2751	1050	
Travel Time (s)	8.7			41.7	15.9	
Volume (vph)	61	49	193	1285	988	148
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	64	52	203	1353	1040	156
Lane Group Flow (vph)	116	0	203	1353	1040	156
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			200	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.941	
Flt Protected	0.950				0.973	
Satd. Flow (prot)	1719	3438	3438	1538	1657	0
Flt Permitted	0.950				0.973	
Satd. Flow (perm)	1719	3438	3438	1538	1657	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1050	2284		342	
Travel Time (s)		15.9	34.6		7.8	
Volume (vph)	40	1263	1109	118	34	27
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	42	1329	1167	124	36	28
Lane Group Flow (vph)	42	1329	1167	124	64	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.1%		ICU Level of Service A	
Analysis Period (min) 15			

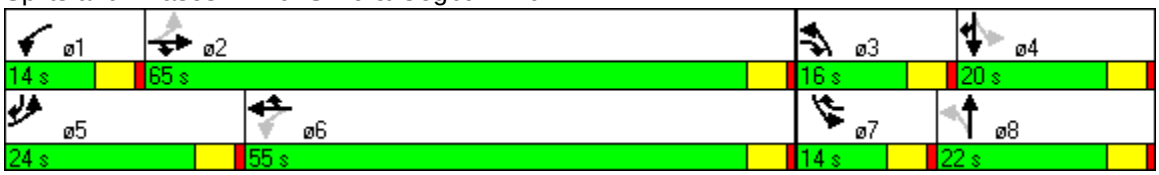
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		150	150		0	150		150
Storage Lanes	1		1	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.898				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1625	0	1719	1810	1538
Flt Permitted	0.134			0.180			0.659			0.700		
Satd. Flow (perm)	242	3438	1538	326	3438	1538	1192	1625	0	1267	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			28			22		60				140
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2284			1605			331			313	
Travel Time (s)		34.6			24.3			7.5			7.1	
Volume (vph)	152	1099	27	32	991	23	79	27	57	23	24	157
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	160	1157	28	34	1043	24	83	28	60	24	25	165
Lane Group Flow (vph)	160	1157	28	34	1043	24	83	88	0	24	25	165
Turn Type	pm+pt		pt+ov	pm+pt		pt+ov	pm+pt			pm+pt		pt+ov
Protected Phases	5	2	2 3	1	6	6 7	3	8		7	4	4 5
Permitted Phases	2			6			8			4		
Total Split (s)	24.0	65.0	81.0	14.0	55.0	69.0	16.0	22.0	0.0	14.0	20.0	44.0
Act Effct Green (s)	74.1	67.8	82.1	68.8	61.4	73.1	31.5	24.5		26.5	20.0	33.7
Actuated g/C Ratio	0.64	0.59	0.71	0.60	0.53	0.64	0.27	0.21		0.23	0.17	0.29
v/c Ratio	0.57	0.57	0.03	0.12	0.57	0.02	0.22	0.22		0.07	0.08	0.30
Control Delay	18.4	6.0	0.5	5.9	16.1	7.9	33.2	18.3		31.3	43.8	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	18.4	6.0	0.5	5.9	16.1	7.9	33.2	18.3		31.3	43.8	8.7
LOS	B	A	A	A	B	A	C	B		C	D	A
Approach Delay		7.3			15.6			25.6			15.3	
Approach LOS		A			B			C			B	
Queue Length 50th (ft)	20	86	0	11	194	3	47	18		13	16	14
Queue Length 95th (ft)	88	104	m1	m19	234	m10	88	65		34	43	65

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		2204			1525			251			233	
Turn Bay Length (ft)	200		150	200		150	150			150		150
Base Capacity (vph)	415	2027	1129	323	1834	1015	383	394		348	315	675
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.39	0.57	0.02	0.11	0.57	0.02	0.22	0.22		0.07	0.08	0.24

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 58 (50%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 12.3 Intersection LOS: B
Intersection Capacity Utilization 56.9% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



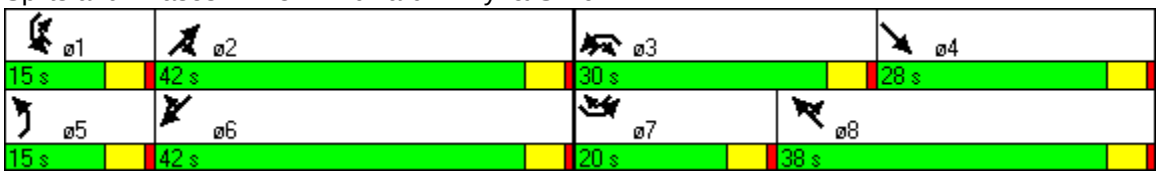
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	200		150	200		150
Storage Lanes	1		0	2		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor												
Frt		0.981				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3373	0	3335	3438	1538	3335	3438	1538	3335	3438	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3373	0	3335	3438	1538	3335	3438	1538	3335	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				108			83			49
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	135	367	53	508	770	241	83	805	271	199	553	47
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	142	386	56	535	811	254	87	847	285	209	582	49
Lane Group Flow (vph)	142	442	0	535	811	254	87	847	285	209	582	49
Turn Type	Prot			Prot		pt+ov	Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases												
Total Split (s)	20.0	28.0	0.0	30.0	38.0	53.0	15.0	42.0	72.0	15.0	42.0	62.0
Act Effct Green (s)	14.2	23.1		23.1	32.0	50.8	14.8	38.0	65.1	14.8	38.0	56.2
Actuated g/C Ratio	0.12	0.20		0.20	0.28	0.44	0.13	0.33	0.57	0.13	0.33	0.49
v/c Ratio	0.67	0.64		0.80	0.85	0.34	0.20	0.75	0.31	0.49	0.51	0.06
Control Delay	58.5	44.6		49.1	45.7	13.6	65.4	18.2	4.5	52.5	33.0	4.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.5	44.6		49.1	45.7	13.6	65.4	18.2	4.5	52.5	33.0	4.3
LOS	E	D		D	D	B	E	B	A	D	C	A
Approach Delay		48.0			41.7			18.4			36.2	
Approach LOS		D			D			B			D	
Queue Length 50th (ft)	100	149		193	290	67	27	262	64	78	181	0
Queue Length 95th (ft)	169	208		250	368	132	m48	280	49	119	237	19

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	200		150	200		150
Base Capacity (vph)	239	725		754	1018	737	429	1136	943	429	1136	800
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.61		0.71	0.80	0.34	0.20	0.75	0.30	0.49	0.51	0.06

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 92 (80%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 34.8 Intersection LOS: C
Intersection Capacity Utilization 70.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Windward Pkwy. & SR 9



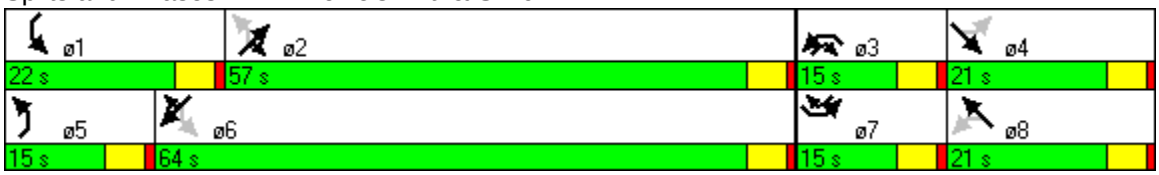
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.870			0.869				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1574	0	1719	1572	0	1719	3438	1538	1719	3438	1538
Flt Permitted	0.716			0.738			0.208			0.110		
Satd. Flow (perm)	1296	1574	0	1335	1572	0	376	3438	1538	199	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			55				68			6
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	12	4	25	33	8	52	19	1095	65	120	988	6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	13	4	26	35	8	55	20	1153	68	126	1040	6
Lane Group Flow (vph)	13	30	0	35	63	0	20	1153	68	126	1040	6
Turn Type	pm+pt			pm+pt			pm+pt		pt+ov	pm+pt		pt+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Total Split (s)	15.0	21.0	0.0	15.0	21.0	0.0	15.0	57.0	72.0	22.0	64.0	79.0
Act Effct Green (s)	27.8	21.8		31.1	27.2		65.4	58.8	71.1	75.0	70.7	81.9
Actuated g/C Ratio	0.24	0.19		0.27	0.24		0.57	0.51	0.62	0.65	0.61	0.71
v/c Ratio	0.04	0.09		0.09	0.15		0.07	0.66	0.07	0.43	0.49	0.01
Control Delay	30.8	18.1		31.4	14.0		1.6	5.1	0.1	19.7	15.5	6.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	18.1		31.4	14.0		1.6	5.1	0.1	19.7	15.5	6.8
LOS	C	B		C	B		A	A	A	B	B	A
Approach Delay		21.9			20.2			4.7			15.9	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)	7	3		19	4		1	28	0	64	236	1
Queue Length 95th (ft)	23	30		45	44		m2	41	m0	m114	287	m2

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	386	320		403	414		357	1758	1011	368	2113	1148
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.09		0.09	0.15		0.06	0.66	0.07	0.34	0.49	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 72 (63%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 10.8 Intersection LOS: B
Intersection Capacity Utilization 55.4% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850		0.918	
Flt Protected	0.950			0.950			0.950				0.995	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1810	1538	0	1653	0
Flt Permitted	0.068			0.090			0.537				0.829	
Satd. Flow (perm)	123	3438	1538	163	3438	1538	972	1810	1538	0	1377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			28			48			29		67	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			3241			480			507	
Travel Time (s)		16.5			49.1			10.9			11.5	
Volume (vph)	194	1419	27	71	1324	46	62	357	189	15	50	102
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	204	1494	28	75	1394	48	65	376	199	16	53	107
Lane Group Flow (vph)	204	1494	28	75	1394	48	65	376	199	0	176	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm		pm+ov	Perm		
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2		2	6		6	8		8	4		
Total Split (s)	20.0	68.0	68.0	11.0	59.0	59.0	36.0	36.0	11.0	36.0	36.0	0.0
Act Effct Green (s)	74.9	64.0	64.0	64.3	57.3	57.3	32.0	32.0	43.0		32.0	
Actuated g/C Ratio	0.65	0.56	0.56	0.56	0.50	0.50	0.28	0.28	0.37		0.28	
v/c Ratio	0.76	0.78	0.03	0.41	0.81	0.06	0.24	0.75	0.34		0.41	
Control Delay	32.1	22.1	3.0	21.4	28.8	4.9	35.1	48.3	23.7		23.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay	32.1	22.1	3.0	21.4	28.8	4.9	35.1	48.3	23.7		23.8	
LOS	C	C	A	C	C	A	D	D	C		C	
Approach Delay		22.9			27.6			39.3			23.8	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	70	600	3	16	448	3	37	254	88		64	
Queue Length 95th (ft)	m114	682	m5	49	551	15	77	368	150		130	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			3161			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	302	1914	869	186	1714	791	270	504	593		432	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Reduced v/c Ratio	0.68	0.78	0.03	0.40	0.81	0.06	0.24	0.75	0.34		0.41	

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 56 (49%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 27.3	Intersection LOS: C
Intersection Capacity Utilization 79.9%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		150	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.894			0.925	
Flt Protected	0.950			0.950				0.990			0.980	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1602	0	0	1640	0
Flt Permitted	0.950			0.950				0.990			0.980	
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	0	1602	0	0	1640	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		843			1088			404			497	
Travel Time (s)		12.8			16.5			9.2			11.3	
Volume (vph)	13	1566	28	13	1470	10	10	0	39	43	3	57
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	14	1648	29	14	1547	11	11	0	41	45	3	60
Lane Group Flow (vph)	14	1648	29	14	1547	11	0	52	0	0	108	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 61.3%	ICU Level of Service B
Analysis Period (min) 15	

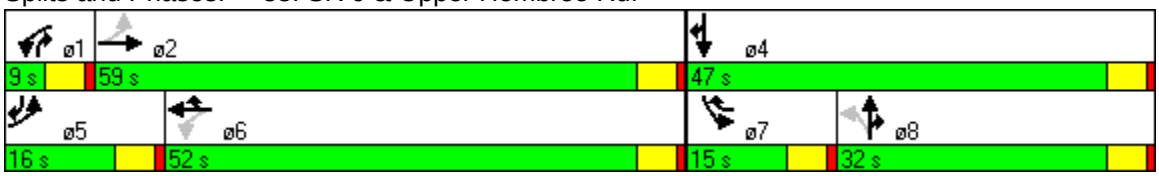
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.992		0.950		
Satd. Flow (prot)	1719	3428	0	1719	3438	1538	0	1795	1538	3335	1810	1538
Flt Permitted	0.077			0.083				0.935		0.950		
Satd. Flow (perm)	139	3428	0	150	3438	1538	0	1692	1538	3335	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				224			23			15
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			843			473			529	
Travel Time (s)		7.4			12.8			10.8			12.0	
Volume (vph)	174	1315	27	8	1239	286	49	276	45	244	106	96
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	183	1384	28	8	1304	301	52	291	47	257	112	101
Lane Group Flow (vph)	183	1412	0	8	1304	301	0	343	47	257	112	101
Turn Type	pm+pt			pm+pt		pt+ov	Perm		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6	6 7		8	8 1	7	4	4 5
Permitted Phases	2			6			8					
Total Split (s)	16.0	59.0	0.0	9.0	52.0	67.0	32.0	32.0	41.0	15.0	47.0	63.0
Act Effct Green (s)	64.0	56.8		53.4	48.4	63.4		28.0	37.0	11.0	43.0	58.6
Actuated g/C Ratio	0.56	0.49		0.46	0.42	0.55		0.24	0.32	0.10	0.37	0.51
v/c Ratio	0.78	0.83		0.06	0.90	0.32		0.83	0.09	0.81	0.17	0.13
Control Delay	44.3	31.0		4.6	32.5	8.8		59.8	17.1	70.6	24.9	12.9
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	31.0		4.6	32.5	8.8		59.8	17.1	70.6	24.9	12.9
LOS	D	C		A	C	A		E	B	E	C	B
Approach Delay		32.6			27.9			54.6			47.3	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	82	473		1	540	113		242	12	97	55	32
Queue Length 95th (ft)	#191	579		m2	#630	m124		#395	40	#163	96	62

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			763			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	242	1695		138	1448	949		412	510	319	677	796
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.76	0.83		0.06	0.90	0.32		0.83	0.09	0.81	0.17	0.13

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 34.5 Intersection LOS: C
Intersection Capacity Utilization 81.4% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



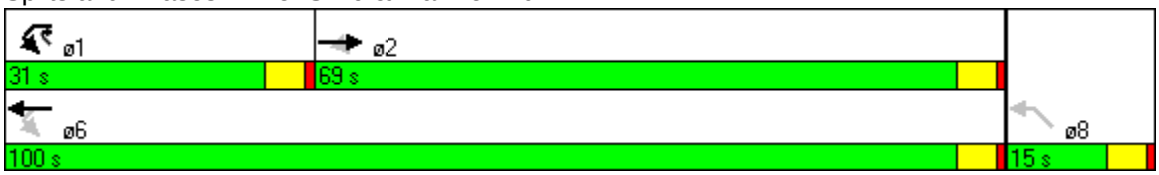
Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	100		0	100
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3438	1538	1719	3438	1719	1538
Flt Permitted			0.058			
Satd. Flow (perm)	3438	1538	105	3438	1810	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		23				165
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			35	30	
Link Distance (ft)	3241			799	548	
Travel Time (s)	49.1			15.6	12.5	
Volume (vph)	1570	29	171	1315	68	341
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1653	31	180	1384	72	359
Lane Group Flow (vph)	1653	31	180	1384	72	359
Turn Type		Perm	pm+pt			Over
Protected Phases	2		1	6		1
Permitted Phases		2	6		8	
Total Split (s)	69.0	69.0	31.0	100.0	15.0	31.0
Act Effct Green (s)	74.5	74.5	99.4	100.2	9.8	20.9
Actuated g/C Ratio	0.65	0.65	0.86	0.87	0.09	0.18
v/c Ratio	0.74	0.03	0.47	0.46	0.46	0.87
Control Delay	5.6	1.7	19.4	1.7	57.2	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	1.7	19.4	1.7	57.2	33.3
LOS	A	A	B	A	E	C
Approach Delay	5.5			3.8	37.3	
Approach LOS	A			A	D	
Queue Length 50th (ft)	74	0	52	4	51	145
Queue Length 95th (ft)	161	m1	134	203	99	251

Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Internal Link Dist (ft)	3161			719	468	
Turn Bay Length (ft)		200	100			100
Base Capacity (vph)	2227	1004	470	2994	173	487
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.03	0.38	0.46	0.42	0.74

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 84 (73%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 71.2%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Maxwell Rd.



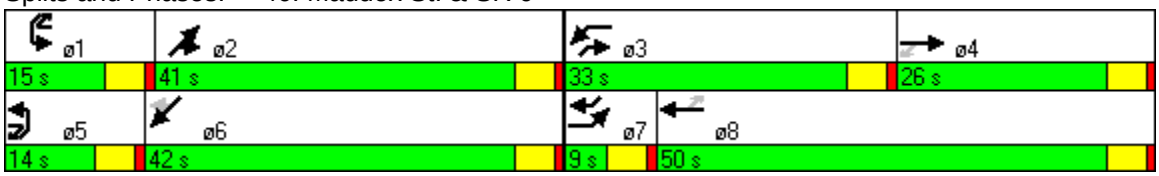
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		150	400		225	250		250	250		200
Storage Lanes	2		1	2		1	2		2	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3335	4940	1538	3335	3438	1538	3335	3438	2707	3335	3438	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3335	4940	1538	3335	3438	1538	3335	3438	2707	3335	3438	1538
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			39			20						31
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			1217			1804	
Travel Time (s)		11.1			16.8			23.7			35.1	
Volume (vph)	93	572	37	562	1201	366	147	936	622	247	664	62
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	98	602	39	592	1264	385	155	985	655	260	699	65
Lane Group Flow (vph)	98	602	39	592	1264	385	155	985	655	260	699	65
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pt+ov	Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	2 3	1	6	7
Permitted Phases			4			8						6
Total Split (s)	9.0	26.0	14.0	33.0	50.0	15.0	14.0	41.0	74.0	15.0	42.0	9.0
Act Effct Green (s)	5.0	24.0	37.7	26.2	45.2	61.0	9.7	37.0	67.2	11.8	39.1	48.1
Actuated g/C Ratio	0.04	0.21	0.33	0.23	0.39	0.53	0.08	0.32	0.58	0.10	0.34	0.42
v/c Ratio	0.68	0.59	0.07	0.78	0.94	0.47	0.55	0.89	0.41	0.76	0.60	0.10
Control Delay	77.1	44.1	9.0	46.4	45.2	18.2	66.4	40.4	4.7	49.2	36.2	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.1	44.1	9.0	46.4	45.2	18.2	66.4	40.4	4.7	49.2	36.2	19.6
LOS	E	D	A	D	D	B	E	D	A	D	D	B
Approach Delay		46.6			40.9			29.6			38.4	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	37	149	0	209	461	161	53	300	69	94	267	28
Queue Length 95th (ft)	#77	194	25	269	#604	242	m84	#476	65	#161	320	m65

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		407			658			1137			1724	
Turn Bay Length (ft)	150		150	400		225	250		250	250		200
Base Capacity (vph)	145	1029	534	841	1375	825	290	1106	1648	343	1169	662
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.59	0.07	0.70	0.92	0.47	0.53	0.89	0.40	0.76	0.60	0.10

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 12 (10%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 37.7 Intersection LOS: D
Intersection Capacity Utilization 82.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



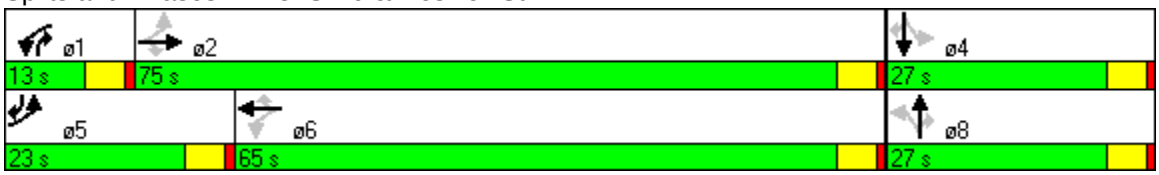
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		200	200		150	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.964			0.965	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1744	1538	0	1746	1538
Flt Permitted	0.102			0.069				0.746			0.764	
Satd. Flow (perm)	185	3438	1538	125	3438	1538	0	1350	1538	0	1382	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93			29			25			39
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		799			1217			507			781	
Travel Time (s)		15.6			23.7			11.5			17.8	
Volume (vph)	175	1634	108	19	1244	41	89	30	74	36	14	194
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	184	1720	114	20	1309	43	94	32	78	38	15	204
Lane Group Flow (vph)	184	1720	114	20	1309	43	0	126	78	0	53	204
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm		pm+ov	Perm		pm+ov
Protected Phases	5	2		1	6			8	1		4	5
Permitted Phases	2		2	6		6	8		8	4		4
Total Split (s)	23.0	75.0	75.0	13.0	65.0	65.0	27.0	27.0	13.0	27.0	27.0	23.0
Act Effct Green (s)	89.9	81.7	81.7	81.7	74.8	74.8		16.5	27.4		16.5	32.2
Actuated g/C Ratio	0.78	0.71	0.71	0.71	0.65	0.65		0.14	0.24		0.14	0.28
v/c Ratio	0.61	0.70	0.10	0.11	0.59	0.04		0.65	0.20		0.27	0.44
Control Delay	24.5	3.1	0.2	8.1	18.9	9.0		51.2	23.9		43.5	27.4
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	24.5	3.1	0.2	8.1	18.9	9.0		51.2	23.9		43.5	27.4
LOS	C	A	A	A	B	A		D	C		D	C
Approach Delay		4.9			18.4			40.8			30.7	
Approach LOS		A			B			D			C	
Queue Length 50th (ft)	50	86	0	3	351	4		89	31		35	101
Queue Length 95th (ft)	m102	113	m0	m7	449	m24		145	66		70	144

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		719			1137			427			701	
Turn Bay Length (ft)	200		200	200		150			100			100
Base Capacity (vph)	399	2442	1119	216	2237	1011		270	414		276	554
Starvation Cap Reductn	0	70	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.46	0.73	0.10	0.09	0.59	0.04		0.47	0.19		0.19	0.37

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 104 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 13.3	Intersection LOS: B
Intersection Capacity Utilization 71.7%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 48: SR 9 & Roswell St.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.874				0.999	
Flt Protected	0.997					
Satd. Flow (prot)	1577	0	0	3438	3435	0
Flt Permitted	0.997					
Satd. Flow (perm)	1577	0	0	3438	3435	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			35	35	
Link Distance (ft)	492			701	375	
Travel Time (s)	11.2			13.7	7.3	
Volume (vph)	5	80	1	1331	2151	11
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	6	89	1	1479	2390	12
Lane Group Flow (vph)	95	0	0	1480	2402	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			

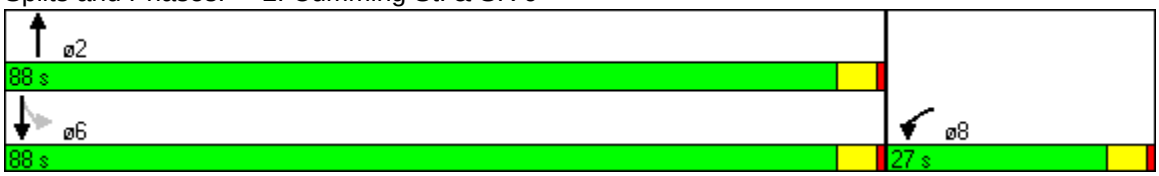
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50		50	50
Trailing Detector (ft)	0		0		0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.988		0.960			
Flt Protected	0.956					0.997
Satd. Flow (prot)	1709	0	3301	0	0	3428
Flt Permitted	0.956					0.581
Satd. Flow (perm)	1709	0	3301	0	0	1998
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	4		120			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		375			960
Travel Time (s)	11.3		7.3			14.5
Volume (vph)	384	38	978	358	132	1778
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	427	42	1087	398	147	1976
Lane Group Flow (vph)	469	0	1485	0	0	2123
Turn Type					Perm	
Protected Phases	8		2			6
Permitted Phases					6	
Total Split (s)	27.0	0.0	88.0	0.0	88.0	88.0
Act Effct Green (s)	23.0		84.0			84.0
Actuated g/C Ratio	0.20		0.73			0.73
v/c Ratio	1.36		0.61			1.46
Control Delay	215.8		3.0			222.3
Queue Delay	0.0		0.0			0.0
Total Delay	215.8		3.0			222.3
LOS	F		A			F
Approach Delay	215.8		3.0			222.3
Approach LOS	F		A			F
Queue Length 50th (ft)	~458		61			~1165
Queue Length 95th (ft)	#665		m18			m#1182

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		295			880
Turn Bay Length (ft)						
Base Capacity (vph)	345		2444			1459
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	1.36		0.61			1.46

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 43 (37%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.46
Intersection Signal Delay: 141.7 Intersection LOS: F
Intersection Capacity Utilization 125.0% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



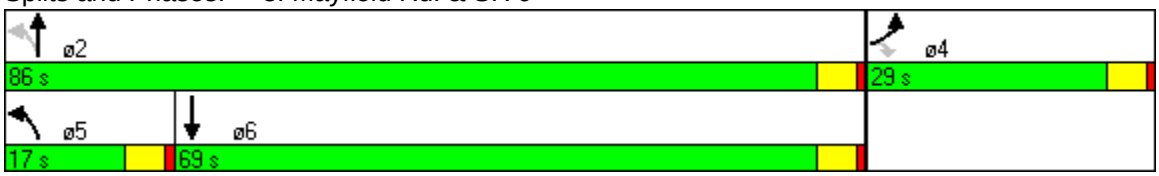
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	0			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.980	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1719	1810	3369	0
Flt Permitted	0.950		0.058			
Satd. Flow (perm)	1719	1538	105	1810	3369	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		191			24	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	482	
Travel Time (s)	10.6			14.5	7.3	
Volume (vph)	284	450	237	779	1460	225
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	316	500	263	866	1622	250
Lane Group Flow (vph)	316	500	263	866	1872	0
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Total Split (s)	29.0	29.0	17.0	86.0	69.0	0.0
Act Effct Green (s)	25.0	25.0	82.0	82.0	65.0	
Actuated g/C Ratio	0.22	0.22	0.71	0.71	0.57	
v/c Ratio	0.84	1.03	1.02	0.67	0.98	
Control Delay	64.3	77.7	98.6	6.9	31.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	64.3	77.7	98.6	6.9	31.0	
LOS	E	E	F	A	C	
Approach Delay	72.5			28.3	31.0	
Approach LOS	E			C	C	
Queue Length 50th (ft)	226	~279	~167	75	596	
Queue Length 95th (ft)	#378	#491	m#323	m189	m616	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	402	
Turn Bay Length (ft)		230				
Base Capacity (vph)	374	484	257	1291	1915	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.84	1.03	1.02	0.67	0.98	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 43 (37%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 39.1 Intersection LOS: D
Intersection Capacity Utilization 86.4% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		0	300		275
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.984				0.850		0.978				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1781	0	1719	1810	1538	1719	3362	0	1719	3438	1538
Flt Permitted	0.319			0.143			0.133			0.118		
Satd. Flow (perm)	577	1781	0	259	1810	1538	241	3362	0	214	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				363		17				49
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			575			701	
Travel Time (s)		11.4			10.2			11.2			13.7	
Volume (vph)	171	482	57	197	255	327	102	834	147	669	1510	52
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	190	536	63	219	283	363	113	927	163	743	1678	58
Lane Group Flow (vph)	190	599	0	219	283	363	113	1090	0	743	1678	58
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Total Split (s)	13.0	33.0	0.0	12.0	32.0	32.0	9.0	34.0	0.0	36.0	61.0	61.0
Act Effct Green (s)	38.0	29.0		36.0	28.0	28.0	35.0	30.0		66.0	57.0	57.0
Actuated g/C Ratio	0.33	0.25		0.31	0.24	0.24	0.30	0.26		0.57	0.50	0.50
v/c Ratio	0.68	1.32		1.20	0.64	0.56	0.82	1.22		1.37	0.98	0.07
Control Delay	41.5	195.2		159.1	46.7	7.3	65.7	138.6		194.6	34.0	5.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	41.5	195.2		159.1	46.7	7.3	65.7	138.6		194.6	34.0	5.9
LOS	D	F		F	D	A	E	F		F	C	A
Approach Delay		158.2			58.6			131.7			81.5	
Approach LOS		F			E			F			F	
Queue Length 50th (ft)	101	~576		~146	189	0	63	~532		~681	640	5
Queue Length 95th (ft)	#166	#800		#306	283	77	m69	m#518		m331	m383	m0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			495			621	
Turn Bay Length (ft)	225			150		150	200			300		275
Base Capacity (vph)	280	453		183	441	649	138	890		542	1704	787
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.68	1.32		1.20	0.64	0.56	0.82	1.22		1.37	0.98	0.07

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 29 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.37
Intersection Signal Delay: 100.5 Intersection LOS: F
Intersection Capacity Utilization 117.9% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			0
Storage Lanes	1	0	1			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.876				0.996	
Flt Protected	0.996		0.950			
Satd. Flow (prot)	1579	0	1719	1810	3424	0
Flt Permitted	0.996		0.950			
Satd. Flow (perm)	1579	0	1719	1810	3424	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2269	199	
Travel Time (s)	8.7			34.4	3.0	
Volume (vph)	24	280	28	1027	1363	41
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	27	311	31	1141	1514	46
Lane Group Flow (vph)	338	0	31	1141	1560	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 79.4%	ICU Level of Service D
Analysis Period (min) 15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	1	0		0	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.965		0.996			
Flt Protected	0.964				0.950	
Satd. Flow (prot)	1683	0	1802	0	1719	3438
Flt Permitted	0.964				0.950	
Satd. Flow (perm)	1683	0	1802	0	1719	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	437		482			2269
Travel Time (s)	9.9		7.3			34.4
Volume (vph)	57	20	1035	28	15	1628
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	63	22	1150	31	17	1809
Lane Group Flow (vph)	85	0	1181	0	17	1809
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	150	
Storage Lanes	1	0		1	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.934			0.850		
Flt Protected	0.975					
Satd. Flow (prot)	1648	0	1810	1538	0	3438
Flt Permitted	0.975					
Satd. Flow (perm)	1648	0	1810	1538	0	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	365		199			854
Travel Time (s)	8.3		3.0			12.9
Volume (vph)	26	25	1047	4	4	1378
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	29	28	1163	4	4	1531
Lane Group Flow (vph)	57	0	1163	4	0	1535
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.945	
Flt Protected		0.999			0.971	
Satd. Flow (prot)	0	1808	1800	0	1660	0
Flt Permitted		0.999			0.971	
Satd. Flow (perm)	0	1808	1800	0	1660	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		854	312		342	
Travel Time (s)		12.9	4.7		7.8	
Volume (vph)	14	1058	1352	51	43	30
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	16	1176	1502	57	48	33
Lane Group Flow (vph)	0	1192	1559	0	81	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 85.1%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.932	
Flt Protected					0.976	
Satd. Flow (prot)	1810	1538	0	1810	1646	0
Flt Permitted					0.976	
Satd. Flow (perm)	1810	1538	0	1810	1646	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	312			1975	374	
Travel Time (s)	4.7			29.9	8.5	
Volume (vph)	1094	7	10	1375	28	28
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1216	8	11	1528	31	31
Lane Group Flow (vph)	1216	8	0	1539	62	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			

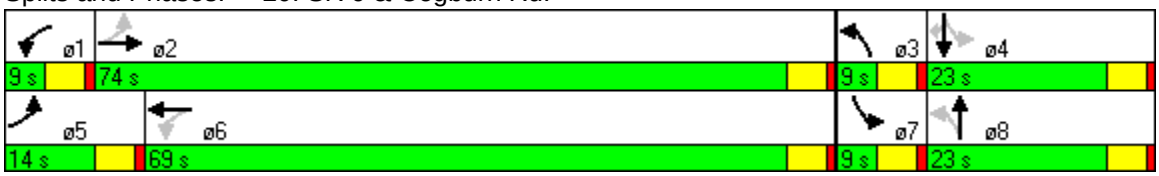
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	150		0	150		0	150		150
Storage Lanes	1		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.996			0.921				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1799	0	1719	1802	0	1719	1667	0	1719	1810	1538
Flt Permitted	0.058			0.062			0.720			0.575		
Satd. Flow (perm)	105	1799	0	112	1802	0	1303	1667	0	1040	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			42				176
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1975			1605			331			313	
Travel Time (s)		29.9			24.3			7.5			7.1	
Volume (vph)	184	900	38	66	937	23	79	51	58	22	51	369
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	204	1000	42	73	1041	26	88	57	64	24	57	410
Lane Group Flow (vph)	204	1042	0	73	1067	0	88	121	0	24	57	410
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Total Split (s)	14.0	74.0	0.0	9.0	69.0	0.0	9.0	23.0	0.0	9.0	23.0	23.0
Act Effct Green (s)	79.0	71.8		70.0	65.0		25.6	22.6		24.8	20.8	20.8
Actuated g/C Ratio	0.69	0.62		0.61	0.57		0.22	0.20		0.22	0.18	0.18
v/c Ratio	0.96	0.93		0.53	1.05		0.29	0.34		0.09	0.17	0.97
Control Delay	78.0	29.2		22.2	62.1		38.4	30.1		34.5	43.0	65.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	78.0	29.2		22.2	62.1		38.4	30.1		34.5	43.0	65.0
LOS	E	C		C	E		D	C		C	D	E
Approach Delay		37.2			59.5			33.6			61.0	
Approach LOS		D			E			C			E	
Queue Length 50th (ft)	96	749		20	~842		52	52		14	37	~206
Queue Length 95th (ft)	m#231	#1008		m31	#1101		97	110		36	75	#404

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1895			1525			251			233	
Turn Bay Length (ft)	150			150			150			150		150
Base Capacity (vph)	212	1124		138	1019		308	361		254	327	422
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.96	0.93		0.53	1.05		0.29	0.34		0.09	0.17	0.97

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 65 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 49.0 Intersection LOS: D
Intersection Capacity Utilization 87.9% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



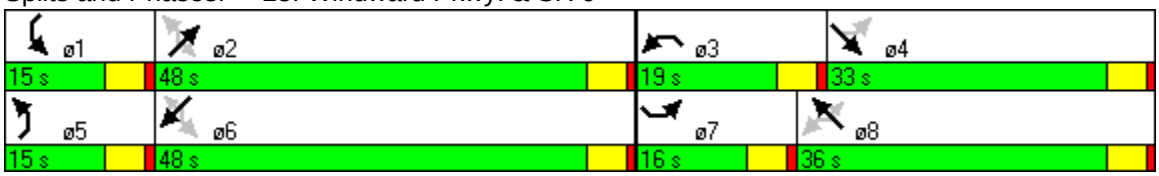
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	250		500	325		350
Storage Lanes	1		0	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.987				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3393	0	1719	3438	1538	1719	1810	1538	1719	1810	1538
Flt Permitted	0.356			0.125			0.091			0.209		
Satd. Flow (perm)	644	3393	0	226	3438	1538	165	1810	1538	378	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				144			293			42
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	142	762	72	285	446	130	75	464	413	208	678	38
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	158	847	80	317	496	144	83	516	459	231	753	42
Lane Group Flow (vph)	158	927	0	317	496	144	83	516	459	231	753	42
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	16.0	33.0	0.0	19.0	36.0	36.0	15.0	48.0	48.0	15.0	48.0	48.0
Act Effct Green (s)	40.3	29.0		47.3	32.7	32.7	55.0	44.0	44.0	55.0	44.0	44.0
Actuated g/C Ratio	0.35	0.25		0.41	0.28	0.28	0.48	0.38	0.38	0.48	0.38	0.38
v/c Ratio	0.48	1.08		1.10	0.51	0.27	0.36	0.74	0.60	0.75	1.09	0.07
Control Delay	26.6	93.9		113.9	36.8	6.5	20.1	24.0	5.7	33.0	94.9	7.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	93.9		113.9	36.8	6.5	20.1	24.0	5.7	33.0	94.9	7.1
LOS	C	F		F	D	A	C	C	A	C	F	A
Approach Delay		84.1			57.8			15.8			77.4	
Approach LOS		F			E			B			E	
Queue Length 50th (ft)	74	~401		~218	163	0	12	232	30	93	~627	0
Queue Length 95th (ft)	122	#532		#400	217	48	m18	m357	m59	#161	#862	23

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	250		500	325		350
Base Capacity (vph)	342	862		288	977	540	228	693	769	309	693	614
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	1.08		1.10	0.51	0.27	0.36	0.74	0.60	0.75	1.09	0.07

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 105 (91%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 58.8 Intersection LOS: E
Intersection Capacity Utilization 92.3% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Windward Pkwy. & SR 9



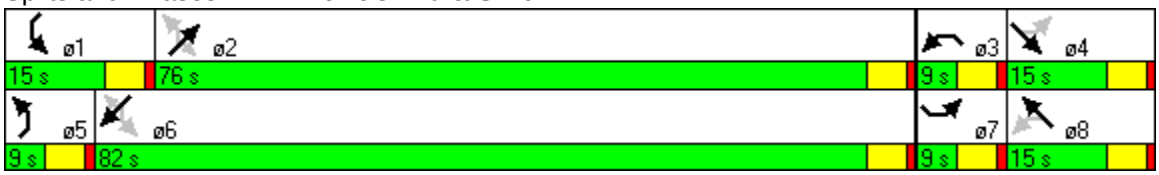
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1538	0	1719	1538	0	1719	1810	1538	1719	1810	1538
Flt Permitted	0.751			0.746			0.089			0.065		
Satd. Flow (perm)	1359	1538	0	1350	1538	0	161	1810	1538	118	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		213			226				7			16
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	6	0	15	18	0	9	33	937	10	28	993	14
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	0	17	20	0	10	37	1041	11	31	1103	16
Lane Group Flow (vph)	7	17	0	20	10	0	37	1041	11	31	1103	16
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Total Split (s)	9.0	15.0	0.0	9.0	15.0	0.0	9.0	76.0	76.0	15.0	82.0	82.0
Act Effct Green (s)	18.4	16.4		19.2	18.2		83.1	80.1	80.1	86.1	81.6	81.6
Actuated g/C Ratio	0.16	0.14		0.17	0.16		0.72	0.70	0.70	0.75	0.71	0.71
v/c Ratio	0.03	0.04		0.08	0.02		0.20	0.83	0.01	0.16	0.86	0.01
Control Delay	40.0	0.2		40.8	0.1		2.4	6.0	0.5	5.1	16.8	4.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	40.0	0.2		40.8	0.1		2.4	6.0	0.5	5.1	17.2	4.4
LOS	D	A		D	A		A	A	A	A	B	A
Approach Delay		11.8			27.2			5.8			16.7	
Approach LOS		B			C			A			B	
Queue Length 50th (ft)	4	0		13	0		2	59	0	7	418	1
Queue Length 95th (ft)	18	0		35	0		m3	m82	m0	m6	m365	m1

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	233	402		242	433		184	1260	1073	242	1284	1096
Starvation Cap Reductn	0	0		0	0		0	0	0	0	21	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.04		0.08	0.02		0.20	0.83	0.01	0.13	0.87	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 81 (70%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 11.6 Intersection LOS: B
Intersection Capacity Utilization 66.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



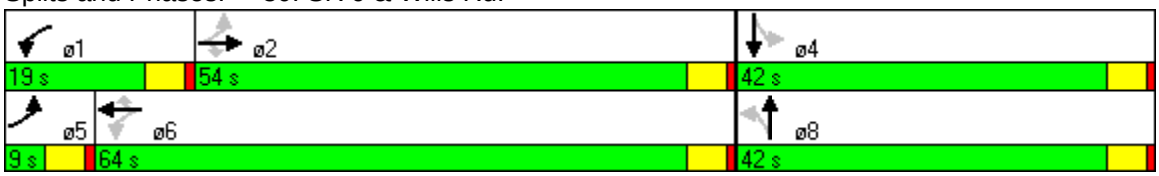
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.947			0.960	
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1714	0	0	1730	0
Flt Permitted	0.080			0.074			0.194				0.967	
Satd. Flow (perm)	145	3438	1538	134	3438	1538	351	1714	0	0	1680	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			51			24		26			19	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			1600			480			507	
Travel Time (s)		16.5			24.2			10.9			11.5	
Volume (vph)	84	1486	55	303	1529	22	30	70	39	44	362	168
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	93	1651	61	337	1699	24	33	78	43	49	402	187
Lane Group Flow (vph)	93	1651	61	337	1699	24	33	121	0	0	638	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Total Split (s)	9.0	54.0	54.0	19.0	64.0	64.0	42.0	42.0	0.0	42.0	42.0	0.0
Act Effct Green (s)	55.0	50.0	50.0	69.0	60.0	60.0	38.0	38.0			38.0	
Actuated g/C Ratio	0.48	0.43	0.43	0.60	0.52	0.52	0.33	0.33			0.33	
v/c Ratio	0.67	1.10	0.09	1.17	0.95	0.03	0.28	0.21			1.12	
Control Delay	30.4	91.2	12.1	125.1	33.6	2.8	36.6	22.7			112.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	30.4	91.2	12.1	125.1	33.6	2.8	36.6	22.7			112.0	
LOS	C	F	B	F	C	A	D	C			F	
Approach Delay		85.4			48.2			25.7			112.0	
Approach LOS		F			D			C			F	
Queue Length 50th (ft)	36	~752	14	~244	680	2	18	50			~538	
Queue Length 95th (ft)	m36	m#872	m20	m#338	m#768	m2	49	96			#766	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			1520			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	138	1495	698	287	1794	814	116	584			568	
Starvation Cap Reductn	0	0	0	0	0	0	0	0			0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	
Reduced v/c Ratio	0.67	1.10	0.09	1.17	0.95	0.03	0.28	0.21			1.12	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 81 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 70.6 Intersection LOS: E
Intersection Capacity Utilization 106.2% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.995			0.927			0.939	
Flt Protected	0.950			0.950				0.979			0.980	
Satd. Flow (prot)	1719	3431	0	1719	3421	0	0	1642	0	0	1665	0
Flt Permitted	0.950			0.950				0.979			0.980	
Satd. Flow (perm)	1719	3431	0	1719	3421	0	0	1642	0	0	1665	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		241			1088			396			497	
Travel Time (s)		3.7			16.5			9.0			11.3	
Volume (vph)	50	1599	18	22	1648	57	14	1	18	8	3	9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	56	1777	20	24	1831	63	16	1	20	9	3	10
Lane Group Flow (vph)	56	1797	0	24	1894	0	0	37	0	0	22	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 57.4%	ICU Level of Service B
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1719	3438	3435	0	1719	0
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1719	3438	3435	0	1719	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		604	241		485	
Travel Time (s)		9.2	3.7		11.0	
Volume (vph)	4	1666	1657	14	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	4	1851	1841	16	1	0
Lane Group Flow (vph)	4	1851	1857	0	1	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.2%		ICU Level of Service B	
Analysis Period (min) 15			

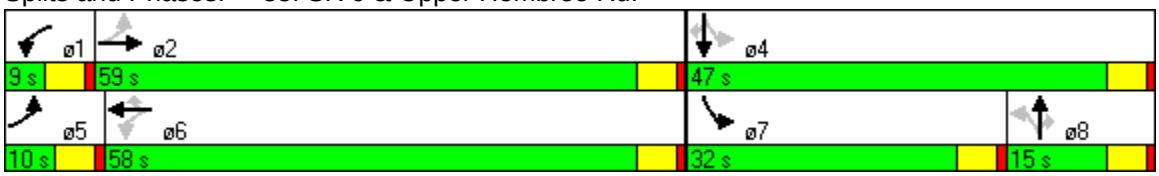
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.989		0.950		
Satd. Flow (prot)	1719	3428	0	1719	3438	1538	0	1790	1538	1719	1810	1538
Flt Permitted	0.073			0.075				0.871		0.502		
Satd. Flow (perm)	132	3428	0	136	3438	1538	0	1576	1538	908	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				244			21			88
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			604			473			529	
Travel Time (s)		7.4			9.2			10.8			12.0	
Volume (vph)	121	1190	23	46	1391	220	14	51	19	461	239	114
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	134	1322	26	51	1546	244	16	57	21	512	266	127
Lane Group Flow (vph)	134	1348	0	51	1546	244	0	73	21	512	266	127
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	pm+pt		Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Total Split (s)	10.0	59.0	0.0	9.0	58.0	58.0	15.0	15.0	15.0	32.0	47.0	47.0
Act Effct Green (s)	61.6	56.8		59.0	54.0	54.0		11.0	11.0	43.0	43.0	43.0
Actuated g/C Ratio	0.54	0.49		0.51	0.47	0.47		0.10	0.10	0.37	0.37	0.37
v/c Ratio	0.87	0.80		0.37	0.96	0.29		0.48	0.13	0.95	0.39	0.20
Control Delay	67.4	29.2		12.8	24.7	1.2		60.8	20.4	62.6	28.6	9.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	67.4	29.2		12.8	24.7	1.2		60.8	20.4	62.6	28.6	9.7
LOS	E	C		B	C	A		E	C	E	C	A
Approach Delay		32.6			21.3			51.7			45.2	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	49	438		4	634	13		52	0	334	143	18
Queue Length 95th (ft)	#168	536		m4	m666	m13		102	25	#491	216	60

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			524			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	154	1695		139	1614	852		151	166	537	677	630
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.87	0.80		0.37	0.96	0.29		0.48	0.13	0.95	0.39	0.20

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 30.8 Intersection LOS: C
Intersection Capacity Utilization 87.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.946	
Flt Protected	0.950				0.971	
Satd. Flow (prot)	1719	3438	3438	1538	1662	0
Flt Permitted	0.950				0.971	
Satd. Flow (perm)	1719	3438	3438	1538	1662	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1600	691		468	
Travel Time (s)		24.2	10.5		10.6	
Volume (vph)	25	1544	1850	39	5	4
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	28	1716	2056	43	6	4
Lane Group Flow (vph)	28	1716	2056	43	10	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.997					
Flt Protected					0.950	
Satd. Flow (prot)	3428	0	0	3438	1719	0
Flt Permitted					0.950	
Satd. Flow (perm)	3428	0	0	3438	1719	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	691			1122	514	
Travel Time (s)	10.5			17.0	11.7	
Volume (vph)	1516	33	1	1888	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1684	37	1	2098	1	0
Lane Group Flow (vph)	1721	0	0	2099	1	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

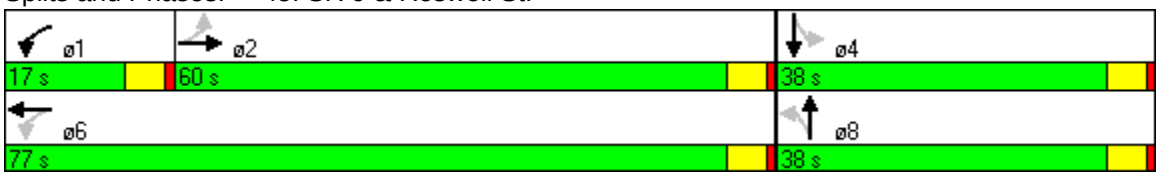
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.999			0.997			0.940			0.923	
Flt Protected				0.950				0.989			0.994	
Satd. Flow (prot)	0	3435	0	1719	3428	0	0	1682	0	0	1660	0
Flt Permitted		0.943		0.067				0.665			0.924	
Satd. Flow (perm)	0	3239	0	121	3428	0	0	1131	0	0	1543	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					4			35			26	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			35			30			30	
Link Distance (ft)		1122			617			499			505	
Travel Time (s)		17.0			12.0			11.3			11.5	
Volume (vph)	6	1504	6	239	1581	36	44	69	90	52	146	264
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	7	1671	7	266	1757	40	49	77	100	58	162	293
Lane Group Flow (vph)	0	1685	0	266	1797	0	0	226	0	0	513	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	60.0	60.0	0.0	17.0	77.0	0.0	38.0	38.0	0.0	38.0	38.0	0.0
Act Effct Green (s)		56.0		73.0	73.0			34.0			34.0	
Actuated g/C Ratio		0.49		0.63	0.63			0.30			0.30	
v/c Ratio		1.07		1.04	0.83			0.63			1.08	
Control Delay		43.7		68.3	16.3			38.4			101.9	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		43.7		68.3	16.3			38.4			101.9	
LOS		D		E	B			D			F	
Approach Delay		43.7			23.0			38.4			101.9	
Approach LOS		D			C			D			F	
Queue Length 50th (ft)		~700		~158	684			122			~412	
Queue Length 95th (ft)		m72		m#189	m418			213			#625	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1042			537			419			425	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1577		257	2177			359			475	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		1.07		1.04	0.83			0.63			1.08	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 10 (9%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 40.6 Intersection LOS: D
Intersection Capacity Utilization 127.5% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Roswell St.



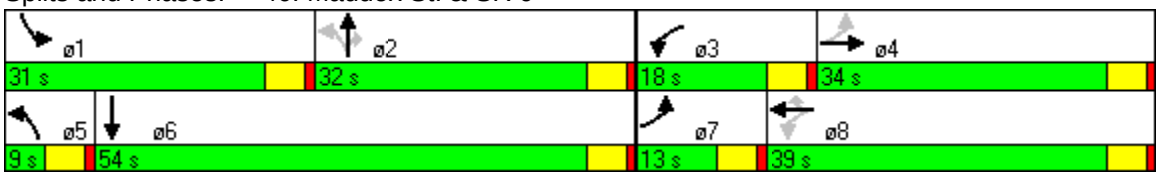
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	400		225	200		360	125		0
Storage Lanes	1		0	2		1	1		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.91	0.91	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.995				0.850			0.850		0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	4915	0	3335	3438	1538	1719	3438	1538	1719	3417	0
Flt Permitted	0.303			0.118			0.153			0.950		
Satd. Flow (perm)	548	4915	0	414	3438	1538	277	3438	1538	1719	3417	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				177			165		4	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			673			700	
Travel Time (s)		11.1			16.8			13.1			13.6	
Volume (vph)	102	1621	51	698	550	159	28	818	637	524	1047	42
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	113	1801	57	776	611	177	31	909	708	582	1163	47
Lane Group Flow (vph)	113	1858	0	776	611	177	31	909	708	582	1210	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2			
Total Split (s)	13.0	34.0	0.0	18.0	39.0	39.0	9.0	32.0	32.0	31.0	54.0	0.0
Act Effct Green (s)	38.8	30.0		48.0	35.2	35.2	33.0	28.0	28.0	27.0	53.6	
Actuated g/C Ratio	0.34	0.26		0.42	0.31	0.31	0.29	0.24	0.24	0.23	0.47	
v/c Ratio	0.41	1.45		1.47	0.58	0.30	0.22	1.09	1.42	1.44	0.76	
Control Delay	26.1	238.2		248.2	36.4	5.8	12.4	63.1	209.2	231.4	12.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.1	238.2		248.2	36.4	5.8	12.4	63.1	209.2	231.4	12.1	
LOS	C	F		F	D	A	B	E	F	F	B	
Approach Delay		226.0			138.0			124.9			83.3	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	51	~691		~359	201	0	8	~388	~596	~580	328	
Queue Length 95th (ft)	91	#790		#484	261	50	m8	m#352	m#546	m#570	m309	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		407			658			593			620	
Turn Bay Length (ft)	150			400		225	200		360	125		
Base Capacity (vph)	277	1285		528	1053	594	142	837	499	404	1595	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.41	1.45		1.47	0.58	0.30	0.22	1.09	1.42	1.44	0.76	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 74 (64%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.47
Intersection Signal Delay: 145.7 Intersection LOS: F
Intersection Capacity Utilization 117.3% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.951			0.850		
Flt Protected	0.969					
Satd. Flow (prot)	1668	0	3438	1538	0	3438
Flt Permitted	0.969					
Satd. Flow (perm)	1668	0	3438	1538	0	3438
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			35
Link Distance (ft)	481		564			673
Travel Time (s)	10.9		11.0			13.1
Volume (vph)	6	4	1479	3	3	1793
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	7	4	1643	3	3	1992
Lane Group Flow (vph)	11	0	1643	3	0	1995
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.983					0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3380	0	0	3435	1719	1538
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3380	0	0	3435	1719	1538
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	30	
Link Distance (ft)	617			564	527	
Travel Time (s)	12.0			11.0	12.0	
Volume (vph)	1457	189	38	1761	95	25
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1619	210	42	1957	106	28
Lane Group Flow (vph)	1829	0	0	1999	106	28
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 87.7%		ICU Level of Service E	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.930			0.919				0.850		0.995	
Flt Protected		0.985			0.985			0.999				
Satd. Flow (prot)	0	1658	0	0	1638	0	0	3435	1538	0	3421	0
Flt Permitted		0.985			0.985			0.999				
Satd. Flow (perm)	0	1658	0	0	1638	0	0	3435	1538	0	3421	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		482			205			700			517	
Travel Time (s)		11.0			4.7			13.6			10.1	
Volume (vph)	9	5	15	3	1	5	15	1031	33	6	1595	57
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	10	6	17	3	1	6	17	1146	37	7	1772	63
Lane Group Flow (vph)	0	33	0	0	10	0	0	1163	37	0	1842	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 62.7%	ICU Level of Service B
Analysis Period (min) 15	

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1810	1719	1461	3335	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1810	1719	1461	3335	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	35		35	
Link Distance (ft)		267	575		517	
Travel Time (s)		6.1	11.2		10.1	
Volume (vph)	0	38	106	1658	1045	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	42	118	1842	1161	0
Lane Group Flow (vph)	0	42	118	1842	1161	0
Sign Control		Stop	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	1	0	0			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.876				0.999	
Flt Protected	0.996					
Satd. Flow (prot)	1609	0	0	3505	3501	0
Flt Permitted	0.996					
Satd. Flow (perm)	1609	0	0	3505	3501	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			35	35	
Link Distance (ft)	492			701	375	
Travel Time (s)	11.2			13.7	7.3	
Volume (vph)	1	10	23	2363	1430	12
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1	11	26	2626	1589	13
Lane Group Flow (vph)	12	0	0	2652	1602	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 91.5%		ICU Level of Service F	
Analysis Period (min) 15			

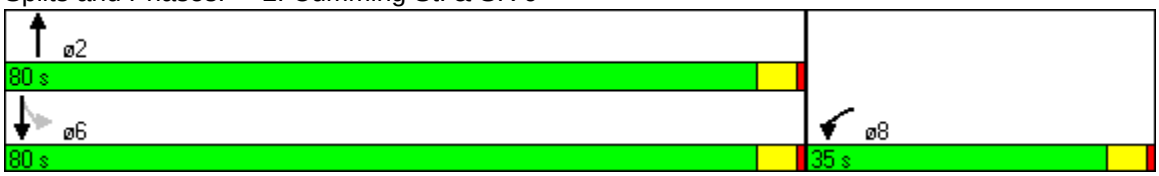
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50		50	50
Trailing Detector (ft)	0		0		0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt	0.970		0.981			
Flt Protected	0.963					0.998
Satd. Flow (prot)	1723	0	3438	0	0	3498
Flt Permitted	0.963					0.556
Satd. Flow (perm)	1723	0	3438	0	0	1949
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	9		30			
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		375			960
Travel Time (s)	11.3		7.3			14.5
Volume (vph)	367	104	2061	303	51	1075
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	408	116	2290	337	57	1194
Lane Group Flow (vph)	524	0	2627	0	0	1251
Turn Type					Perm	
Protected Phases	8		2			6
Permitted Phases					6	
Total Split (s)	35.0	0.0	80.0	0.0	80.0	80.0
Act Effct Green (s)	31.0		76.0			76.0
Actuated g/C Ratio	0.27		0.66			0.66
v/c Ratio	1.11		1.15			0.97
Control Delay	114.9		83.3			37.1
Queue Delay	0.0		0.0			0.0
Total Delay	114.9		83.3			37.1
LOS	F		F			D
Approach Delay	114.9		83.3			37.1
Approach LOS	F		F			D
Queue Length 50th (ft)	~441		~1212			255
Queue Length 95th (ft)	#658		m248			#614

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		295			880
Turn Bay Length (ft)						
Base Capacity (vph)	471		2282			1288
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	1.11		1.15			0.97

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 101 (88%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 73.9 Intersection LOS: E
Intersection Capacity Utilization 100.7% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



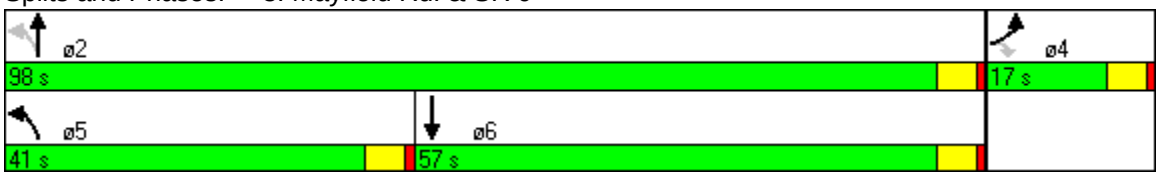
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	0			0
Storage Lanes	1	1	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.959	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1752	1568	1752	1845	3361	0
Flt Permitted	0.950		0.070			
Satd. Flow (perm)	1752	1568	129	1845	3361	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		251			64	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	482	
Travel Time (s)	10.6			14.5	7.3	
Volume (vph)	206	226	563	1602	901	343
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	229	251	626	1780	1001	381
Lane Group Flow (vph)	229	251	626	1780	1382	0
Turn Type		Perm	pm+pt			
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Total Split (s)	17.0	17.0	41.0	98.0	57.0	0.0
Act Effct Green (s)	13.0	13.0	94.0	94.0	53.0	
Actuated g/C Ratio	0.11	0.11	0.82	0.82	0.46	
v/c Ratio	1.16	0.63	1.00	1.18	0.87	
Control Delay	158.0	13.5	55.5	98.9	19.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	158.0	13.5	55.5	98.9	19.7	
LOS	F	B	E	F	B	
Approach Delay	82.4			87.6	19.7	
Approach LOS	F			F	B	
Queue Length 50th (ft)	~201	0	408	~1569	388	
Queue Length 95th (ft)	#358	78	m346	m#455	m349	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	402	
Turn Bay Length (ft)		230				
Base Capacity (vph)	198	400	628	1508	1583	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	1.16	0.63	1.00	1.18	0.87	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 11 (10%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 65.0 Intersection LOS: E
Intersection Capacity Utilization 102.4% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



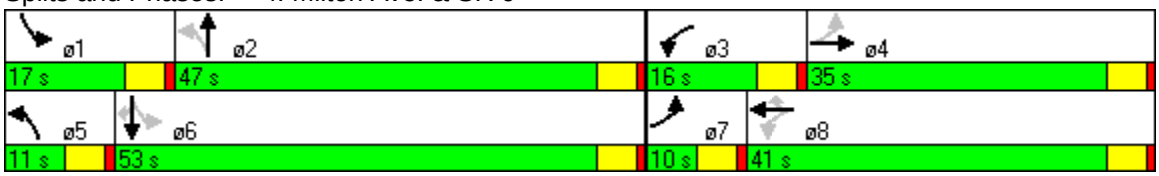
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		0	300		275
Storage Lanes	1		0	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.973				0.850		0.990				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1795	0	1752	1845	1568	1752	3470	0	1752	3505	1568
Flt Permitted	0.129			0.290			0.128			0.085		
Satd. Flow (perm)	238	1795	0	535	1845	1568	236	3470	0	157	3505	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				150		7				144
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			575			701	
Travel Time (s)		11.4			10.2			11.2			13.7	
Volume (vph)	164	226	50	161	536	761	121	1461	99	313	997	130
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	182	251	56	179	596	846	134	1623	110	348	1108	144
Lane Group Flow (vph)	182	307	0	179	596	846	134	1733	0	348	1108	144
Turn Type	pm+pt			pm+pt		Perm	pm+pt			pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Total Split (s)	10.0	35.0	0.0	16.0	41.0	41.0	11.0	47.0	0.0	17.0	53.0	53.0
Act Effct Green (s)	37.4	31.4		47.0	37.0	37.0	50.0	43.0		60.0	49.0	49.0
Actuated g/C Ratio	0.33	0.27		0.41	0.32	0.32	0.43	0.37		0.52	0.43	0.43
v/c Ratio	1.16	0.62		0.52	1.00	1.40	0.69	1.33		1.33	0.74	0.19
Control Delay	149.9	41.7		28.2	77.4	215.4	27.2	178.1		178.1	29.1	4.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	149.9	41.7		28.2	77.4	215.4	27.2	178.1		178.1	29.1	4.8
LOS	F	D		C	E	F	C	F		F	C	A
Approach Delay		82.0			144.0			167.2			59.4	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	~109	194		86	~443	~763	25	~900		~286	352	5
Queue Length 95th (ft)	#256	290		139	#682	#1009	m29	m#801		m#284	m354	m6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			495			621	
Turn Bay Length (ft)	225			150		150	200			300		275
Base Capacity (vph)	157	498		346	594	606	195	1302		262	1493	751
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	1.16	0.62		0.52	1.00	1.40	0.69	1.33		1.33	0.74	0.19

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 103 (90%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.40
Intersection Signal Delay: 122.0 Intersection LOS: F
Intersection Capacity Utilization 111.5% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			0
Storage Lanes	1	0	1			0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.901				0.987	
Flt Protected	0.987		0.950			
Satd. Flow (prot)	1640	0	1752	1845	3459	0
Flt Permitted	0.987		0.950			
Satd. Flow (perm)	1640	0	1752	1845	3459	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2269	199	
Travel Time (s)	8.7			34.4	3.0	
Volume (vph)	13	34	211	1567	1205	119
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	14	38	234	1741	1339	132
Lane Group Flow (vph)	52	0	234	1741	1471	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 92.5%		ICU Level of Service F	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	200	
Storage Lanes	1	0		0	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.944		0.996			
Flt Protected	0.972				0.950	
Satd. Flow (prot)	1693	0	1837	0	1752	3505
Flt Permitted	0.972				0.950	
Satd. Flow (perm)	1693	0	1837	0	1752	3505
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	437		482			2269
Travel Time (s)	9.9		7.3			34.4
Volume (vph)	25	18	1760	48	20	1219
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	28	20	1956	53	22	1354
Lane Group Flow (vph)	48	0	2009	0	22	1354
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 105.5%		ICU Level of Service G	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		150	150	
Storage Lanes	1	0		1	1	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.915			0.850		
Flt Protected	0.982					0.998
Satd. Flow (prot)	1657	0	1845	1568	0	3498
Flt Permitted	0.982					0.998
Satd. Flow (perm)	1657	0	1845	1568	0	3498
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		45			45
Link Distance (ft)	365		199			854
Travel Time (s)	8.3		3.0			12.9
Volume (vph)	10	17	1563	17	62	1314
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	11	19	1737	19	69	1460
Lane Group Flow (vph)	30	0	1737	19	0	1529
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 92.3%		ICU Level of Service F	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.988		0.932	
Flt Protected		0.999			0.976	
Satd. Flow (prot)	0	1843	1823	0	1678	0
Flt Permitted		0.999			0.976	
Satd. Flow (perm)	0	1843	1823	0	1678	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		854	312		342	
Travel Time (s)		12.9	4.7		7.8	
Volume (vph)	39	1541	1353	126	23	23
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	43	1712	1503	140	26	26
Lane Group Flow (vph)	0	1755	1643	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 122.5%		ICU Level of Service H	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	0		0	0
Storage Lanes		1	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850			0.912	
Flt Protected				0.999	0.983	
Satd. Flow (prot)	1845	1568	0	1843	1654	0
Flt Permitted				0.999	0.983	
Satd. Flow (perm)	1845	1568	0	1843	1654	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	312			1975	374	
Travel Time (s)	4.7			29.9	8.5	
Volume (vph)	1537	27	18	1471	8	15
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1708	30	20	1634	9	17
Lane Group Flow (vph)	1708	30	0	1654	26	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 101.8%		ICU Level of Service G	
Analysis Period (min) 15			

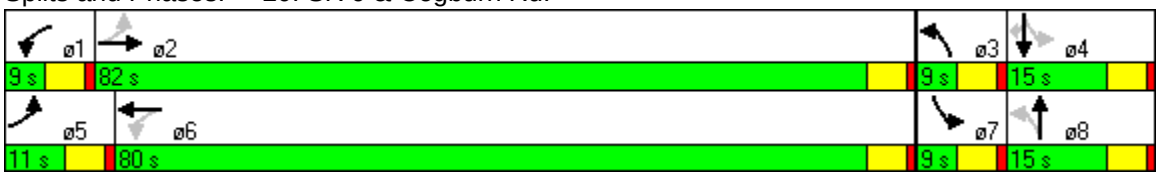
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	150		0	150		0	150		150
Storage Lanes	1		0	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	50
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.997			0.898				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1837	0	1752	1839	0	1752	1657	0	1752	1845	1568
Flt Permitted	0.051			0.053			0.736			0.491		
Satd. Flow (perm)	94	1837	0	98	1839	0	1358	1657	0	906	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2			73				134
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1975			1605			331			313	
Travel Time (s)		29.9			24.3			7.5			7.1	
Volume (vph)	178	1341	33	39	1209	28	96	33	70	28	29	184
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	198	1490	37	43	1343	31	107	37	78	31	32	204
Lane Group Flow (vph)	198	1527	0	43	1374	0	107	115	0	31	32	204
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		4
Total Split (s)	11.0	82.0	0.0	9.0	80.0	0.0	9.0	15.0	0.0	9.0	15.0	15.0
Act Effct Green (s)	85.4	79.8		81.0	76.0		17.6	14.6		16.0	11.0	11.0
Actuated g/C Ratio	0.74	0.69		0.70	0.66		0.15	0.13		0.14	0.10	0.10
v/c Ratio	1.16	1.20		0.30	1.13		0.48	0.42		0.19	0.18	0.75
Control Delay	106.6	111.3		8.8	73.6		50.9	25.7		43.1	50.7	36.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	106.6	111.3		8.8	73.6		50.9	25.7		43.1	50.7	36.8
LOS	F	F		A	E		D	C		D	D	D
Approach Delay		110.8			71.7			37.9			39.2	
Approach LOS		F			E			D			D	
Queue Length 50th (ft)	~124	~1396		2	~1171		70	29		20	22	50
Queue Length 95th (ft)	m#87	m#1069		m2	m#1139		126	89		48	54	#161

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1895			1525			251			233	
Turn Bay Length (ft)	150			150			150			150		150
Base Capacity (vph)	170	1276		141	1216		225	274		163	176	271
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.16	1.20		0.30	1.13		0.48	0.42		0.19	0.18	0.75

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 11 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.20
Intersection Signal Delay: 85.8 Intersection LOS: F
Intersection Capacity Utilization 97.9% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



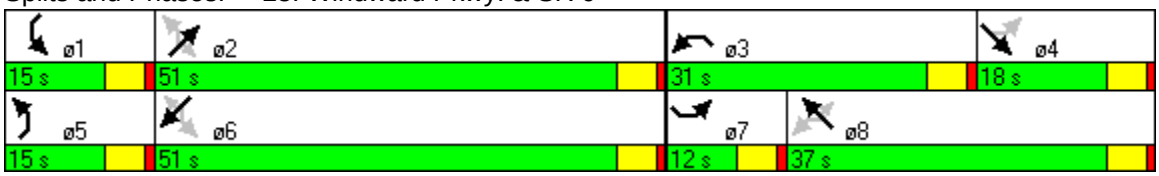
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	250		500	325		350
Storage Lanes	1		0	1		1	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.981				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3438	0	1752	3505	1568	1752	1845	1568	1752	1845	1568
Flt Permitted	0.286			0.222			0.085			0.085		
Satd. Flow (perm)	528	3438	0	410	3505	1568	157	1845	1568	157	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11				207			367			63
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	165	447	66	620	939	295	102	982	330	243	674	57
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	183	497	73	689	1043	328	113	1091	367	270	749	63
Lane Group Flow (vph)	183	570	0	689	1043	328	113	1091	367	270	749	63
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Total Split (s)	12.0	18.0	0.0	31.0	37.0	37.0	15.0	51.0	51.0	15.0	51.0	51.0
Act Effct Green (s)	22.0	14.0		45.0	33.0	33.0	58.0	47.0	47.0	58.0	47.0	47.0
Actuated g/C Ratio	0.19	0.12		0.39	0.29	0.29	0.50	0.41	0.41	0.50	0.41	0.41
v/c Ratio	0.98	1.33		1.45	1.04	0.55	0.49	1.45	0.43	1.16	0.99	0.09
Control Delay	94.0	203.6		240.8	78.8	16.3	29.3	227.6	2.7	139.7	65.8	5.5
Queue Delay	0.0	14.1		2.7	0.0	0.0	0.0	0.0	0.0	0.0	74.4	0.0
Total Delay	94.0	217.7		243.5	78.8	16.3	29.3	227.6	2.7	139.7	140.2	5.5
LOS	F	F		F	E	B	C	F	A	F	F	A
Approach Delay		187.7			123.9			160.8			132.3	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	91	~286		~651	~438	70	39	~1094	28	~188	543	0
Queue Length 95th (ft)	#230	#403		#884	#570	164	m26	m#762	m11	#359	#808	26

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	250		500	325		350
Base Capacity (vph)	186	428		476	1006	598	232	754	858	232	754	678
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	10		2	0	0	0	0	0	0	125	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	1.36		1.45	1.04	0.55	0.49	1.45	0.43	1.16	1.19	0.09

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 5 (4%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.45
Intersection Signal Delay: 145.0 Intersection LOS: F
Intersection Capacity Utilization 127.3% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Windward Pkwy. & SR 9



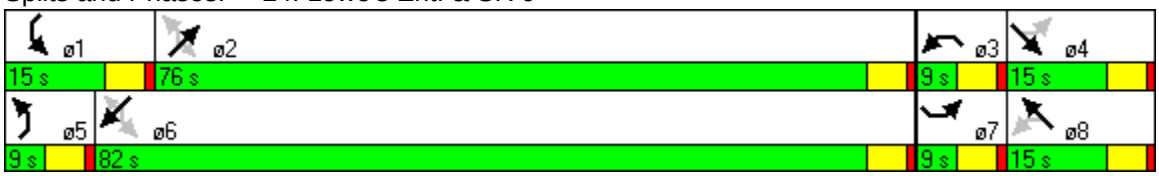
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.873			0.870				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1610	0	1752	1605	0	1752	1845	1568	1752	1845	1568
Flt Permitted	0.647			0.732			0.056			0.053		
Satd. Flow (perm)	1193	1610	0	1350	1605	0	103	1845	1568	98	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			70				40			7
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	15	5	30	41	10	63	23	1336	80	147	1205	8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	17	6	33	46	11	70	26	1484	89	163	1339	9
Lane Group Flow (vph)	17	39	0	46	81	0	26	1484	89	163	1339	9
Turn Type	pm+pt			pm+pt			pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Total Split (s)	9.0	15.0	0.0	9.0	15.0	0.0	9.0	76.0	76.0	15.0	82.0	82.0
Act Effct Green (s)	16.8	12.8		18.4	16.4		77.5	72.5	72.5	87.0	81.6	81.6
Actuated g/C Ratio	0.15	0.11		0.16	0.14		0.67	0.63	0.63	0.76	0.71	0.71
v/c Ratio	0.09	0.19		0.20	0.28		0.18	1.28	0.09	0.72	1.02	0.01
Control Delay	40.9	21.4		42.9	17.2		6.5	149.9	8.6	23.5	35.0	6.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	20.5	0.0
Total Delay	40.9	21.4		42.9	17.2		6.5	149.9	8.6	23.5	55.5	6.4
LOS	D	C		D	B		A	F	A	C	E	A
Approach Delay		27.3			26.5			139.7			51.7	
Approach LOS		C			C			F			D	
Queue Length 50th (ft)	11	4		29	7		6	~1390	23	78	~1107	1
Queue Length 95th (ft)	32	37		64	56		m5	m#1055	m19	m57	m458	m1

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	198	209		233	289		141	1162	1003	232	1309	1115
Starvation Cap Reductn	0	0		0	0		0	0	0	0	67	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.19		0.20	0.28		0.18	1.28	0.09	0.70	1.08	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 107 (93%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.28
Intersection Signal Delay: 93.1 Intersection LOS: F
Intersection Capacity Utilization 97.4% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



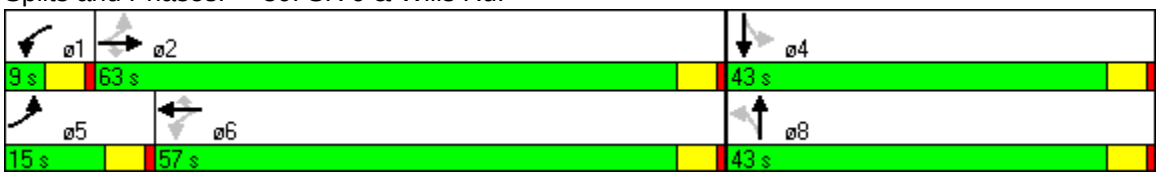
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.954			0.918	
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1752	3505	1568	1752	3505	1568	1752	1760	0	0	1687	0
Flt Permitted	0.070			0.075			0.515				0.407	
Satd. Flow (perm)	129	3505	1568	138	3505	1568	950	1760	0	0	689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			31			62		21			74	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			1600			480			507	
Travel Time (s)		16.5			24.2			10.9			11.5	
Volume (vph)	237	1731	33	47	1616	56	76	436	192	18	61	124
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	263	1923	37	52	1796	62	84	484	213	20	68	138
Lane Group Flow (vph)	263	1923	37	52	1796	62	84	697	0	0	226	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2		2	6		6	8			4		
Total Split (s)	15.0	63.0	63.0	9.0	57.0	57.0	43.0	43.0	0.0	43.0	43.0	0.0
Act Effct Green (s)	68.0	60.8	60.8	58.0	53.0	53.0	39.0	39.0			39.0	
Actuated g/C Ratio	0.59	0.53	0.53	0.50	0.46	0.46	0.34	0.34			0.34	
v/c Ratio	1.13	1.04	0.04	0.37	1.11	0.08	0.26	1.14			0.80	
Control Delay	105.4	51.4	4.0	15.2	88.5	5.0	30.3	116.7			45.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Total Delay	105.4	51.4	4.0	15.2	88.5	5.0	30.3	116.7			45.1	
LOS	F	D	A	B	F	A	C	F			D	
Approach Delay		57.0			83.8			107.4			45.1	
Approach LOS		E			F			F			D	
Queue Length 50th (ft)	~173	~855	5	13	~818	9	45	~595			105	
Queue Length 95th (ft)	m#180	m#845	m5	m16	m#952	m14	87	#829			#250	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			1520			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	232	1853	844	140	1615	756	322	611			283	
Starvation Cap Reductn	0	0	0	0	0	0	0	0			0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0			0	
Storage Cap Reductn	0	0	0	0	0	0	0	0			0	
Reduced v/c Ratio	1.13	1.04	0.04	0.37	1.11	0.08	0.26	1.14			0.80	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 57 (50%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 74.1 Intersection LOS: E
Intersection Capacity Utilization 102.4% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.999			0.894			0.926	
Flt Protected	0.950			0.950				0.990			0.979	
Satd. Flow (prot)	1752	3494	0	1752	3501	0	0	1633	0	0	1672	0
Flt Permitted	0.950			0.950				0.990			0.979	
Satd. Flow (perm)	1752	3494	0	1752	3501	0	0	1633	0	0	1672	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		241			1088			407			497	
Travel Time (s)		3.7			16.5			9.3			11.3	
Volume (vph)	15	1902	35	15	1788	13	13	0	47	52	4	68
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	17	2113	39	17	1987	14	14	0	52	58	4	76
Lane Group Flow (vph)	17	2152	0	17	2001	0	0	66	0	0	138	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 73.6%	ICU Level of Service D
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			0	0	0
Storage Lanes	1			0	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.914	
Flt Protected	0.950				0.982	
Satd. Flow (prot)	1752	3505	3501	0	1656	0
Flt Permitted	0.950				0.982	
Satd. Flow (perm)	1752	3505	3501	0	1656	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		604	241		485	
Travel Time (s)		9.2	3.7		11.0	
Volume (vph)	6	1948	1861	8	4	6
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	7	2164	2068	9	4	7
Lane Group Flow (vph)	7	2164	2077	0	11	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

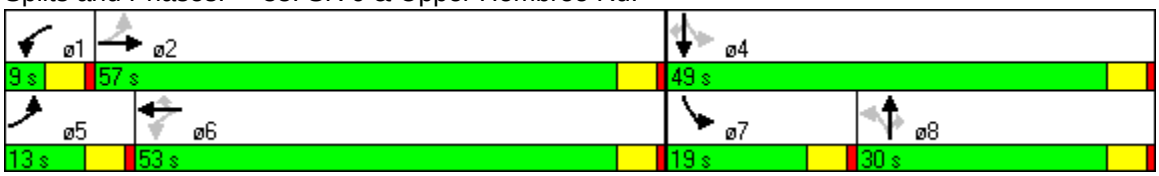
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.992		0.950		
Satd. Flow (prot)	1752	3494	0	1752	3505	1568	0	1830	1568	1752	1845	1568
Flt Permitted	0.075			0.082				0.924		0.133		
Satd. Flow (perm)	138	3494	0	151	3505	1568	0	1704	1568	245	1845	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				388			26			88
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			604			473			529	
Travel Time (s)		7.4			9.2			10.8			12.0	
Volume (vph)	212	1605	33	6	1512	349	60	338	51	298	130	117
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	236	1783	37	7	1680	388	67	376	57	331	144	130
Lane Group Flow (vph)	236	1820	0	7	1680	388	0	443	57	331	144	130
Turn Type	pm+pt			pm+pt		Perm	Perm		Perm	pm+pt		Perm
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8		8	4		4
Total Split (s)	13.0	57.0	0.0	9.0	53.0	53.0	30.0	30.0	30.0	19.0	49.0	49.0
Act Effct Green (s)	62.0	60.2		54.0	49.0	49.0		26.0	26.0	45.0	45.0	45.0
Actuated g/C Ratio	0.54	0.52		0.47	0.43	0.43		0.23	0.23	0.39	0.39	0.39
v/c Ratio	1.17	0.99		0.05	1.13	0.44		1.15	0.15	1.13	0.20	0.19
Control Delay	145.7	47.6		4.5	84.1	5.6		134.3	23.3	123.9	24.1	9.4
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	145.7	47.6		4.5	84.1	5.6		134.3	23.3	123.9	24.1	9.4
LOS	F	D		A	F	A		F	C	F	C	A
Approach Delay		58.8			69.1			121.6			75.5	
Approach LOS		E			E			F			E	
Queue Length 50th (ft)	~159	652		1	~777	74		~386	18	~235	70	19
Queue Length 95th (ft)	#321	#967		m1	m#680	m63		#587	53	#419	116	60

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			524			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	201	1830		141	1493	891		385	375	292	722	667
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	1.17	0.99		0.05	1.13	0.44		1.15	0.15	1.13	0.20	0.19

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 70.8 Intersection LOS: E
Intersection Capacity Utilization 104.5% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	150			150	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.906	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1752	3505	3505	1568	1646	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1752	3505	3505	1568	1646	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1600	691		468	
Travel Time (s)		24.2	10.5		10.6	
Volume (vph)	29	1912	1628	30	40	91
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	32	2124	1809	33	44	101
Lane Group Flow (vph)	32	2124	1809	33	145	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998					
Flt Protected					0.950	
Satd. Flow (prot)	3498	0	0	3505	1752	0
Flt Permitted					0.950	
Satd. Flow (perm)	3498	0	0	3505	1752	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	30	
Link Distance (ft)	691			1122	514	
Travel Time (s)	10.5			17.0	11.7	
Volume (vph)	1921	31	0	1657	1	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	2134	34	0	1841	1	0
Lane Group Flow (vph)	2168	0	0	1841	1	0
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 64.1%	ICU Level of Service C
Analysis Period (min) 15	

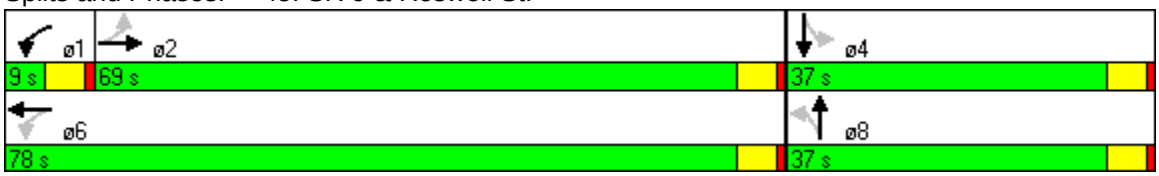
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.995			0.952			0.940	
Flt Protected				0.950				0.994			0.993	
Satd. Flow (prot)	0	3505	0	1752	3487	0	0	1746	0	0	1722	0
Flt Permitted		0.955		0.058				0.861			0.712	
Satd. Flow (perm)	0	3347	0	107	3487	0	0	1512	0	0	1235	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					6			24			35	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			35			30			30	
Link Distance (ft)		1122			617			499			505	
Travel Time (s)		17.0			12.0			11.3			11.5	
Volume (vph)	1	1915	5	105	1472	50	52	249	167	44	121	133
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	2128	6	117	1636	56	58	277	186	49	134	148
Lane Group Flow (vph)	0	2135	0	117	1692	0	0	521	0	0	331	0
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Total Split (s)	69.0	69.0	0.0	9.0	78.0	0.0	37.0	37.0	0.0	37.0	37.0	0.0
Act Effct Green (s)		65.0		74.0	74.0			33.0			33.0	
Actuated g/C Ratio		0.57		0.64	0.64			0.29			0.29	
v/c Ratio		1.13		0.84	0.75			1.16			0.87	
Control Delay		70.3		53.7	8.7			128.6			59.2	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		70.3		53.7	8.7			128.6			59.2	
LOS		E		D	A			F			E	
Approach Delay		70.3			11.7			128.6			59.2	
Approach LOS		E			B			F			E	
Queue Length 50th (ft)		~945		30	394			~444			211	
Queue Length 95th (ft)		m#875		m#56	346			#659			#380	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1042			537			419			425	
Turn Bay Length (ft)				100								
Base Capacity (vph)		1892		140	2246			451			379	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		1.13		0.84	0.75			1.16			0.87	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 94 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 53.8 Intersection LOS: D
Intersection Capacity Utilization 126.4% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Roswell St.



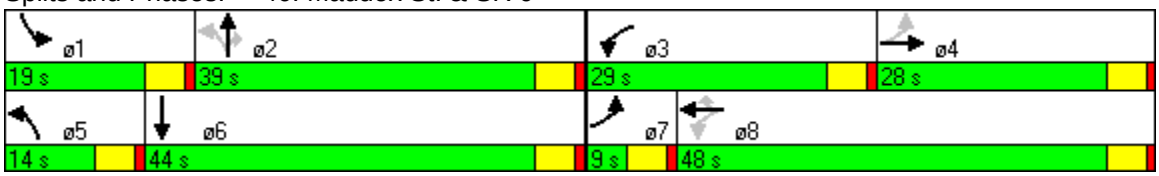
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	400		225	200		360	125		0
Storage Lanes	1		0	2		1	1		1	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.91	0.91	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.991				0.850			0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	4991	0	3400	3505	1568	1752	3505	1568	1752	3459	0
Flt Permitted	0.167			0.143			0.114			0.950		
Satd. Flow (perm)	308	4991	0	512	3505	1568	210	3505	1568	1752	3459	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				223			423		9	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			673			700	
Travel Time (s)		11.1			16.8			13.1			13.6	
Volume (vph)	113	699	44	685	1465	381	178	1143	757	234	812	76
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	126	777	49	761	1628	423	198	1270	841	260	902	84
Lane Group Flow (vph)	126	826	0	761	1628	423	198	1270	841	260	986	0
Turn Type	pm+pt			pm+pt		Perm	pm+pt		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2			
Total Split (s)	9.0	28.0	0.0	29.0	48.0	48.0	14.0	39.0	39.0	19.0	44.0	0.0
Act Effct Green (s)	29.9	24.9		53.0	44.0	44.0	45.0	35.0	35.0	15.0	40.0	
Actuated g/C Ratio	0.26	0.22		0.46	0.38	0.38	0.39	0.30	0.30	0.13	0.35	
v/c Ratio	0.88	0.76		0.91	1.21	0.57	0.92	1.19	1.09	1.14	0.82	
Control Delay	77.4	47.3		42.1	136.2	16.0	39.3	111.0	60.8	130.7	26.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	77.4	47.3		42.1	136.2	16.0	39.3	111.0	60.8	130.7	26.7	
LOS	E	D		D	F	B	D	F	E	F	C	
Approach Delay		51.3			92.7			86.5			48.4	
Approach LOS		D			F			F			D	
Queue Length 50th (ft)	53	211		228	~777	111	88	~596	~582	~215	367	
Queue Length 95th (ft)	#156	261		#332	#916	214	m74	m#493	m449	m#361	440	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		407			658			593			620	
Turn Bay Length (ft)	150			400		225	200		360	125		
Base Capacity (vph)	143	1089		864	1341	738	216	1067	771	229	1209	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.88	0.76		0.88	1.21	0.57	0.92	1.19	1.09	1.14	0.82	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 46 (40%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.21
Intersection Signal Delay: 77.8 Intersection LOS: E
Intersection Capacity Utilization 104.6% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		50	0	
Storage Lanes	1	0		1	0	
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.882			0.850		
Flt Protected	0.994					
Satd. Flow (prot)	1617	0	3505	1568	0	3505
Flt Permitted	0.994					
Satd. Flow (perm)	1617	0	3505	1568	0	3505
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			35
Link Distance (ft)	481		564			673
Travel Time (s)	10.9		11.0			13.1
Volume (vph)	1	6	2072	8	4	1537
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	1	7	2302	9	4	1708
Lane Group Flow (vph)	8	0	2302	9	0	1712
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.991					0.850
Flt Protected				0.999	0.950	
Satd. Flow (prot)	3473	0	0	3501	1752	1568
Flt Permitted				0.999	0.950	
Satd. Flow (perm)	3473	0	0	3501	1752	1568
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	30	
Link Distance (ft)	617			564	527	
Travel Time (s)	12.0			11.0	12.0	
Volume (vph)	1994	132	19	1519	108	86
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	2216	147	21	1688	120	96
Lane Group Flow (vph)	2363	0	0	1709	120	96
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.0%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		300	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	0.95
Ped Bike Factor												
Frt		0.884			0.924				0.850		0.996	
Flt Protected					0.994			0.999			0.999	
Satd. Flow (prot)	0	1631	0	0	1694	0	0	3501	1568	0	3487	0
Flt Permitted					0.994			0.999			0.999	
Satd. Flow (perm)	0	1631	0	0	1694	0	0	3501	1568	0	3487	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		482			205			700			517	
Travel Time (s)		11.0			4.7			13.6			10.1	
Volume (vph)	0	1	5	5	13	23	33	1493	111	20	1112	32
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	0	1	6	6	14	26	37	1659	123	22	1236	36
Lane Group Flow (vph)	0	7	0	0	46	0	0	1696	123	0	1294	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 78.2%	ICU Level of Service D
Analysis Period (min) 15	

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	0	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	1.00
Ped Bike Factor						
Frt				0.850		
Flt Protected					0.950	
Satd. Flow (prot)	0	1845	1752	1490	3400	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	1845	1752	1490	3400	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30	35		35	
Link Distance (ft)		262	575		517	
Travel Time (s)		6.0	11.2		10.1	
Volume (vph)	0	165	44	1164	1516	0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	0	183	49	1293	1684	0
Lane Group Flow (vph)	0	183	49	1293	1684	0
Sign Control		Stop	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.2%		ICU Level of Service D	
Analysis Period (min) 15			

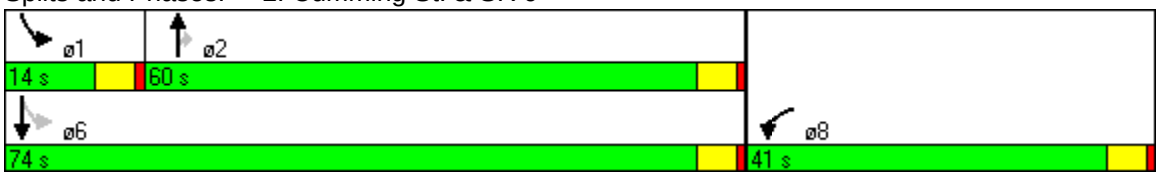
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		250	200	
Storage Lanes	1	0		1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50	50
Trailing Detector (ft)	0		0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.988			0.850		
Flt Protected	0.956				0.950	
Satd. Flow (prot)	1709	0	3438	1538	1719	3438
Flt Permitted	0.956				0.161	
Satd. Flow (perm)	1709	0	3438	1538	291	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			378		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		1076			960
Travel Time (s)	11.3		21.0			14.5
Volume (vph)	385	38	978	359	132	1778
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	405	40	1029	378	139	1872
Lane Group Flow (vph)	445	0	1029	378	139	1872
Turn Type				Perm	pm+pt	
Protected Phases	8		2		1	6
Permitted Phases				2	6	
Total Split (s)	41.0	0.0	60.0	60.0	14.0	74.0
Act Effct Green (s)	33.3		61.1	61.1	73.7	73.7
Actuated g/C Ratio	0.29		0.53	0.53	0.64	0.64
v/c Ratio	0.89		0.56	0.38	0.47	0.85
Control Delay	50.4		12.0	3.9	10.5	10.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	50.4		12.0	3.9	10.5	10.1
LOS	D		B	A	B	B
Approach Delay	50.4		9.8			10.1
Approach LOS	D		A			B
Queue Length 50th (ft)	302		314	52	25	198
Queue Length 95th (ft)	#458		m316	m102	m28	227

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		996			880
Turn Bay Length (ft)				250	200	
Base Capacity (vph)	553		1827	995	310	2203
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.80		0.56	0.38	0.45	0.85

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 103 (90%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 79.5% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



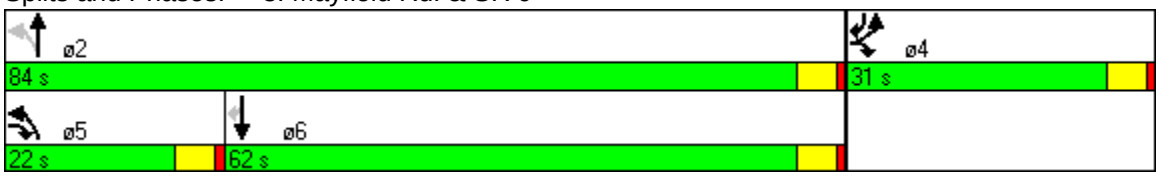
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	200			200
Storage Lanes	1	1	1			1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1719	3438	3438	1538
Flt Permitted	0.950		0.065			
Satd. Flow (perm)	1719	1538	118	3438	3438	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		17				203
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	2751	
Travel Time (s)	10.6			14.5	41.7	
Volume (vph)	299	450	237	779	1460	240
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	315	474	249	820	1537	253
Lane Group Flow (vph)	315	474	249	820	1537	253
Turn Type		pt+ov	pm+pt			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Total Split (s)	31.0	53.0	22.0	84.0	62.0	31.0
Act Effct Green (s)	26.6	47.5	80.4	80.4	59.5	90.1
Actuated g/C Ratio	0.23	0.41	0.70	0.70	0.52	0.78
v/c Ratio	0.79	0.73	0.79	0.34	0.86	0.20
Control Delay	56.1	34.5	57.7	6.2	22.4	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	34.5	57.7	6.2	22.4	0.6
LOS	E	C	E	A	C	A
Approach Delay	43.2			18.2	19.3	
Approach LOS	D			B	B	
Queue Length 50th (ft)	220	274	168	56	505	0
Queue Length 95th (ft)	#352	405	m#271	121	427	6

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	2671	
Turn Bay Length (ft)		230	200			200
Base Capacity (vph)	404	654	333	2403	1779	1253
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.72	0.75	0.34	0.86	0.20

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 89 (77%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 24.2	Intersection LOS: C
Intersection Capacity Utilization 80.1%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		200	300		275
Storage Lanes	1		0	1		2	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.980				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1773	0	1719	1810	2707	1719	3438	1538	1719	3438	1538
Flt Permitted	0.367			0.133			0.154			0.133		
Satd. Flow (perm)	664	1773	0	241	1810	2707	279	3438	1538	241	3438	1538
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		7							77			55
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			1804			1076	
Travel Time (s)		11.4			10.2			35.1			21.0	
Volume (vph)	171	482	76	197	255	332	121	834	147	674	1510	52
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	180	507	80	207	268	349	127	878	155	709	1589	55
Lane Group Flow (vph)	180	587	0	207	268	349	127	878	155	709	1589	55
Turn Type	pm+pt			pm+pt		pt+ov	pm+pt		pt+ov	pm+pt		pt+ov
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Total Split (s)	13.0	35.0	0.0	12.0	34.0	72.0	9.0	30.0	42.0	38.0	59.0	72.0
Act Effct Green (s)	40.0	31.0		38.0	30.0	68.0	31.0	26.0	38.0	64.0	55.0	68.0
Actuated g/C Ratio	0.35	0.27		0.33	0.26	0.59	0.27	0.23	0.33	0.56	0.48	0.59
v/c Ratio	0.57	1.22		1.14	0.57	0.22	0.92	1.13	0.28	1.24	0.97	0.06
Control Delay	34.0	151.5		137.7	42.4	11.5	77.5	93.4	9.7	142.3	43.1	5.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	151.5		137.7	42.4	11.5	77.5	93.4	9.7	142.3	43.1	5.2
LOS	C	F		F	D	B	E	F	A	F	D	A
Approach Delay		123.9			53.3			80.5			72.1	
Approach LOS		F			D			F			E	
Queue Length 50th (ft)	92	~532		~128	173	64	68	~396	70	~616	621	6
Queue Length 95th (ft)	149	#755		#283	261	91	m#80	m#376	m79	m#804	#774	m9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			1724			996	
Turn Bay Length (ft)	225			150		150	200		200	300		275
Base Capacity (vph)	314	483		182	472	1601	138	777	560	571	1644	932
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	1.22		1.14	0.57	0.22	0.92	1.13	0.28	1.24	0.97	0.06

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 67 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.24
Intersection Signal Delay: 78.7 Intersection LOS: E
Intersection Capacity Utilization 114.6% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			150
Storage Lanes	1	0	1			1
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.875					0.850
Flt Protected	0.996		0.950			
Satd. Flow (prot)	1577	0	1719	3438	3438	1538
Flt Permitted	0.996		0.950			
Satd. Flow (perm)	1577	0	1719	3438	3438	1538
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2751	1050	
Travel Time (s)	8.7			41.7	15.9	
Volume (vph)	28	337	85	1027	1363	45
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	29	355	89	1081	1435	47
Lane Group Flow (vph)	384	0	89	1081	1435	47
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			200	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.931	
Flt Protected	0.950				0.976	
Satd. Flow (prot)	1719	3438	3438	1538	1644	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1719	3438	3438	1538	1644	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1050	2284		342	
Travel Time (s)		15.9	34.6		7.8	
Volume (vph)	40	1058	1352	61	53	56
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	42	1114	1423	64	56	59
Lane Group Flow (vph)	42	1114	1423	64	115	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.4%		ICU Level of Service A	
Analysis Period (min) 15			

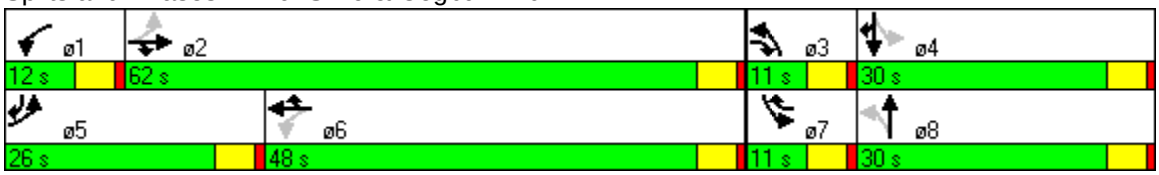
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		150	150		0	150		150
Storage Lanes	1		1	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.920				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1665	0	1719	1810	1538
Flt Permitted	0.116			0.276			0.722			0.628		
Satd. Flow (perm)	210	3438	1538	499	3438	1538	1306	1665	0	1136	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			40			19		46				114
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2284			1605			331			313	
Travel Time (s)		34.6			24.3			7.5			7.1	
Volume (vph)	212	900	38	66	937	23	79	51	58	22	51	397
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	223	947	40	69	986	24	83	54	61	23	54	418
Lane Group Flow (vph)	223	947	40	69	986	24	83	115	0	23	54	418
Turn Type	pm+pt		pt+ov	pm+pt		pt+ov	pm+pt			pm+pt		pt+ov
Protected Phases	5	2	2 3	1	6	6 7	3	8		7	4	4 5
Permitted Phases	2			6			8			4		
Total Split (s)	26.0	62.0	73.0	12.0	48.0	59.0	11.0	30.0	0.0	11.0	30.0	56.0
Act Effct Green (s)	70.0	61.3	72.3	57.6	50.9	61.7	34.6	30.4		33.8	28.2	47.3
Actuated g/C Ratio	0.61	0.53	0.63	0.50	0.44	0.54	0.30	0.26		0.29	0.25	0.41
v/c Ratio	0.68	0.52	0.04	0.21	0.65	0.03	0.20	0.24		0.06	0.12	0.60
Control Delay	18.3	10.9	1.7	4.1	7.0	0.3	29.4	23.3		27.5	36.5	21.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	18.3	10.9	1.7	4.1	7.0	0.3	29.4	23.3		27.5	36.5	21.5
LOS	B	B	A	A	A	A	C	C		C	D	C
Approach Delay		12.0			6.7			25.9			23.4	
Approach LOS		B			A			C			C	
Queue Length 50th (ft)	43	232	4	2	15	0	44	42		12	32	182
Queue Length 95th (ft)	m109	242	m8	m10	291	m0	82	94		31	68	257

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		2204			1525			251			233	
Turn Bay Length (ft)	200		150	200		150	150			150		150
Base Capacity (vph)	417	1834	982	340	1520	836	418	474		369	444	785
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.53	0.52	0.04	0.20	0.65	0.03	0.20	0.24		0.06	0.12	0.53

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 11 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 12.9 Intersection LOS: B
Intersection Capacity Utilization 64.9% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



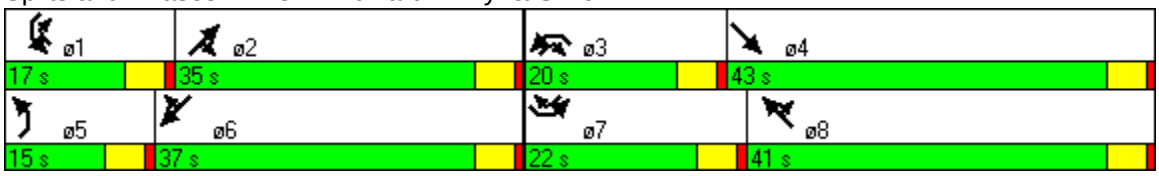
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	200		150	200		150
Storage Lanes	1		0	2		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor												
Frt		0.987				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3393	0	3335	3438	1538	3335	3438	1538	3335	3438	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3393	0	3335	3438	1538	3335	3438	1538	3335	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				137			54			40
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	142	762	72	285	446	130	75	464	413	208	678	38
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	149	802	76	300	469	137	79	488	435	219	714	40
Lane Group Flow (vph)	149	878	0	300	469	137	79	488	435	219	714	40
Turn Type	Prot			Prot		pt+ov	Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases												
Total Split (s)	22.0	43.0	0.0	20.0	41.0	58.0	15.0	35.0	55.0	17.0	37.0	59.0
Act Effct Green (s)	15.2	34.9		15.0	34.7	56.8	16.1	31.0	50.0	18.1	33.0	52.2
Actuated g/C Ratio	0.13	0.30		0.13	0.30	0.49	0.14	0.27	0.43	0.16	0.29	0.45
v/c Ratio	0.66	0.85		0.69	0.45	0.17	0.17	0.53	0.62	0.42	0.72	0.06
Control Delay	55.1	41.6		54.6	33.5	3.4	56.0	34.4	29.1	48.2	41.9	5.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	41.6		54.6	33.5	3.4	56.0	34.4	29.1	48.2	41.9	5.1
LOS	E	D		D	C	A	E	C	C	D	D	A
Approach Delay		43.5			35.9			33.8			41.8	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	105	313		109	145	0	32	106	166	77	250	0
Queue Length 95th (ft)	172	378		156	192	34	59	153	169	121	320	19

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	200		150	200		150
Base Capacity (vph)	269	1157		464	1106	821	467	927	712	525	987	756
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.76		0.65	0.42	0.17	0.17	0.53	0.61	0.42	0.72	0.05

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 89 (77%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 38.8 Intersection LOS: D
Intersection Capacity Utilization 66.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 23: Windward Pkwy. & SR 9



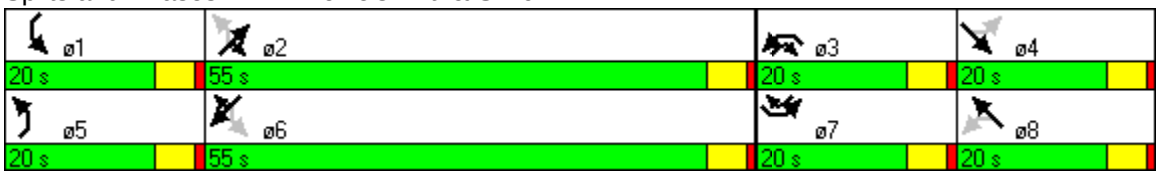
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.850			0.850				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1538	0	1719	1538	0	1719	3438	1538	1719	3438	1538
Flt Permitted	0.752			0.747			0.144			0.166		
Satd. Flow (perm)	1361	1538	0	1352	1538	0	261	3438	1538	300	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		419			438				11			15
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	6	0	15	18	0	9	33	937	10	28	993	14
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	0	16	19	0	9	35	986	11	29	1045	15
Lane Group Flow (vph)	6	16	0	19	9	0	35	986	11	29	1045	15
Turn Type	pm+pt			pm+pt			pm+pt		pt+ov	pm+pt		pt+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	20.0	55.0	75.0	20.0	55.0	75.0
Act Effct Green (s)	33.1	28.8		34.8	31.5		69.7	64.6	76.0	67.5	63.5	74.4
Actuated g/C Ratio	0.29	0.25		0.30	0.27		0.61	0.56	0.66	0.59	0.55	0.65
v/c Ratio	0.01	0.02		0.04	0.01		0.14	0.51	0.01	0.11	0.55	0.01
Control Delay	27.5	0.1		27.9	0.0		13.3	20.5	4.2	2.0	3.3	0.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	0.1		27.9	0.0		13.3	20.5	4.2	2.0	3.3	0.0
LOS	C	A		C	A		B	C	A	A	A	A
Approach Delay		7.5			18.9			20.1			3.2	
Approach LOS		A			B			C			A	
Queue Length 50th (ft)	3	0		10	0		12	200	1	2	30	0
Queue Length 95th (ft)	13	0		28	0		m28	290	m2	m2	35	m0

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	476	699		474	739		364	1931	1134	383	1898	1121
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02		0.04	0.01		0.10	0.51	0.01	0.08	0.55	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 101 (88%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 11.5 Intersection LOS: B
Intersection Capacity Utilization 41.8% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



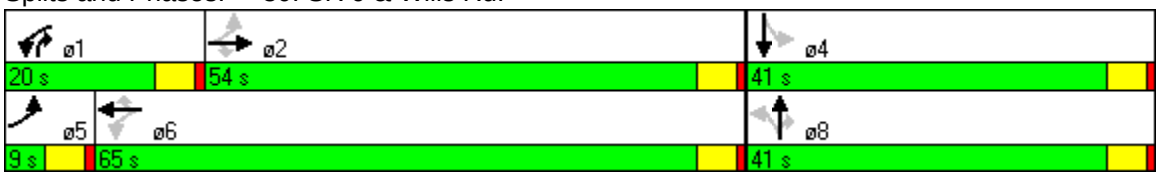
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850		0.960	
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1810	1538	0	1730	0
Flt Permitted	0.080			0.074			0.200				0.972	
Satd. Flow (perm)	145	3438	1538	134	3438	1538	362	1810	1538	0	1689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			51			23			8		19	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			3241			480			507	
Travel Time (s)		16.5			49.1			10.9			11.5	
Volume (vph)	84	1486	55	309	1529	22	30	70	45	44	362	168
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	88	1564	58	325	1609	23	32	74	47	46	381	177
Lane Group Flow (vph)	88	1564	58	325	1609	23	32	74	47	0	604	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm		pm+ov	Perm		
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2		2	6		6	8		8	4		
Total Split (s)	9.0	54.0	54.0	20.0	65.0	65.0	41.0	41.0	20.0	41.0	41.0	0.0
Act Effct Green (s)	55.0	50.0	50.0	70.0	61.0	61.0	37.0	37.0	57.0		37.0	
Actuated g/C Ratio	0.48	0.43	0.43	0.61	0.53	0.53	0.32	0.32	0.50		0.32	
v/c Ratio	0.64	1.05	0.08	1.08	0.88	0.03	0.28	0.13	0.06		1.09	
Control Delay	37.5	69.8	12.5	102.5	25.3	3.3	36.9	28.4	13.4		100.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay	37.5	69.8	12.5	102.5	25.3	3.3	36.9	28.4	13.4		100.3	
LOS	D	E	B	F	C	A	D	C	B		F	
Approach Delay		66.2			37.9			25.6			100.3	
Approach LOS		E			D			C			F	
Queue Length 50th (ft)	34	~643	6	~215	479	1	18	39	14		~494	
Queue Length 95th (ft)	m56	#790	m18	#399	660	m2	48	75	35		#718	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			3161			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	138	1495	698	302	1824	827	116	582	766		556	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Reduced v/c Ratio	0.64	1.05	0.08	1.08	0.88	0.03	0.28	0.13	0.06		1.09	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 103 (90%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 56.9 Intersection LOS: E
Intersection Capacity Utilization 106.6% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		150	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.927			0.939	
Flt Protected	0.950			0.950				0.979			0.980	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1642	0	0	1665	0
Flt Permitted	0.950			0.950				0.979			0.980	
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	0	1642	0	0	1665	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		843			1088			401			497	
Travel Time (s)		12.8			16.5			9.1			11.3	
Volume (vph)	50	1604	18	22	1652	57	14	1	18	8	3	9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	53	1688	19	23	1739	60	15	1	19	8	3	9
Lane Group Flow (vph)	53	1688	19	23	1739	60	0	35	0	0	20	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 55.7%	ICU Level of Service B
Analysis Period (min) 15	

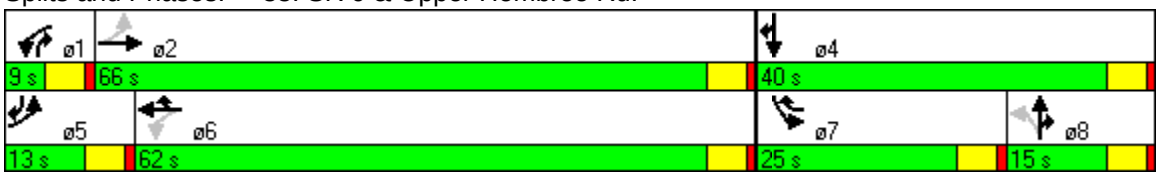
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.989		0.950		
Satd. Flow (prot)	1719	3428	0	1719	3438	1538	0	1790	1538	3335	1810	1538
Flt Permitted	0.065			0.129				0.877		0.950		
Satd. Flow (perm)	118	3428	0	233	3438	1538	0	1587	1538	3335	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				232			21			21
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			843			473			529	
Travel Time (s)		7.4			12.8			10.8			12.0	
Volume (vph)	121	1190	23	47	1391	220	14	51	20	461	239	114
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	127	1253	24	49	1464	232	15	54	21	485	252	120
Lane Group Flow (vph)	127	1277	0	49	1464	232	0	69	21	485	252	120
Turn Type	pm+pt			pm+pt		pt+ov	Perm		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6	6 7		8	8 1	7	4	4 5
Permitted Phases	2			6			8					
Total Split (s)	13.0	66.0	0.0	9.0	62.0	87.0	15.0	15.0	24.0	25.0	40.0	53.0
Act Effct Green (s)	71.0	63.8		63.2	58.2	82.5		11.8	20.8	20.2	36.0	48.8
Actuated g/C Ratio	0.62	0.55		0.55	0.51	0.72		0.10	0.18	0.18	0.31	0.42
v/c Ratio	0.65	0.67		0.25	0.84	0.20		0.43	0.07	0.83	0.44	0.18
Control Delay	33.9	20.8		7.1	11.7	0.2		57.8	16.2	56.3	34.6	17.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	20.8		7.1	11.7	0.2		57.8	16.2	56.3	34.6	17.7
LOS	C	C		A	B	A		E	B	E	C	B
Approach Delay		22.0			10.0			48.1			44.5	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	40	348		6	108	0		49	0	178	148	44
Queue Length 95th (ft)	#117	428		m10	m226	m0		97	23	#244	226	84

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			763			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	198	1904		193	1741	1178		162	295	609	567	667
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	0.64	0.67		0.25	0.84	0.20		0.43	0.07	0.80	0.44	0.18

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 75.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



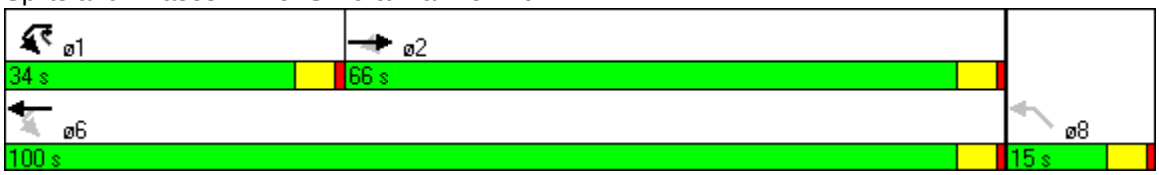
Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	100		0	100
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3438	1538	1719	3438	1719	1538
Flt Permitted			0.061			
Satd. Flow (perm)	3438	1538	110	3438	1810	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		25				157
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			35	30	
Link Distance (ft)	3241			799	548	
Travel Time (s)	49.1			15.6	12.5	
Volume (vph)	1510	32	363	1845	70	149
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1589	34	382	1942	74	157
Lane Group Flow (vph)	1589	34	382	1942	74	157
Turn Type		Perm	pm+pt			Over
Protected Phases	2		1	6		1
Permitted Phases		2	6		8	
Total Split (s)	66.0	66.0	34.0	100.0	15.0	34.0
Act Effct Green (s)	69.8	69.8	99.3	100.1	9.9	25.5
Actuated g/C Ratio	0.61	0.61	0.86	0.87	0.09	0.22
v/c Ratio	0.76	0.04	0.85	0.65	0.48	0.34
Control Delay	4.1	0.0	44.3	2.0	57.6	6.9
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	4.1	0.0	44.3	2.1	57.6	6.9
LOS	A	A	D	A	E	A
Approach Delay	4.0			9.1	23.1	
Approach LOS	A			A	C	
Queue Length 50th (ft)	21	0	250	113	53	0
Queue Length 95th (ft)	m21	m0	m294	136	102	51

Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Internal Link Dist (ft)	3161			719	468	
Turn Bay Length (ft)		200	100			100
Base Capacity (vph)	2087	944	515	2993	173	517
Starvation Cap Reductn	0	0	0	196	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.04	0.74	0.69	0.43	0.30

Intersection Summary	
Area Type: Other	
Cycle Length: 115	
Actuated Cycle Length: 115	
Offset: 38 (33%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 7.9	Intersection LOS: A
Intersection Capacity Utilization 75.7%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Maxwell Rd.



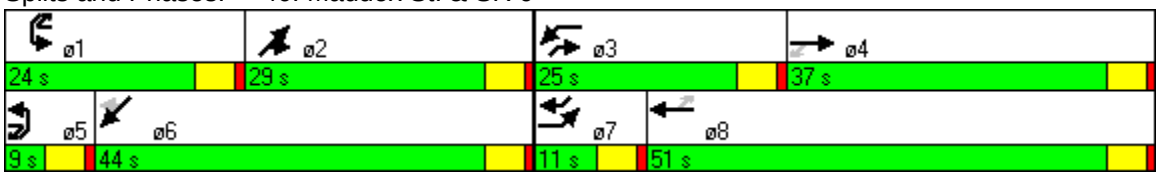
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		150	400		225	250		250	250		200
Storage Lanes	2		1	2		1	2		2	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3335	4940	1538	3335	3438	1538	3335	3438	2707	3335	3438	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3335	4940	1538	3335	3438	1538	3335	3438	2707	3335	3438	1538
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			11			25						38
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			1217			1804	
Travel Time (s)		11.1			16.8			23.7			35.1	
Volume (vph)	102	1621	57	698	550	285	34	818	637	650	1047	42
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	107	1706	60	735	579	300	36	861	671	684	1102	44
Lane Group Flow (vph)	107	1706	60	735	579	300	36	861	671	684	1102	44
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pt+ov	Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	2 3	1	6	7
Permitted Phases			4			8						6
Total Split (s)	11.0	37.0	9.0	25.0	51.0	24.0	9.0	29.0	54.0	24.0	44.0	11.0
Act Effct Green (s)	7.0	33.0	42.0	21.0	47.0	71.0	5.0	25.0	50.0	20.0	41.8	52.8
Actuated g/C Ratio	0.06	0.29	0.37	0.18	0.41	0.62	0.04	0.22	0.43	0.17	0.36	0.46
v/c Ratio	0.53	1.20	0.11	1.21	0.41	0.31	0.25	1.15	0.57	1.18	0.88	0.06
Control Delay	62.2	135.1	20.9	148.8	25.3	10.5	48.3	124.7	25.7	116.0	29.6	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.2	135.1	20.9	148.8	25.3	10.5	48.3	124.7	25.7	116.0	29.6	6.4
LOS	E	F	C	F	C	B	D	F	C	F	C	A
Approach Delay		127.3			78.8			80.6			61.3	
Approach LOS		F			E			F			E	
Queue Length 50th (ft)	40	~563	24	~342	157	89	12	~382	205	~306	449	9
Queue Length 95th (ft)	70	#660	54	#462	206	139	m21	#515	206	m#310	m455	m9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		407			658			1137			1724	
Turn Bay Length (ft)	150		150	400		225	250		250	250		200
Base Capacity (vph)	203	1418	569	609	1405	959	145	747	1177	580	1250	727
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	1.20	0.11	1.21	0.41	0.31	0.25	1.15	0.57	1.18	0.88	0.06

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 8 (7%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.21
Intersection Signal Delay: 87.8 Intersection LOS: F
Intersection Capacity Utilization 105.7% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



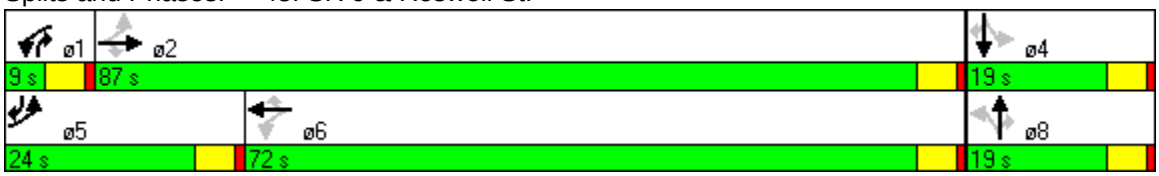
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		200	200		150	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.957			0.966	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1732	1538	0	1748	1538
Flt Permitted	0.056			0.150				0.667			0.605	
Satd. Flow (perm)	101	3438	1538	271	3438	1538	0	1207	1538	0	1095	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			199			21			29			15
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		799			1217			507			781	
Travel Time (s)		15.6			23.7			11.5			17.8	
Volume (vph)	65	1457	189	41	1761	36	95	10	28	52	22	388
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	68	1534	199	43	1854	38	100	11	29	55	23	408
Lane Group Flow (vph)	68	1534	199	43	1854	38	0	111	29	0	78	408
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm		pm+ov	Perm		pm+ov
Protected Phases	5	2		1	6			8	1		4	5
Permitted Phases	2		2	6		6	8		8	4		4
Total Split (s)	24.0	87.0	87.0	9.0	72.0	72.0	19.0	19.0	9.0	19.0	19.0	24.0
Act Effct Green (s)	93.0	85.7	85.7	76.4	71.1	71.1		14.0	23.4		14.0	35.9
Actuated g/C Ratio	0.81	0.75	0.75	0.66	0.62	0.62		0.12	0.20		0.12	0.31
v/c Ratio	0.20	0.60	0.17	0.17	0.87	0.04		0.76	0.09		0.59	0.83
Control Delay	14.1	10.5	3.4	0.9	5.6	0.1		72.9	13.6		62.3	46.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	14.1	10.6	3.4	0.9	5.6	0.1		72.9	13.6		62.3	46.9
LOS	B	B	A	A	A	A		E	B		E	D
Approach Delay		9.9			5.4			60.6			49.4	
Approach LOS		A			A			E			D	
Queue Length 50th (ft)	25	204	15	0	29	0		80	0		55	259
Queue Length 95th (ft)	m37	325	m47	m1	m26	m0		#167	26		#108	#391

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		719			1137			427			701	
Turn Bay Length (ft)	200		200	200		150			100			100
Base Capacity (vph)	363	2563	1197	248	2124	958		157	336		143	518
Starvation Cap Reductn	0	80	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.19	0.62	0.17	0.17	0.87	0.04		0.71	0.09		0.55	0.79

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 20 (17%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 13.9 Intersection LOS: B
Intersection Capacity Utilization 88.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 48: SR 9 & Roswell St.



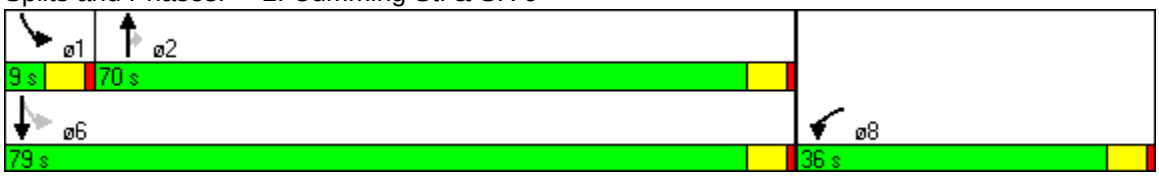
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		250	200	
Storage Lanes	1	0		1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50		50	50	50	50
Trailing Detector (ft)	0		0	0	0	0
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Ped Bike Factor						
Frt	0.972			0.850		
Flt Protected	0.962				0.950	
Satd. Flow (prot)	1692	0	3438	1538	1719	3438
Flt Permitted	0.962				0.057	
Satd. Flow (perm)	1692	0	3438	1538	103	3438
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	12			243		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		35			45
Link Distance (ft)	498		1076			960
Travel Time (s)	11.3		21.0			14.5
Volume (vph)	390	104	2061	326	51	1075
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	411	109	2169	343	54	1132
Lane Group Flow (vph)	520	0	2169	343	54	1132
Turn Type				Perm	pm+pt	
Protected Phases	8		2		1	6
Permitted Phases				2	6	
Total Split (s)	36.0	0.0	70.0	70.0	9.0	79.0
Act Effct Green (s)	32.0		67.8	67.8	75.0	75.0
Actuated g/C Ratio	0.28		0.59	0.59	0.65	0.65
v/c Ratio	1.09		1.07	0.34	0.39	0.50
Control Delay	105.3		52.6	2.4	15.0	19.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	105.3		52.6	2.4	15.0	19.1
LOS	F		D	A	B	B
Approach Delay	105.3		45.8			18.9
Approach LOS	F		D			B
Queue Length 50th (ft)	~426		~946	27	21	414
Queue Length 95th (ft)	#642		m#882	m21	m21	498

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Internal Link Dist (ft)	418		996			880
Turn Bay Length (ft)				250	200	
Base Capacity (vph)	479		2027	1006	137	2242
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	1.09		1.07	0.34	0.39	0.50

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 77 (67%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 45.6 Intersection LOS: D
Intersection Capacity Utilization 91.6% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Cumming St. & SR 9



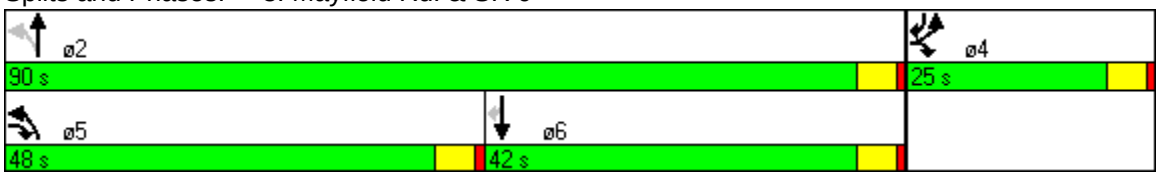
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	230	200			200
Storage Lanes	1	1	1			1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1719	3438	3438	1538
Flt Permitted	0.950		0.095			
Satd. Flow (perm)	1719	1538	172	3438	3438	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		22				170
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	467			960	2751	
Travel Time (s)	10.6			14.5	41.7	
Volume (vph)	226	225	563	1602	901	363
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	238	237	593	1686	948	382
Lane Group Flow (vph)	238	237	593	1686	948	382
Turn Type		pt+ov	pm+pt			pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases			2			6
Total Split (s)	25.0	73.0	48.0	90.0	42.0	25.0
Act Effct Green (s)	20.2	64.5	86.8	86.8	42.5	66.7
Actuated g/C Ratio	0.18	0.56	0.75	0.75	0.37	0.58
v/c Ratio	0.79	0.27	0.88	0.65	0.75	0.40
Control Delay	61.5	11.9	16.8	6.2	38.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	11.9	16.8	6.2	38.8	8.5
LOS	E	B	B	A	D	A
Approach Delay	36.8			9.0	30.1	
Approach LOS	D			A	C	
Queue Length 50th (ft)	169	76	242	282	244	78
Queue Length 95th (ft)	#285	113	m157	m204	357	101

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Internal Link Dist (ft)	387			880	2671	
Turn Bay Length (ft)		230	200			200
Base Capacity (vph)	314	921	722	2596	1271	973
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.26	0.82	0.65	0.75	0.39

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 35 (30%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 19.1 Intersection LOS: B
Intersection Capacity Utilization 78.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Mayfield Rd. & SR 9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	225		0	150		150	200		200	300		275
Storage Lanes	1		0	1		2	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.954				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1726	0	1719	1810	2707	1719	3438	1538	1719	3438	1538
Flt Permitted	0.143			0.205			0.138			0.082		
Satd. Flow (perm)	259	1726	0	371	1810	2707	250	3438	1538	148	3438	1538
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		18							76			132
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		501			449			1804			1076	
Travel Time (s)		11.4			10.2			35.1			21.0	
Volume (vph)	164	226	101	161	536	762	172	1461	99	314	997	130
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	173	238	106	169	564	802	181	1538	104	331	1049	137
Lane Group Flow (vph)	173	344	0	169	564	802	181	1538	104	331	1049	137
Turn Type	pm+pt			pm+pt		pt+ov	pm+pt		pt+ov	pm+pt		pt+ov
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Total Split (s)	10.0	32.0	0.0	13.0	35.0	54.0	17.0	51.0	64.0	19.0	53.0	63.0
Act Effct Green (s)	34.0	28.0		40.0	31.0	50.0	57.9	47.0	60.0	65.1	51.1	61.1
Actuated g/C Ratio	0.30	0.24		0.35	0.27	0.43	0.50	0.41	0.52	0.57	0.44	0.53
v/c Ratio	1.13	0.79		0.72	1.16	0.68	0.69	1.09	0.12	1.15	0.69	0.16
Control Delay	143.5	53.2		45.8	129.8	29.8	31.3	70.9	0.7	132.2	10.9	0.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	143.5	53.2		45.8	129.8	29.8	31.3	70.9	0.7	132.2	10.9	0.6
LOS	F	D		D	F	C	C	E	A	F	B	A
Approach Delay		83.4			68.3			63.0			36.4	
Approach LOS		F			E			E			D	
Queue Length 50th (ft)	~99	228		89	~494	265	59	~701	1	~237	109	0
Queue Length 95th (ft)	#244	#371		#167	#711	344	m74	m#674	m0	m#365	m211	m6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		421			369			1724			996	
Turn Bay Length (ft)	225			150		150	200		200	300		275
Base Capacity (vph)	153	434		235	488	1177	296	1405	839	289	1529	879
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.79		0.72	1.16	0.68	0.61	1.09	0.12	1.15	0.69	0.16

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 77 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.16
Intersection Signal Delay: 59.0 Intersection LOS: E
Intersection Capacity Utilization 108.4% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Milton Ave. & SR 9

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	200			150
Storage Lanes	1	0	1			1
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.941					0.850
Flt Protected	0.973		0.950			
Satd. Flow (prot)	1657	0	1719	3438	3438	1538
Flt Permitted	0.973		0.950			
Satd. Flow (perm)	1657	0	1719	3438	3438	1538
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			45	45	
Link Distance (ft)	384			2751	1050	
Travel Time (s)	8.7			41.7	15.9	
Volume (vph)	75	59	236	1567	1205	181
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	79	62	248	1649	1268	191
Lane Group Flow (vph)	141	0	248	1649	1268	191
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	200			200	0	0
Storage Lanes	1			1	1	0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor						
Frt				0.850	0.939	
Flt Protected	0.950				0.973	
Satd. Flow (prot)	1719	3438	3438	1538	1653	0
Flt Permitted	0.950				0.973	
Satd. Flow (perm)	1719	3438	3438	1538	1653	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		30	
Link Distance (ft)		1050	2284		342	
Travel Time (s)		15.9	34.6		7.8	
Volume (vph)	49	1541	1353	144	41	33
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	52	1622	1424	152	43	35
Lane Group Flow (vph)	52	1622	1424	152	78	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			

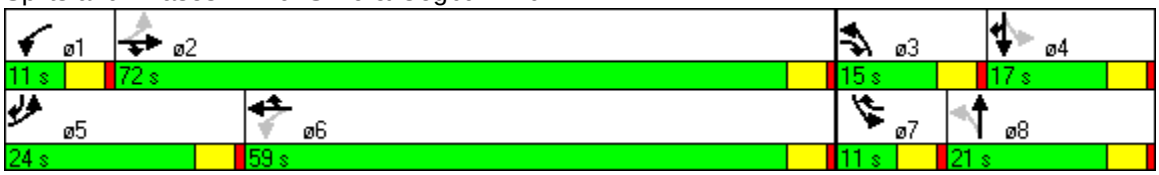
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		150	150		0	150		150
Storage Lanes	1		1	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.898				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1625	0	1719	1810	1538
Flt Permitted	0.087			0.134			0.564			0.687		
Satd. Flow (perm)	157	3438	1538	242	3438	1538	1021	1625	0	1243	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			35			22		74				81
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		2284			1605			331			313	
Travel Time (s)		34.6			24.3			7.5			7.1	
Volume (vph)	186	1341	33	39	1209	28	96	33	70	28	29	192
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	196	1412	35	41	1273	29	101	35	74	29	31	202
Lane Group Flow (vph)	196	1412	35	41	1273	29	101	109	0	29	31	202
Turn Type	pm+pt		pt+ov	pm+pt		pt+ov	pm+pt			pm+pt		pt+ov
Protected Phases	5	2	2 3	1	6	6 7	3	8		7	4	4 5
Permitted Phases	2			6			8			4		
Total Split (s)	24.0	72.0	87.0	11.0	59.0	70.0	15.0	21.0	0.0	11.0	17.0	41.0
Act Effct Green (s)	79.0	72.4	86.6	68.2	61.4	72.3	27.8	19.2		20.7	13.8	31.4
Actuated g/C Ratio	0.69	0.63	0.75	0.59	0.53	0.63	0.24	0.17		0.18	0.12	0.27
v/c Ratio	0.67	0.65	0.03	0.18	0.69	0.03	0.33	0.33		0.12	0.14	0.42
Control Delay	34.5	5.1	0.2	6.3	18.2	6.8	38.2	20.0		35.1	47.9	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	34.5	5.1	0.2	6.3	18.2	6.8	38.2	20.0		35.1	47.9	21.3
LOS	C	A	A	A	B	A	D	B		D	D	C
Approach Delay		8.5			17.6			28.7			26.0	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	79	102	0	5	252	5	60	23		17	21	72
Queue Length 95th (ft)	m153	175	m0	m14	345	m11	109	77		42	51	132

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		2204			1525			251			233	
Turn Bay Length (ft)	200		150	200		150	150			150		150
Base Capacity (vph)	380	2165	1178	234	1834	976	315	333		254	217	560
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.52	0.65	0.03	0.18	0.69	0.03	0.32	0.33		0.11	0.14	0.36

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 81 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 65.7% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: SR 9 & Cogburn Rd.



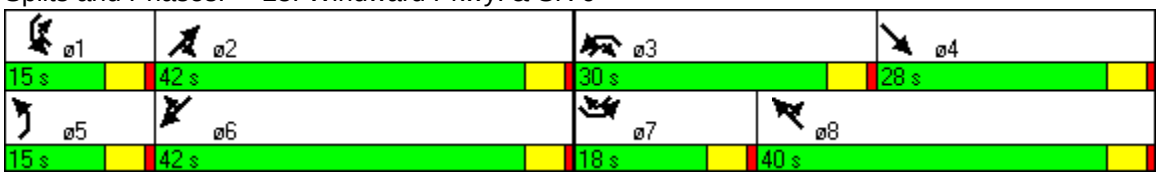
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	425		250	200		150	200		150
Storage Lanes	1		0	2		1	2		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor												
Frt		0.981				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3373	0	3335	3438	1538	3335	3438	1538	3335	3438	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1719	3373	0	3335	3438	1538	3335	3438	1538	3335	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13				55			46			60
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		345			530			738			478	
Travel Time (s)		7.8			12.0			11.2			7.2	
Volume (vph)	165	447	66	620	939	295	102	982	330	243	674	57
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	174	471	69	653	988	311	107	1034	347	256	709	60
Lane Group Flow (vph)	174	540	0	653	988	311	107	1034	347	256	709	60
Turn Type	Prot			Prot		pt+ov	Prot		pt+ov	Prot		pt+ov
Protected Phases	7	4		3	8	8 1	5	2	2 3	1	6	6 7
Permitted Phases												
Total Split (s)	18.0	28.0	0.0	30.0	40.0	55.0	15.0	42.0	72.0	15.0	42.0	60.0
Act Effct Green (s)	13.8	24.1		25.3	35.6	51.2	11.6	38.0	67.3	11.6	38.0	55.8
Actuated g/C Ratio	0.12	0.21		0.22	0.31	0.45	0.10	0.33	0.59	0.10	0.33	0.49
v/c Ratio	0.84	0.75		0.89	0.93	0.43	0.32	0.91	0.38	0.76	0.62	0.08
Control Delay	80.8	49.2		56.5	52.5	20.1	63.9	30.1	5.5	66.1	35.4	4.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.8	49.2		56.5	52.5	20.1	63.9	30.1	5.5	66.1	35.4	4.3
LOS	F	D		E	D	C	E	C	A	E	D	A
Approach Delay		56.9			48.7			26.8			41.3	
Approach LOS		E			D			C			D	
Queue Length 50th (ft)	128	194		241	370	126	32	325	103	97	232	0
Queue Length 95th (ft)	#249	258		#335	#495	204	m51	#505	112	#161	297	22

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		265			450			658			398	
Turn Bay Length (ft)	150			425		250	200		150	200		150
Base Capacity (vph)	209	718		754	1076	710	336	1136	928	336	1136	780
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.75		0.87	0.92	0.44	0.32	0.91	0.37	0.76	0.62	0.08

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 9 (8%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 42.1 Intersection LOS: D
Intersection Capacity Utilization 82.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 23: Windward Pkwy. & SR 9



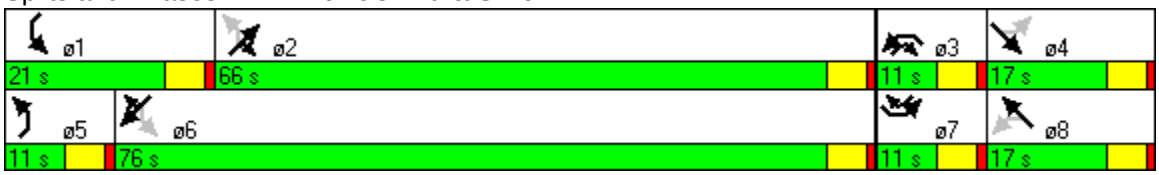
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	50		0	50		0	175		175	200		250
Storage Lanes	1		0	1		0	1		1	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor												
Frt		0.870			0.871				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	1574	0	1719	1576	0	1719	3438	1538	1719	3438	1538
Flt Permitted	0.677			0.733			0.179			0.084		
Satd. Flow (perm)	1225	1574	0	1326	1576	0	324	3438	1538	152	3438	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			66				78			8
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		264			303			1605			738	
Travel Time (s)		6.0			6.9			24.3			11.2	
Volume (vph)	15	5	30	41	10	63	23	1336	80	147	1205	8
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	16	5	32	43	11	66	24	1406	84	155	1268	8
Lane Group Flow (vph)	16	37	0	43	77	0	24	1406	84	155	1268	8
Turn Type	pm+pt			pm+pt			pm+pt		pt+ov	pm+pt		pt+ov
Protected Phases	7	4		3	8		5	2	2 3	1	6	6 7
Permitted Phases	4			8			2			6		
Total Split (s)	11.0	17.0	0.0	11.0	17.0	0.0	11.0	66.0	77.0	21.0	76.0	87.0
Act Effct Green (s)	20.7	15.2		21.6	17.4		72.1	65.5	76.4	83.0	76.6	87.5
Actuated g/C Ratio	0.18	0.13		0.19	0.15		0.63	0.57	0.66	0.72	0.67	0.76
v/c Ratio	0.06	0.16		0.16	0.26		0.08	0.72	0.08	0.53	0.55	0.01
Control Delay	37.3	20.0		38.7	17.0		1.8	6.1	0.4	20.4	13.9	5.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	20.0		38.7	17.0		1.8	6.1	0.4	20.4	13.9	5.1
LOS	D	C		D	B		A	A	A	C	B	A
Approach Delay		25.2			24.8			5.7			14.5	
Approach LOS		C			C			A			B	
Queue Length 50th (ft)	10	3		26	7		1	28	0	74	290	1
Queue Length 95th (ft)	29	36		58	53		m2	331	m1	m114	339	m2

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		184			223			1525			658	
Turn Bay Length (ft)	50			50			175		175	200		250
Base Capacity (vph)	252	236		273	295		289	1959	1049	341	2291	1174
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.16		0.16	0.26		0.08	0.72	0.08	0.45	0.55	0.01

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 99 (86%), Referenced to phase 2:NETL and 6:SWTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 10.8 Intersection LOS: B
Intersection Capacity Utilization 64.0% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 24: Lowe's Ent. & SR 9



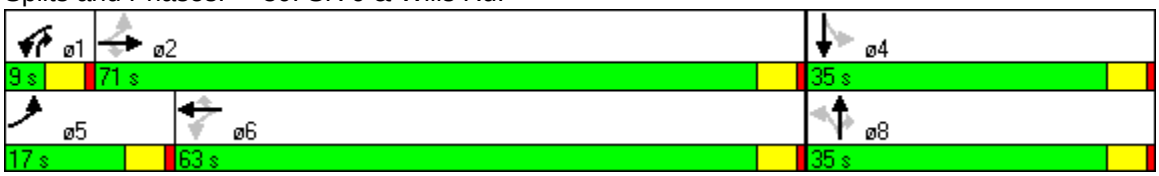
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	275		300	200		600	150		0	0		0
Storage Lanes	1		1	1		1	1		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850		0.917	
Flt Protected	0.950			0.950			0.950				0.996	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	1719	1810	1538	0	1653	0
Flt Permitted	0.063			0.068			0.475				0.569	
Satd. Flow (perm)	114	3438	1538	123	3438	1538	860	1810	1538	0	944	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			35			59			15		68	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1088			3241			480			507	
Travel Time (s)		16.5			49.1			10.9			11.5	
Volume (vph)	237	1731	33	87	1616	56	76	436	192	18	61	124
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	249	1822	35	92	1701	59	80	459	202	19	64	131
Lane Group Flow (vph)	249	1822	35	92	1701	59	80	459	202	0	214	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm		pm+ov	Perm		
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2		2	6		6	8		8	4		
Total Split (s)	17.0	71.0	71.0	9.0	63.0	63.0	35.0	35.0	9.0	35.0	35.0	0.0
Act Effct Green (s)	76.0	67.0	67.0	64.0	59.0	59.0	31.0	31.0	40.0		31.0	
Actuated g/C Ratio	0.66	0.58	0.58	0.56	0.51	0.51	0.27	0.27	0.35		0.27	
v/c Ratio	0.97	0.91	0.04	0.67	0.96	0.07	0.34	0.94	0.37		0.70	
Control Delay	65.0	18.4	1.2	42.3	35.8	2.6	39.0	70.3	28.3		39.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay	65.0	18.4	1.2	42.3	35.8	2.6	39.0	70.3	28.3		39.4	
LOS	E	B	A	D	D	A	D	E	C		D	
Approach Delay		23.6			35.0			55.4			39.4	
Approach LOS		C			D			E			D	
Queue Length 50th (ft)	125	660	2	16	608	5	48	333	102		99	
Queue Length 95th (ft)	m#133	m718	m2	#94	#788	m13	95	#534	169		#210	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		1008			3161			400			427	
Turn Bay Length (ft)	275		300	200		600	150					
Base Capacity (vph)	257	2003	911	138	1764	818	232	488	545		304	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0		0	
Reduced v/c Ratio	0.97	0.91	0.04	0.67	0.96	0.07	0.34	0.94	0.37		0.70	

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 49 (43%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 33.4 Intersection LOS: C
Intersection Capacity Utilization 95.0% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 30: SR 9 & Wills Rd.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		150	200		150	0		0	0		0
Storage Lanes	1		1	1		1	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850		0.895			0.926	
Flt Protected	0.950			0.950				0.989			0.979	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1602	0	0	1640	0
Flt Permitted	0.950			0.950				0.989			0.979	
Satd. Flow (perm)	1719	3438	1538	1719	3438	1538	0	1602	0	0	1640	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		843			1088			393			497	
Travel Time (s)		12.8			16.5			8.9			11.3	
Volume (vph)	15	1912	35	15	1794	13	13	0	47	52	4	68
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	16	2013	37	16	1888	14	14	0	49	55	4	72
Lane Group Flow (vph)	16	2013	37	16	1888	14	0	63	0	0	131	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

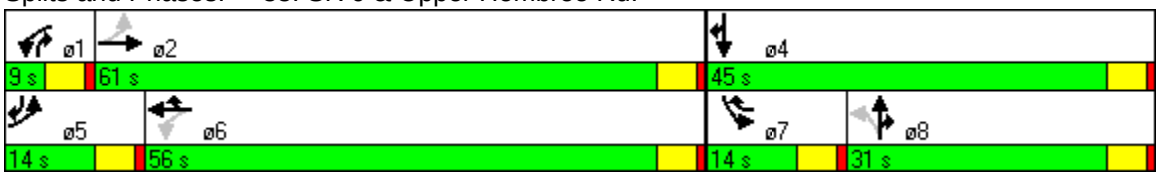
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		0	200		425	0		100	200		500
Storage Lanes	1		0	1		1	0		1	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Ped Bike Factor												
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.993		0.950		
Satd. Flow (prot)	1719	3428	0	1719	3438	1538	0	1797	1538	3335	1810	1538
Flt Permitted	0.071			0.077				0.927		0.950		
Satd. Flow (perm)	128	3428	0	139	3438	1538	0	1677	1538	3335	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				142			10			9
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		489			843			473			529	
Travel Time (s)		7.4			12.8			10.8			12.0	
Volume (vph)	212	1605	33	10	1512	349	60	338	55	298	130	117
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	223	1689	35	11	1592	367	63	356	58	314	137	123
Lane Group Flow (vph)	223	1724	0	11	1592	367	0	419	58	314	137	123
Turn Type	pm+pt			pm+pt		pt+ov	Perm		pt+ov	Prot		pt+ov
Protected Phases	5	2		1	6	6 7		8	8 1	7	4	4 5
Permitted Phases	2			6			8					
Total Split (s)	14.0	61.0	0.0	9.0	56.0	70.0	31.0	31.0	40.0	14.0	45.0	59.0
Act Effct Green (s)	66.0	58.8		57.0	52.0	66.0		27.0	36.0	10.0	41.0	55.0
Actuated g/C Ratio	0.57	0.51		0.50	0.45	0.57		0.23	0.31	0.09	0.36	0.48
v/c Ratio	1.05	0.98		0.08	1.02	0.39		1.06	0.12	1.08	0.21	0.17
Control Delay	105.6	46.4		6.3	53.5	14.4		105.9	24.8	126.0	26.9	16.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	105.6	46.4		6.3	53.5	14.4		105.9	24.8	126.0	26.9	16.5
LOS	F	D		A	D	B		F	C	F	C	B
Approach Delay		53.2			45.9			96.0			78.9	
Approach LOS		D			D			F			E	
Queue Length 50th (ft)	~131	~678		3	~681	181		~343	25	~134	70	46
Queue Length 95th (ft)	#290	#850		m3	m#741	m197		#539	57	#225	119	83

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		409			763			393			449	
Turn Bay Length (ft)	150			200		425			100	200		500
Base Capacity (vph)	212	1754		138	1555	943		394	488	290	645	740
Starvation Cap Reductn	0	0		0	0	0		0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0		0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0		0	0	0	0	0
Reduced v/c Ratio	1.05	0.98		0.08	1.02	0.39		1.06	0.12	1.08	0.21	0.17

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay: 57.4 Intersection LOS: E
Intersection Capacity Utilization 96.5% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 33: SR 9 & Upper Hembree Rd.



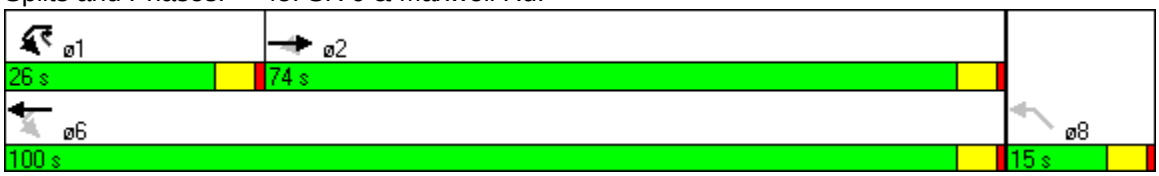
Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		200	100		0	100
Storage Lanes		1	1		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3438	1538	1719	3438	1719	1538
Flt Permitted			0.054			
Satd. Flow (perm)	3438	1538	98	3438	1810	1538
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		25				148
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			35	30	
Link Distance (ft)	3241			799	548	
Travel Time (s)	49.1			15.6	12.5	
Volume (vph)	1916	35	208	1605	82	379
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	2017	37	219	1689	86	399
Lane Group Flow (vph)	2017	37	219	1689	86	399
Turn Type		Perm	pm+pt			Over
Protected Phases	2		1	6		1
Permitted Phases		2	6		8	
Total Split (s)	74.0	74.0	26.0	100.0	15.0	26.0
Act Effct Green (s)	73.0	73.0	99.2	100.0	10.1	22.2
Actuated g/C Ratio	0.63	0.63	0.86	0.87	0.09	0.19
v/c Ratio	0.92	0.04	0.55	0.57	0.54	0.96
Control Delay	13.6	3.6	33.8	1.6	60.2	64.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	3.6	33.8	1.6	60.2	64.6
LOS	B	A	C	A	E	E
Approach Delay	13.4			5.3	63.8	
Approach LOS	B			A	E	
Queue Length 50th (ft)	172	0	115	20	61	196
Queue Length 95th (ft)	#911	m2	m176	106	115	#398

Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Internal Link Dist (ft)	3161			719	468	
Turn Bay Length (ft)		200	100			100
Base Capacity (vph)	2183	985	397	2989	173	416
Starvation Cap Reductn	0	0	0	149	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.04	0.55	0.59	0.50	0.96

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 74 (64%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 15.4 Intersection LOS: B
Intersection Capacity Utilization 83.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 45: SR 9 & Maxwell Rd.



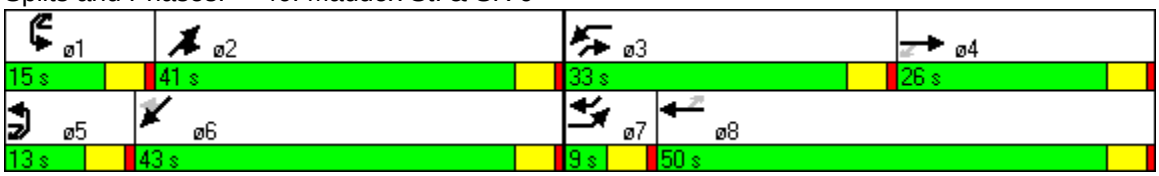
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	150		150	400		225	250		250	250		200
Storage Lanes	2		1	2		1	2		2	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.88	0.97	0.95	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3335	4940	1538	3335	3438	1538	3335	3438	2707	3335	3438	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3335	4940	1538	3335	3438	1538	3335	3438	2707	3335	3438	1538
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			31			8						12
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		487			738			1217			1804	
Travel Time (s)		11.1			16.8			23.7			35.1	
Volume (vph)	113	699	45	685	1465	446	179	1143	757	299	812	76
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	119	736	47	721	1542	469	188	1203	797	315	855	80
Lane Group Flow (vph)	119	736	47	721	1542	469	188	1203	797	315	855	80
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pt+ov	Prot		pm+ov
Protected Phases	7	4	5	3	8	1	5	2	2 3	1	6	7
Permitted Phases			4			8						6
Total Split (s)	9.0	26.0	13.0	33.0	50.0	15.0	13.0	41.0	74.0	15.0	43.0	9.0
Act Effct Green (s)	5.0	22.0	35.0	29.0	46.0	61.0	9.0	37.0	70.0	11.0	39.0	48.0
Actuated g/C Ratio	0.04	0.19	0.30	0.25	0.40	0.53	0.08	0.32	0.61	0.10	0.34	0.42
v/c Ratio	0.82	0.78	0.10	0.86	1.12	0.57	0.72	1.09	0.48	0.99	0.73	0.12
Control Delay	93.6	50.8	14.6	52.5	98.1	21.3	54.6	90.1	17.5	80.1	34.0	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.6	50.8	14.6	52.5	98.1	21.3	54.6	90.1	17.5	80.1	34.0	17.6
LOS	F	D	B	D	F	C	D	F	B	F	C	B
Approach Delay		54.5			72.9			60.6			44.5	
Approach LOS		D			E			E			D	
Queue Length 50th (ft)	45	191	8	263	~693	221	68	~545	232	114	331	38
Queue Length 95th (ft)	#98	239	37	#358	#832	324	m81	#685	m291	m#211	400	m61

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Internal Link Dist (ft)		407			658			1137			1724	
Turn Bay Length (ft)	150		150	400		225	250		250	250		200
Base Capacity (vph)	145	945	490	841	1375	820	261	1106	1648	319	1166	649
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.78	0.10	0.86	1.12	0.57	0.72	1.09	0.48	0.99	0.73	0.12

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 40 (35%), Referenced to phase 2:NET and 6:SWT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 61.7 Intersection LOS: E
Intersection Capacity Utilization 97.3% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 46: Maddox St. & SR 9



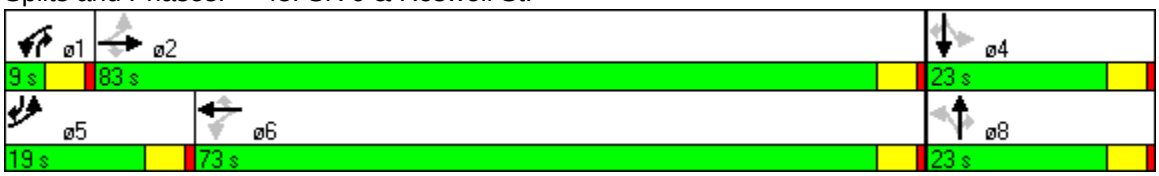
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		200	200		150	0		100	0		100
Storage Lanes	1		1	1		1	0		1	0		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.964			0.966	
Satd. Flow (prot)	1719	3438	1538	1719	3438	1538	0	1744	1538	0	1748	1538
Flt Permitted	0.070			0.058				0.739			0.622	
Satd. Flow (perm)	127	3438	1538	105	3438	1538	0	1337	1538	0	1126	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			113			34			17			30
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		799			1217			507			781	
Travel Time (s)		15.6			23.7			11.5			17.8	
Volume (vph)	213	1994	132	23	1519	50	108	37	90	44	18	236
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	224	2099	139	24	1599	53	114	39	95	46	19	248
Lane Group Flow (vph)	224	2099	139	24	1599	53	0	153	95	0	65	248
Turn Type	pm+pt		Perm	pm+pt		Perm	Perm		pm+ov	Perm		pm+ov
Protected Phases	5	2		1	6			8	1		4	5
Permitted Phases	2		2	6		6	8		8	4		4
Total Split (s)	19.0	83.0	83.0	9.0	73.0	73.0	23.0	23.0	9.0	23.0	23.0	19.0
Act Effct Green (s)	89.8	80.3	80.3	77.8	72.2	72.2		17.1	26.7		17.1	34.8
Actuated g/C Ratio	0.78	0.70	0.70	0.68	0.63	0.63		0.15	0.23		0.15	0.30
v/c Ratio	0.78	0.87	0.13	0.16	0.74	0.05		0.77	0.26		0.39	0.51
Control Delay	34.9	11.2	2.0	6.7	7.6	1.0		63.6	30.9		49.0	31.8
Queue Delay	0.0	0.4	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	34.9	11.7	2.0	6.7	7.6	1.0		63.6	30.9		49.0	31.8
LOS	C	B	A	A	A	A		E	C		D	C
Approach Delay		13.2			7.3			51.1			35.4	
Approach LOS		B			A			D			D	
Queue Length 50th (ft)	110	281	7	2	357	4		108	46		43	127
Queue Length 95th (ft)	m123	m300	m8	m3	401	m4		#200	94		88	206

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Internal Link Dist (ft)		719			1137			427			701	
Turn Bay Length (ft)	200		200	200		150			100			100
Base Capacity (vph)	307	2400	1108	150	2158	978		221	370		186	504
Starvation Cap Reductn	0	62	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.73	0.90	0.13	0.16	0.74	0.05		0.69	0.26		0.35	0.49

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 115
Offset: 74 (64%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 83.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 48: SR 9 & Roswell St.



APPENDIX D

S.R. 9

Crash Analysis Information

S.R. 9 2005 Crash History Summary (Corridor Segment Breakdown)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA

DESCRIPTION	INT. 1	BTWN. INT. 1 & 2	INT. 2	BTWN. INT. 2 & 3	INT. 3	BTWN. INT. 3 & 4	INT. 4	BTWN. INT. 4 & 5	INT. 5	BTWN. INT. 5 & 6	INT. 6	BTWN. INT. 6 & 7	INT. 7	BTWN. INT. 7 & 8	INT. 8	BTWN. INT. 8 & 9	INT. 9	BTWN. INT. 9 & 10	INT. 10	BTWN. INT. 10 & 11	INT. 11	BTWN. INT. 11 & 12	INT. 12	BTWN. INT. 12 & 13	INT. 13	BTWN. INT. 13 & 14	INT. 14	TOTAL
TYPE																												
Rear End	5	1	1		18	12	12		7	2	25	10	14	3	14			17	4	2	4	9	20	6	1	1	23	211
Angle	8			1	7	5	7	1	3	1	11	8	13	1	4			6	1	1	2		2	1		1	10	94
Sideswipe - Same Direction	2	1		1		2	1		1	3	6	6	4		2			2	2		1					1	3	38
Sideswipe - Opposite Direction					1				2				1														1	5
Head On					2								1		2			1			1		1				2	10
Not a Collision with a Motor Vehicle					1		1		2				1										3			1	1	10
SEVERITY																												
Property Damage Only Crashes	10	2	1	2	21	14	17	1	14	5	32	23	26	4	15			17	4	2	6	8	17	5	1	4	31	282
Injury Crashes (No Fatalities)	5				8	5	4		1	1	10	1	8		7			9	3	1	2	1	9	2			9	86
Fatality Crashes																												0
Total Number of Injuries	5				17	6	5		1	2	13	2	14		11			11	4	2	2	1	11	2			11	120
Total Number of Fatalities																												0
LIGHT CONDITIONS																												
Daylight	13	1	1	2	27	16	16	1	15	6	33	22	28	4	15			23	7	2	8	8	19	5	1	2	32	307
Dawn / Dusk	2	1			1	1	2				1									1			1	1				11
Dark - Lighted					1	2	2				7	2	6		6			2					4	1		2	6	41
Dark - Not Lighted							1				1				1			1				1	2				2	9
ROAD SURFACE																												
Dry	14	2	1	2	24	17	17	1	14	6	34	18	31	3	18			21	6	1	4	8	22	5	1	4	34	308
Wet	1				5	2	4		1		8	6	3	1	4			5	1	2	4	1	4	2			6	60
DAY OF WEEK																												
Sunday						1	2		1		6			1				1					2	1			4	19
Monday	2	1			7	4	3	1	4	1	9	2	7		6			8		2	2		3	2		1	4	69
Tuesday	4				6	4	2		2	1	5	5	5	1	6			6	1			2	4	1			6	61
Wednesday	2	1		1	7	2	3		2	1	10	5	3		2			2	3		1	5	5	1		1	7	64
Thursday	5		1		5	3	5		2	2	4	6	4		1			3			3		2			1	10	57
Friday	2				3	4	3		2	1	6	5	13		4			5	3	1	1		7			1	5	66
Saturday				1	1	1	3		2		2	1	2	2	3			1			1	2	3	2	1		4	32
TIME OF DAY																												
12:00 Midnight to 3:00 AM					2	3	1				2	2	2					1	1				4			1	3	22
3:00 AM to 6:00 AM	1					1	3		2	1	5	3	3					1					1					21
6:00 AM to 9:00 AM	2	1			6	2	2		1		11	2	5		3			8	1	1			5	2			6	58
9:00 AM to 12:00 Noon	1		1		6	4	4		3		6	4	6		2			4		1	4	1	2	1			9	59
12:00 Noon to 3:00 PM	6			2	7	3	3	1	7	3	5	2	6	3	4			2	3	1	2	3	5	2	1		10	81
3:00 PM to 6:00 PM	4				6	3	3		1	2	6	8	5	1	6			6	2		2	2	5	1		2	5	70
6:00 PM to 9:00 PM	1				2	2	4		1		3	2	5		2			1				3	3	1		1	5	36
9:00 PM to 12:00 Midnight		1				1	1				4	1	2		5			3					1				2	21
OVERALL CRASH SUMMARY																												
Total Number of Crashes	15	2	1	2	29	19	21	1	15	6	42	24	34	4	22	0	0	26	7	3	8	9	26	7	1	4	40	368
Percentage of Total	4.1%	0.5%	0.3%	0.5%	7.9%	5.2%	5.7%	0.3%	4.1%	1.6%	11.4%	6.5%	9.2%	1.1%	6.0%	0.0%	0.0%	7.1%	1.9%	0.8%	2.2%	2.4%	7.1%	1.9%	0.3%	1.1%	10.9%	100.0%

INTERSECTION LEGEND	
1: S.R. 9 at Upper Hembree Road/Northmeadow Parkway	8: S.R. 9 at Cumming Street
2: S.R. 9 at Cambridge Square	9: S.R. 9 at Mayfield Road
3: S.R. 9 at Wills Road	10: S.R. 9 at Canton Street
4: S.R. 9 at Roswell Street/Maxwell Road	11: S.R. 9 at Vaughn Drive
5: S.R. 9 at Devore Road	12: S.R. 9 at Cogburn Road/Henderson Village Parkway
6: S.R. 9 at Maddox Street/Old Milton Parkway	13: S.R. 9 at Lowe's Driveway/Shopping Center Entrance
7: S.R. 9 at Milton Avenue/Academy Street	14: S.R. 9 at Windward Parkway

S.R. 9 2006 Crash History Summary (Corridor Segment Breakdown)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA

DESCRIPTION	INT. 1	BTWN. INT. 1 & 2	INT. 2	BTWN. INT. 2 & 3	INT. 3	BTWN. INT. 3 & 4	INT. 4	BTWN. INT. 4 & 5	INT. 5	BTWN. INT. 5 & 6	INT. 6	BTWN. INT. 6 & 7	INT. 7	BTWN. INT. 7 & 8	INT. 8	BTWN. INT. 8 & 9	INT. 9	BTWN. INT. 9 & 10	INT. 10	BTWN. INT. 10 & 11	INT. 11	BTWN. INT. 11 & 12	INT. 12	BTWN. INT. 12 & 13	INT. 13	BTWN. INT. 13 & 14	INT. 14	TOTAL
TYPE																												
Rear End	10	1		3	4	7	14		4	6	24	13	11	5	14	2	19	12	4		6	5	18	2		3	25	212
Angle	5	2		2	11	5	7	1	8		12	13	13	6	4		6	2	1		2		2	1		2	10	115
Sideswipe - Same Direction	1				3	2		1		1	9	7	5	1	3	1	2		1					1			2	40
Sideswipe - Opposite Direction							1			1			2								1							5
Head On					1				1		2		2		1		1											8
Not a Collision with a Motor Vehicle					1	1								1				1	1								1	6
SEVERITY																												
Property Damage Only Crashes	15	2		4	19	14	18	2	10	4	36	30	28	12	19	2	25	8	7		7	3	16	3		2	34	320
Injury Crashes (No Fatalities)	1	1		1	1	1	4		3	4	11	3	5	1	3	1	3	7			2	2	4	1		3	4	66
Fatality Crashes																												0
Total Number of Injuries	2	1		1	2	1	4		4	4	16	5	6	1	5	1	4	10			3	3	6	1		3	4	87
Total Number of Fatalities																												0
LIGHT CONDITIONS																												
Daylight	15	3		5	14	14	19	2	12	8	40	29	30	11	18	3	26	14	6		7	5	17	3		3	26	330
Dawn / Dusk					2		1				1			1	1		2						1				1	10
Dark - Lighted	1				3	1	2		1		5	4	3		2			1	1		1		1			2	9	37
Dark - Not Lighted					1						1			1	1						1		1	1			2	9
ROAD SURFACE																												
Dry	14	2		4	16	9	21	2	12	5	43	31	28	12	18	2	24	13	3		7	4	17	4		5	36	332
Wet	2	1		1	4	6	1		1	3	4	2	5	1	4	1	4	2	4		2	1	3				2	54
DAY OF WEEK																												
Sunday	1					1			2		1	1	4				1	2					1				1	15
Monday	2	1			3	3	4		2	3	4	5	2	3	7	1	5	2	1		1		2	1		1	5	58
Tuesday	5	1		1	4	1	6	1	3	3	9	2	6	3	1	1	4		2		2			1			6	62
Wednesday	2	1			3	2	3		2		11	5	8	2	5		6	3	1		2		3				5	64
Thursday	2			1	2	3	2		1	1	8	10	4	2	4		7	3			1		3			2	12	68
Friday	2			3	5	2	6		3	1	9	3	7	1	2	1	3	4	2			3	8	1		2	4	72
Saturday	2				3	3	1	1			5	7	2	2	3		2	1	1		3	2	3	1			5	47
TIME OF DAY																												
12:00 Midnight to 3:00 AM					1								1		1			1			1							5
3:00 AM to 6:00 AM																											1	1
6:00 AM to 9:00 AM	2	1			4	1	2		3		11	3	6	1	5		6	3					1			1	4	54
9:00 AM to 12:00 Noon	3	2		1	5	1	4		1	2	5	6	6	3	2	2	5	3	2		2	1		1			4	61
12:00 Noon to 3:00 PM	5			2	3	6	5	1	3	3	13	5	7	4	4	1	8	4	1		2	2	7	1			8	95
3:00 PM to 6:00 PM	3			2	3	5	8	1	4	1	11	13	6	3	7		6	3	3		2	2	7	1		2	8	101
6:00 PM to 9:00 PM	3				3	2	3		1	2	5	5	5	2	2		3	1	1		1		5	1		1	11	57
9:00 PM to 12:00 Midnight					1				1		2	1	2		1						1					1	2	12
OVERALL CRASH SUMMARY																												
Total Number of Crashes	16	3	0	5	20	15	22	2	13	8	47	33	33	13	22	3	28	15	7	0	9	5	20	4	0	5	38	386
Percentage of Total	4.1%	0.8%	0.0%	1.3%	5.2%	3.9%	5.7%	0.5%	3.4%	2.1%	12.2%	8.5%	8.5%	3.4%	5.7%	0.8%	7.3%	3.9%	1.8%	0.0%	2.3%	1.3%	5.2%	1.0%	0.0%	1.3%	9.8%	100.0%

INTERSECTION LEGEND	
1: S.R. 9 at Upper Hembree Road/Northmeadow Parkway	8: S.R. 9 at Cumming Street
2: S.R. 9 at Cambridge Square	9: S.R. 9 at Mayfield Road
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7: S.R. 9 at Milton Avenue/Academy Street	14: S.R. 9 at Windward Parkway

S.R. 9 2007 Crash History Summary (Corridor Segment Breakdown)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA

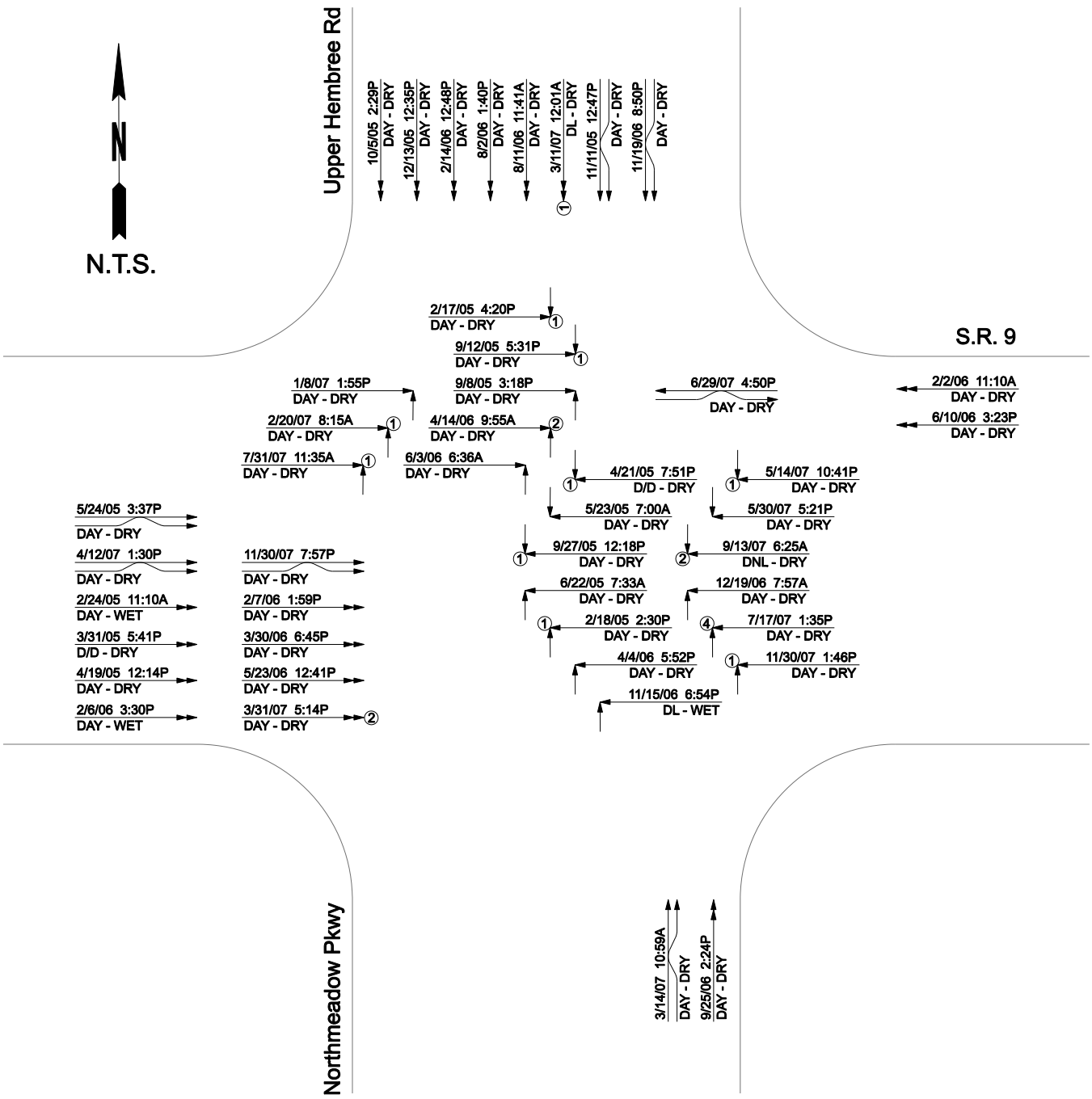
DESCRIPTION	INT. 1	BTWN. INT. 1 & 2	INT. 2	BTWN. INT. 2 & 3	INT. 3	BTWN. INT. 3 & 4	INT. 4	BTWN. INT. 4 & 5	INT. 5	BTWN. INT. 5 & 6	INT. 6	BTWN. INT. 6 & 7	INT. 7	BTWN. INT. 7 & 8	INT. 8	BTWN. INT. 8 & 9	INT. 9	BTWN. INT. 9 & 10	INT. 10	BTWN. INT. 10 & 11	INT. 11	BTWN. INT. 11 & 12	INT. 12	BTWN. INT. 12 & 13	INT. 13	BTWN. INT. 13 & 14	INT. 14	TOTAL
TYPE																												
Rear End	2	1		1	15	6	13	2	6	3	20	8	14	5	8	4	13	5			5	3	18	4		7	25	188
Angle	8	2		1	8	1	8		10	3	7	3	9	1	6	2	4				3		3			2	13	94
Sideswipe - Same Direction	3				1	2		1	2		4	5	1		2		2	1										24
Sideswipe - Opposite Direction	1				1	1			1		1	2	2									1				1	1	12
Head On									1		1	1	2				1	1	1									8
Not a Collision with a Motor Vehicle				2			1				2	2	2										1					10
SEVERITY																												
Property Damage Only Crashes	6	3		4	14	7	17	2	15	3	29	14	20	6	11	5	16	6	1		6	1	15	2		7	28	238
Injury Crashes (No Fatalities)	8				11	3	5	1	5	3	6	7	10		5	1	4	1			2	3	7	2		3	11	98
Fatality Crashes																												0
Total Number of Injuries	13				14	4	9	1	10	4	7	11	13		8	1	7	5			2	4	9	2		3	11	138
Total Number of Fatalities																												0
LIGHT CONDITIONS																												
Daylight	12	3		2	23	9	15	3	15	5	27	19	28	6	15	6	17	5			8	4	18	3		9	29	281
Dawn / Dusk							1		4		1	1					1	1	1				1				6	17
Dark - Lighted	1			2	2	1	3		1	1	7	1	2		1		2	1					2	1		1	4	33
Dark - Not Lighted	1						3																1					5
ROAD SURFACE																												
Dry	14	3		3	22	9	19	3	18	4	33	20	29	5	15	6	20	7	1		8	4	22	3		10	37	315
Wet				1	3	1	3		2	2	2	1	1	1	1									1			2	21
DAY OF WEEK																												
Sunday	1						1		1		4	2			1		1										3	14
Monday	2	1			6		3		2	1	7	4	6	2	3		2	2					2				8	51
Tuesday	3			1	8		7		3		5	4	6			2	5	2			3	1	4			1	3	58
Wednesday	2	1			3	3	3	1	8	2	8	4	5	1	4		1		1		2	3	1	1		3	7	64
Thursday	2			3	3	4	6		2	2	7	4	8	1	4	2	2	2			2		5				5	64
Friday	3	1			4	1	1		2	1	2	3	2	1	2		6	1					8	3			8	49
Saturday	1				1	2	1	2	2		2		3	1	2	2	3				1		2			6	5	36
TIME OF DAY																												
12:00 Midnight to 3:00 AM	1			2	1								1															5
3:00 AM to 6:00 AM											1																	1
6:00 AM to 9:00 AM	2	2			2	1	1		4		4	4	6	1	2	1		2			1		3				4	40
9:00 AM to 12:00 Noon	3				6	2	3		3	1	4	1	6	1	1	2	4					1	1			1	8	48
12:00 Noon to 3:00 PM	4	1		1	5	4	6	3	4	2	6	8	8	2	5	2	8	1			2	1	7	2		3	7	92
3:00 PM to 6:00 PM	3			1	7	2	4		7	2	14	4	7	1	5	1	6	3	1		5	2	7	1		2	11	96
6:00 PM to 9:00 PM	1				3		7		2		3	4	1	1	3		1	1					4	1		1	6	39
9:00 PM to 12:00 Midnight					1	1	1			1	3		1				1									3	3	15
OVERALL CRASH SUMMARY																												
Total Number of Crashes	14	3	0	4	25	10	22	3	20	6	35	21	30	6	16	6	20	7	1	0	8	4	22	4	0	10	39	336
Percentage of Total	4.2%	0.9%	0.0%	1.2%	7.4%	3.0%	6.5%	0.9%	6.0%	1.8%	10.4%	6.3%	8.9%	1.8%	4.8%	1.8%	6.0%	2.1%	0.3%	0.0%	2.4%	1.2%	6.5%	1.2%	0.0%	3.0%	11.6%	100.0%

INTERSECTION LEGEND	
1: S.R. 9 at Upper Hembree Road/Northmeadow Parkway	8: S.R. 9 at Cumming Street
2: S.R. 9 at Cambridge Square	9: S.R. 9 at Mayfield Road
3: S.R. 9 at Wills Road	10: S.R. 9 at Canton Street
4: S.R. 9 at Roswell Street/Maxwell Road	11: S.R. 9 at Vaughn Drive
5: S.R. 9 at Devore Road	12: S.R. 9 at Cogburn Road/Henderson Village Parkway
6: S.R. 9 at Maddox Street/Old Milton Parkway	13: S.R. 9 at Lowe's Driveway/Shopping Center Entrance
7: S.R. 9 at Milton Avenue/Academy Street	14: S.R. 9 at Windward Parkway

S.R. 9 2005-2007 Crash History Summary (Corridor Segment Breakdown)
From Upper Hembree Road/Northmeadow Parkway to Windward Parkway
Fulton County, GA

DESCRIPTION	INT. 1	BTWN. INT. 1 & 2	INT. 2	BTWN. INT. 2 & 3	INT. 3	BTWN. INT. 3 & 4	INT. 4	BTWN. INT. 4 & 5	INT. 5	BTWN. INT. 5 & 6	INT. 6	BTWN. INT. 6 & 7	INT. 7	BTWN. INT. 7 & 8	INT. 8	BTWN. INT. 8 & 9	INT. 9	BTWN. INT. 9 & 10	INT. 10	BTWN. INT. 10 & 11	INT. 11	BTWN. INT. 11 & 12	INT. 12	BTWN. INT. 12 & 13	INT. 13	BTWN. INT. 13 & 14	INT. 14	TOTAL
TYPE																												
Rear End	17	3	1	4	37	25	39	2	17	11	69	31	39	13	36	6	32	34	8	2	15	17	56	12	1	11	73	611
Angle	21	4	0	4	26	11	22	2	21	4	30	24	35	8	14	2	10	8	2	1	7	0	7	2	0	5	33	303
Sideswipe - Same Direction	6	1	0	1	4	6	1	2	3	4	19	18	10	1	7	1	4	3	3	0	1	0	0	1	0	1	5	102
Sideswipe - Opposite Direction	1	0	0	0	2	1	1	0	3	1	1	2	5	0	0	0	0	0	0	0	1	1	0	0	0	1	2	22
Head On	0	0	0	0	3	0	0	0	2	0	3	1	5	0	3	0	2	2	1	0	1	0	1	0	0	0	2	26
Not a Collision with a Motor Vehicle	0	0	0	2	2	1	2	0	2	0	2	2	3	1	0	0	0	1	1	0	0	0	4	0	0	1	2	26
SEVERITY																												
Property Damage Only Crashes	31	7	1	10	54	35	52	5	39	12	97	67	74	22	45	7	41	31	12	2	19	12	48	10	1	13	93	840
Injury Crashes (No Fatalities)	14	1	0	1	20	9	13	1	9	8	27	11	23	1	15	2	7	17	3	1	6	6	20	5	0	6	24	250
Fatality Crashes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Number of Injuries	20	1	0	1	33	11	18	1	15	10	36	18	33	1	24	2	11	26	4	2	7	8	26	5	0	6	26	345
Total Number of Fatalities	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LIGHT CONDITIONS																												
Daylight	40	7	1	9	64	39	50	6	42	19	100	70	86	21	48	9	43	42	13	2	23	17	54	11	1	14	87	918
Dawn / Dusk	2	1	0	0	3	1	4	0	4	0	3	1	0	1	1	0	3	1	1	1	0	0	3	1	0	0	7	38
Dark - Lighted	2	0	0	2	6	4	7	0	2	1	19	7	11	0	9	0	2	4	1	0	1	0	7	2	0	5	19	111
Dark - Not Lighted	1	0	0	0	1	0	4	0	0	0	2	0	0	1	2	0	0	1	0	0	1	1	4	1	0	0	4	23
ROAD SURFACE																												
Dry	42	7	1	9	62	35	57	6	44	15	110	69	88	20	51	8	44	41	10	1	19	16	61	12	1	19	107	955
Wet	3	1	0	2	12	9	8	0	4	5	14	9	9	3	9	1	4	7	5	2	6	2	7	3	0	0	10	135
DAY OF WEEK																												
Sunday	2	0	0	0	0	2	3	0	4	0	11	3	4	1	1	0	2	3	0	0	0	0	3	1	0	0	8	48
Monday	6	3	0	0	16	7	10	1	8	5	20	11	15	5	16	1	7	12	1	2	3	0	7	3	0	2	17	178
Tuesday	12	1	0	2	18	5	15	1	8	4	19	11	17	4	7	3	9	8	3	0	5	3	8	2	0	1	15	181
Wednesday	6	3	0	1	13	7	9	1	12	3	29	14	16	3	11	0	7	5	5	0	5	8	9	2	0	4	19	192
Thursday	9	0	1	4	10	10	13	0	5	5	19	20	16	3	9	2	9	8	0	0	6	0	10	0	0	3	27	189
Friday	7	1	0	3	12	7	10	0	7	3	17	11	22	2	8	1	9	10	5	1	1	3	23	4	0	3	17	187
Saturday	3	0	0	1	5	6	5	3	4	0	9	8	7	5	8	2	5	2	1	0	5	4	8	3	1	6	14	115
TIME OF DAY																												
12:00 Midnight to 3:00 AM	1	0	0	2	4	3	1	0	0	0	2	2	4	0	1	0	0	2	1	0	1	0	4	0	0	1	3	32
3:00 AM to 6:00 AM	1	0	0	0	0	1	3	0	2	1	6	3	3	0	0	0	0	1	0	0	0	0	1	0	0	0	1	23
6:00 AM to 9:00 AM	6	4	0	0	12	4	5	0	8	0	26	9	17	2	10	1	6	13	1	1	1	0	9	2	0	1	14	152
9:00 AM to 12:00 Noon	7	2	1	1	17	7	11	0	7	3	15	11	18	4	5	4	9	7	2	1	6	3	3	2	0	1	21	168
12:00 Noon to 3:00 PM	15	1	0	5	15	13	14	5	14	8	24	15	21	9	13	3	16	7	4	1	6	6	19	5	1	3	25	268
3:00 PM to 6:00 PM	10	0	0	3	16	10	15	1	12	5	31	25	18	5	18	1	12	12	6	0	9	6	19	3	0	6	24	267
6:00 PM to 9:00 PM	5	0	0	0	8	4	14	0	4	2	11	11	11	3	7	0	4	3	1	0	1	3	12	3	0	3	22	132
9:00 PM to 12:00 Midnight	0	1	0	0	2	2	2	0	1	1	9	2	5	0	6	0	1	3	0	0	1	0	1	0	0	4	7	48
OVERALL CRASH SUMMARY																												
Total Number of Crashes	45	8	1	11	74	44	65	6	48	20	124	78	97	23	60	9	48	48	15	3	25	18	68	15	1	19	117	1,090
Percentage of Total	4.1%	0.7%	0.1%	1.0%	6.8%	4.0%	6.0%	0.6%	4.4%	1.8%	11.4%	7.2%	8.9%	2.1%	5.5%	0.8%	4.4%	4.4%	1.4%	0.3%	2.3%	1.7%	6.2%	1.4%	0.1%	1.7%	10.7%	100.0%

INTERSECTION LEGEND	
1: S.R. 9 at Upper Hembree Road/Northmeadow Parkway	8: S.R. 9 at Cumming Street
2: S.R. 9 at Cambridge Square	9: S.R. 9 at Mayfield Road
3: S.R. 9 at Wills Road	10: S.R. 9 at Canton Street
4: S.R. 9 at Roswell Street/Maxwell Road	11: S.R. 9 at Vaughn Drive
5: S.R. 9 at Devore Road	12: S.R. 9 at Cogburn Road/Henderson Village Parkway
6: S.R. 9 at Maddox Street/Old Milton Parkway	13: S.R. 9 at Lowe's Driveway/Shopping Center Entrance
7: S.R. 9 at Milton Avenue/Academy Street	14: S.R. 9 at Windward Parkway



LEGEND

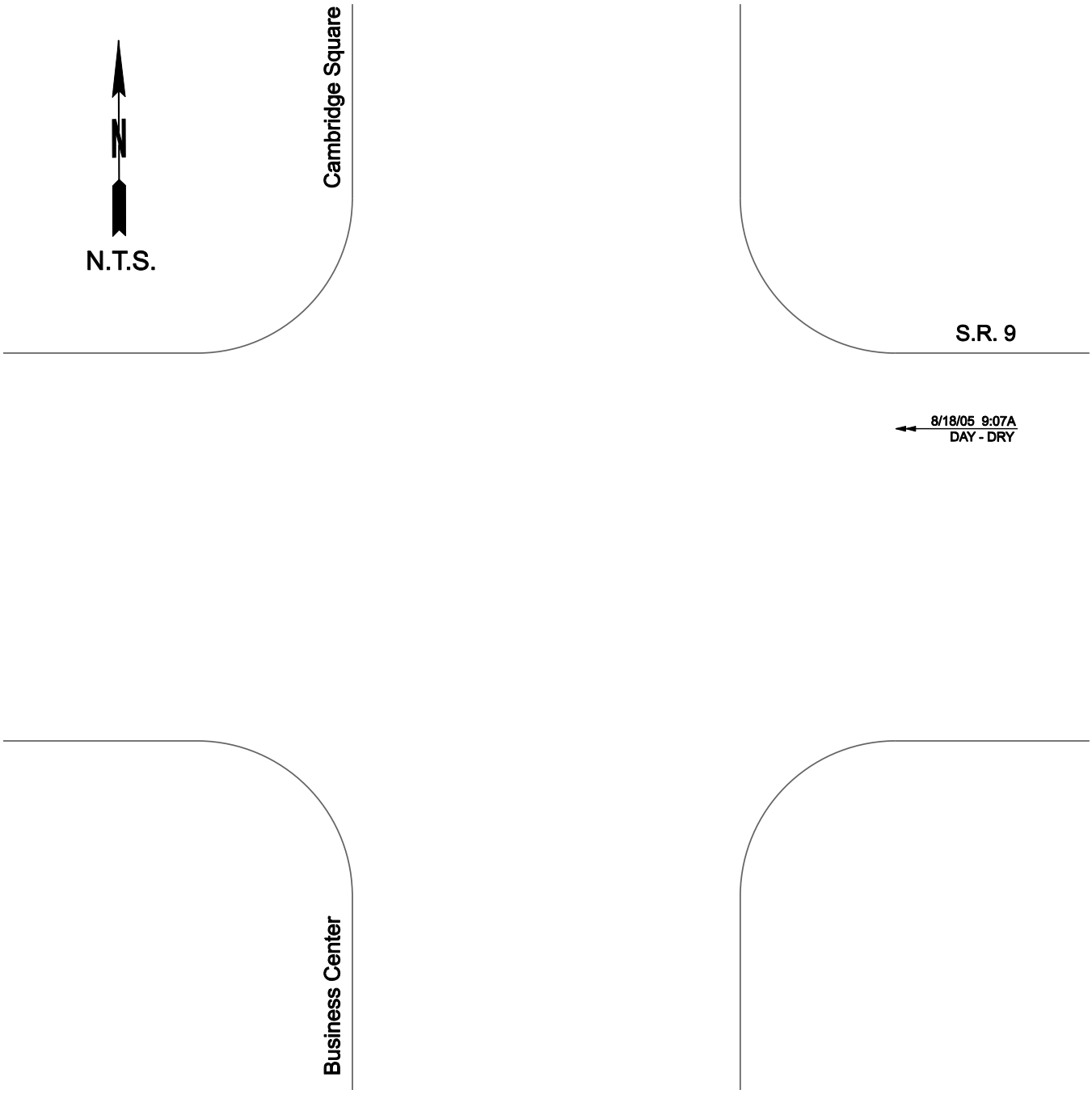
Moving Vehicle (Direction of Travel)	Fixed Object	Time: A = AM, P = PM
Read End	Fatal Crash	Road Surface: DRY, WET
Angle	Injury Crash	Light Conditions: DAY = Daylight, D/D = Dawn/Dusk, DL = Dark - Lighted, DNL = Dark - Not Lighted
Head On		
Side Swipe		
Out of Control		

TOTAL NUMBER OF CRASHES AT LOCATION

31	Property Damage
14	Injury
0	Fatal
45	Total Crashes

COLLISION DIAGRAM

S.R. 9 AT UPPER HEMBREE RD/NORTHMEADOW PKWY FROM 2005 TO 2007



LEGEND

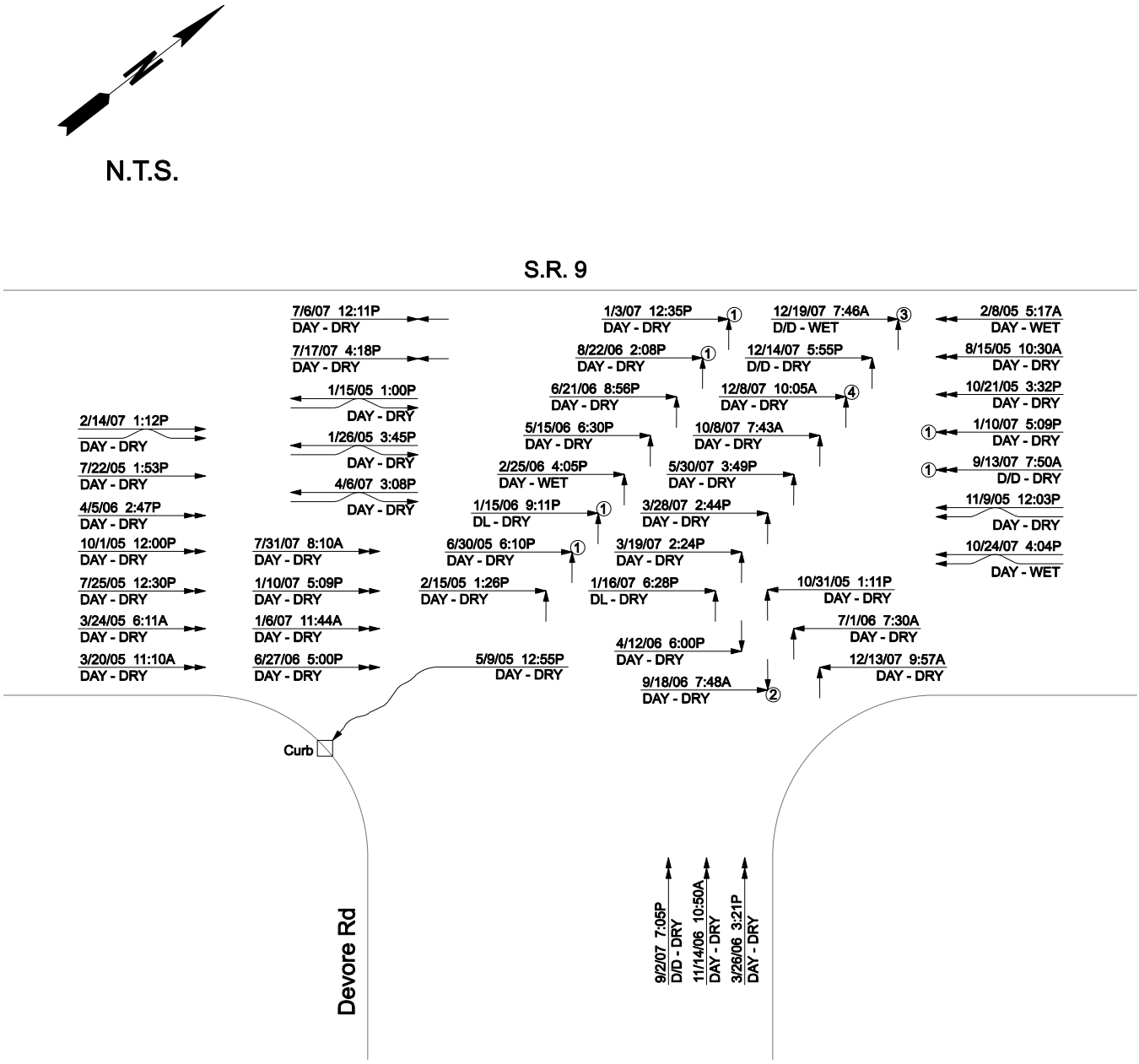
Moving Vehicle (Direction of Travel)	Fixed Object	Time: A = AM, P = PM
Read End	Fatal Crash	Road Surface: DRY, WET
Angle	Injury Crash	Light Conditions: DAY = Daylight, D/D = Dawn/Dusk, DL = Dark - Lighted, DNL = Dark - Not Lighted
Head On		
Side Swipe		
Out of Control		

TOTAL NUMBER OF CRASHES AT LOCATION

1	Property Damage
0	Injury
0	Fatal
1	Total Crashes

COLLISION DIAGRAM

S.R. 9 AT CAMBRIDGE SQUARE/BUSINESS CENTER FROM 2005 TO 2007



LEGEND

Moving Vehicle (Direction of Travel)	Fixed Object	Time: A = AM, P = PM
Read End	Fatal Crash	Road Surface: DRY, WET
Angle	Injury Crash	Light Conditions: DAY = Daylight, D/D = Dawn/Dusk, DL = Dark - Lighted, DNL = Dark - Not Lighted
Head On		
Side Swipe		
Out of Control		

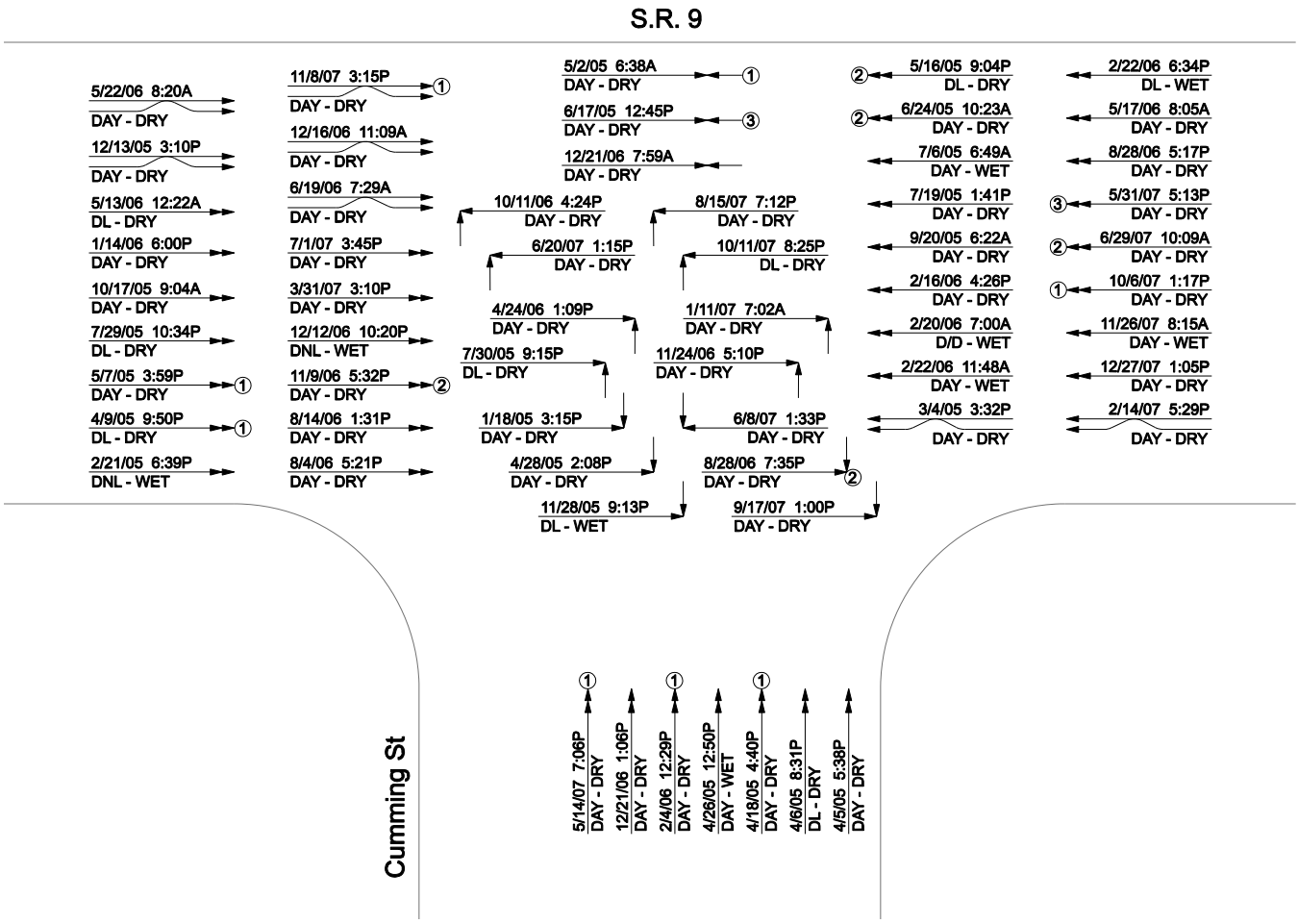
TOTAL NUMBER OF CRASHES AT LOCATION

39	Property Damage
9	Injury
0	Fatal
48	Total Crashes

COLLISION DIAGRAM

S.R. 9 AT DEVORE RD
FROM 2005 TO 2007

N.T.S.



LEGEND

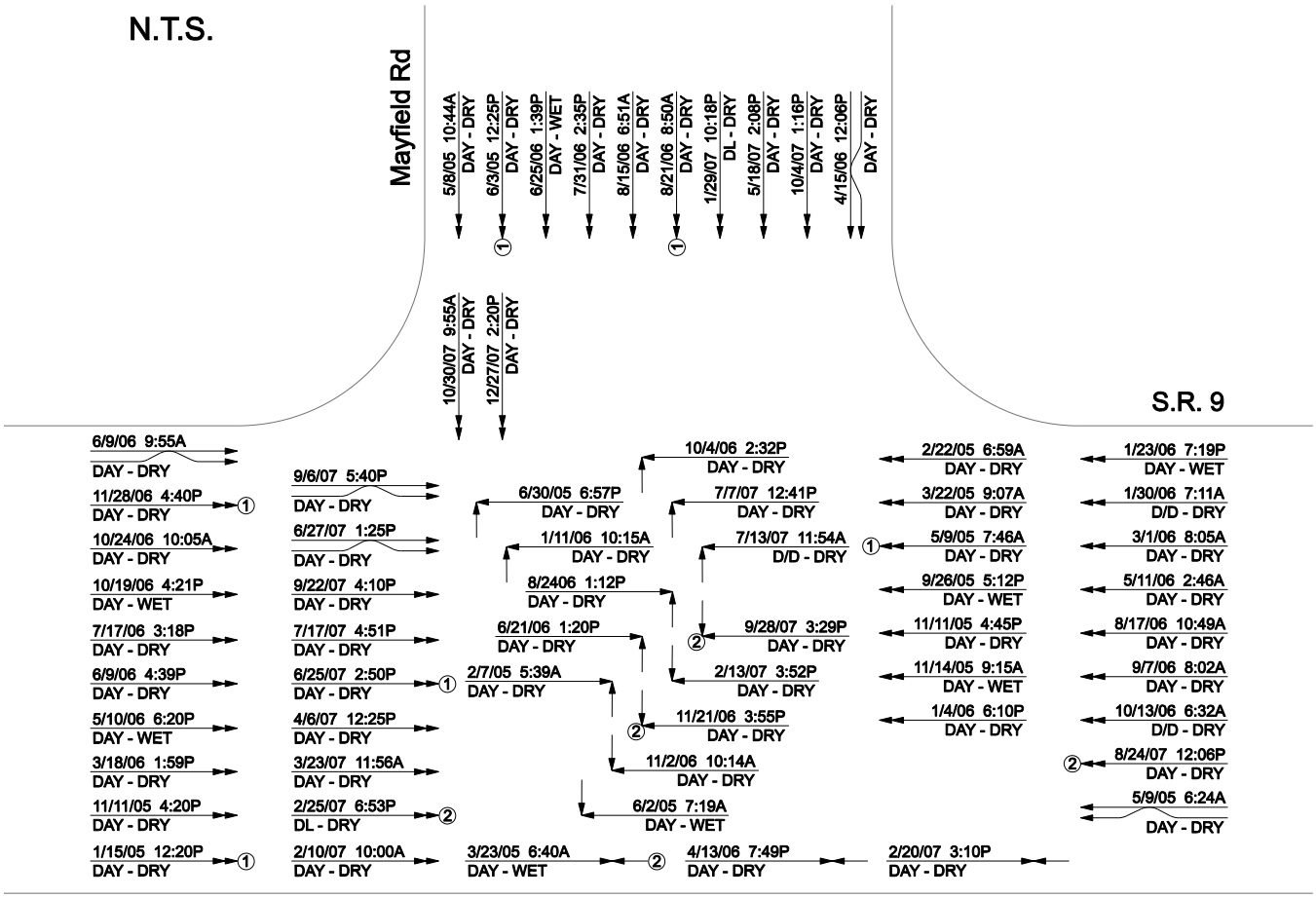
Moving Vehicle (Direction of Travel)	Fixed Object	Time: A = AM, P = PM
Read End	Fatal Crash	Road Surface: DRY, WET
Angle	Injury Crash	Light Conditions: DAY = Daylight, D/D = Dawn/Dusk, DL = Dark - Lighted, DNL = Dark - Not Lighted
Head On		
Side Swipe		
Out of Control		

TOTAL NUMBER OF CRASHES AT LOCATION

45	Property Damage
15	Injury
0	Fatal
60	Total Crashes

COLLISION DIAGRAM

S.R. 9 AT CUMMING STREET FROM 2005 TO 2007



LEGEND

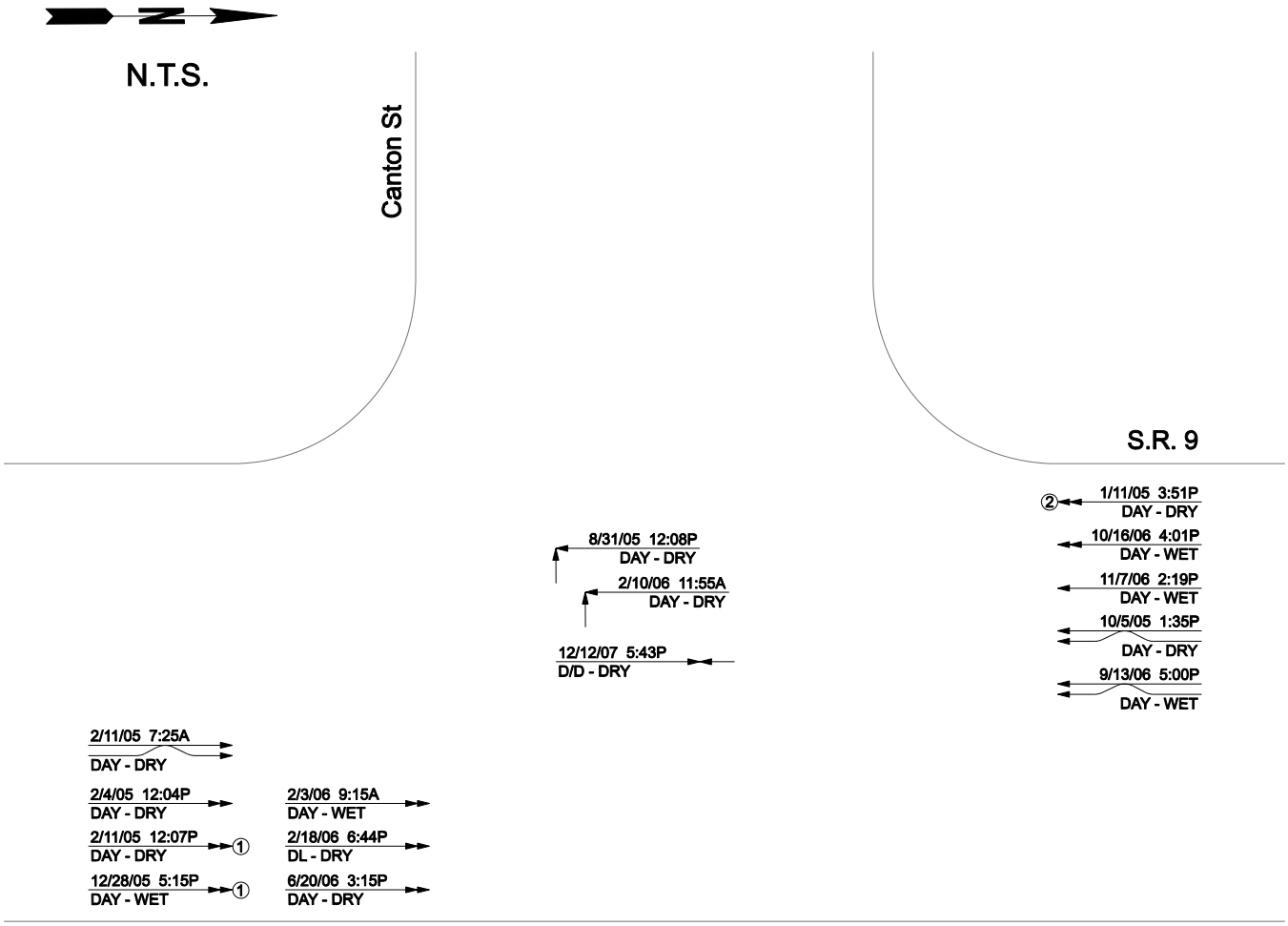
Moving Vehicle (Direction of Travel)	Fixed Object	Time: A = AM, P = PM
Read End	Fatal Crash	Road Surface: DRY, WET
Angle	Injury Crash	Light Conditions: DAY = Daylight, D/D = Dawn/Dusk, DL = Dark - Lighted, DNL = Dark - Not Lighted
Head On		
Side Swipe		
Out of Control		

TOTAL NUMBER OF CRASHES AT LOCATION

52	Property Damage
11	Injury
0	Fatal
63	Total Crashes

COLLISION DIAGRAM

S.R. 9 AT MAYFIELD ROAD FROM 2005 TO 2007



LEGEND

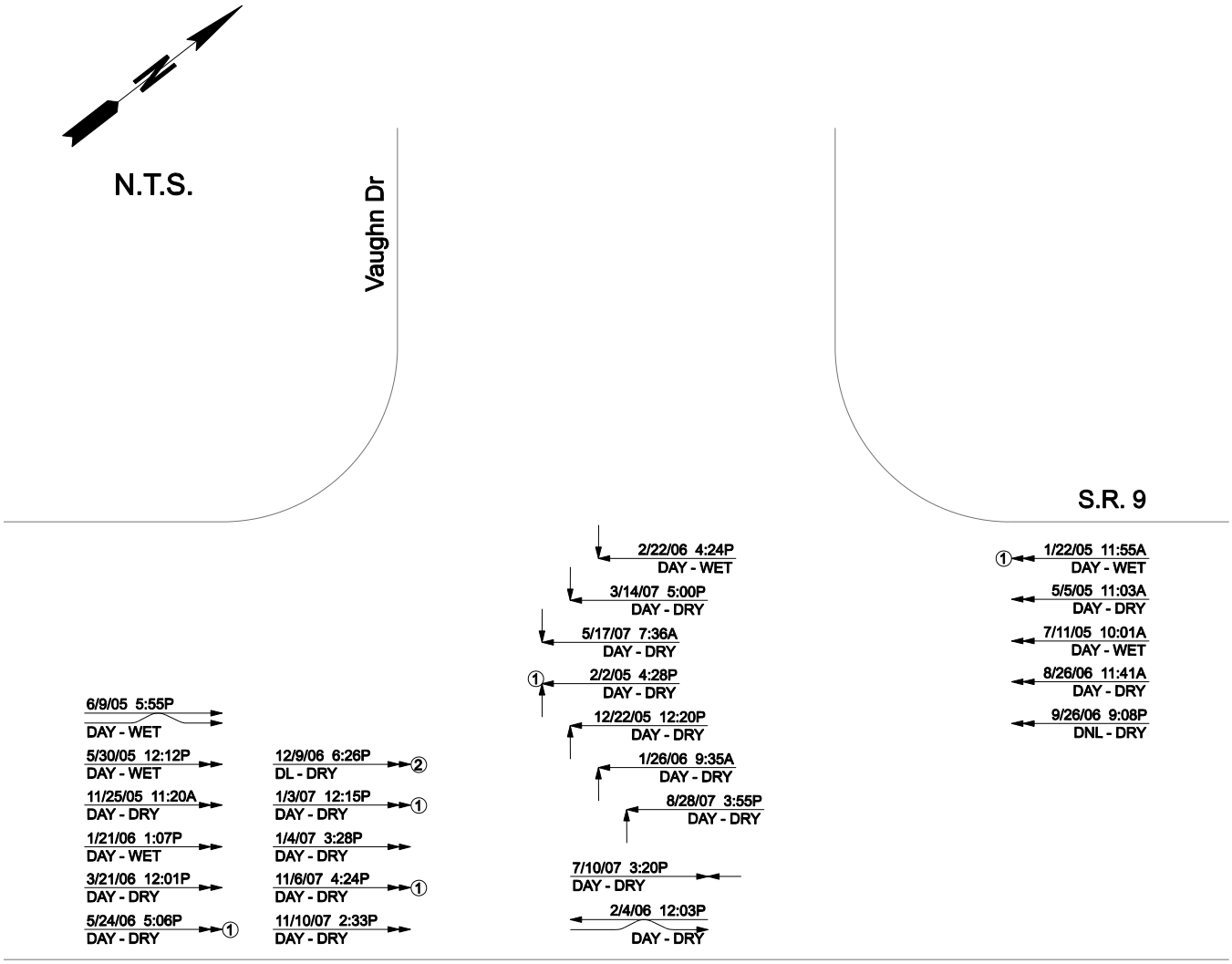
Moving Vehicle (Direction of Travel)	Fixed Object	Time: A = AM, P = PM
Read End	Fatal Crash	Road Surface: DRY, WET
Angle	Injury Crash	Light Conditions: DAY = Daylight, D/D = Dawn/Dusk, DL = Dark - Lighted, DNL = Dark - Not Lighted
Head On		
Side Swipe		
Out of Control		

TOTAL NUMBER OF CRASHES AT LOCATION

12	Property Damage
3	Injury
0	Fatal
15	Total Crashes

COLLISION DIAGRAM

S.R. 9 AT CANTON STREET
FROM 2005 TO 2007



LEGEND

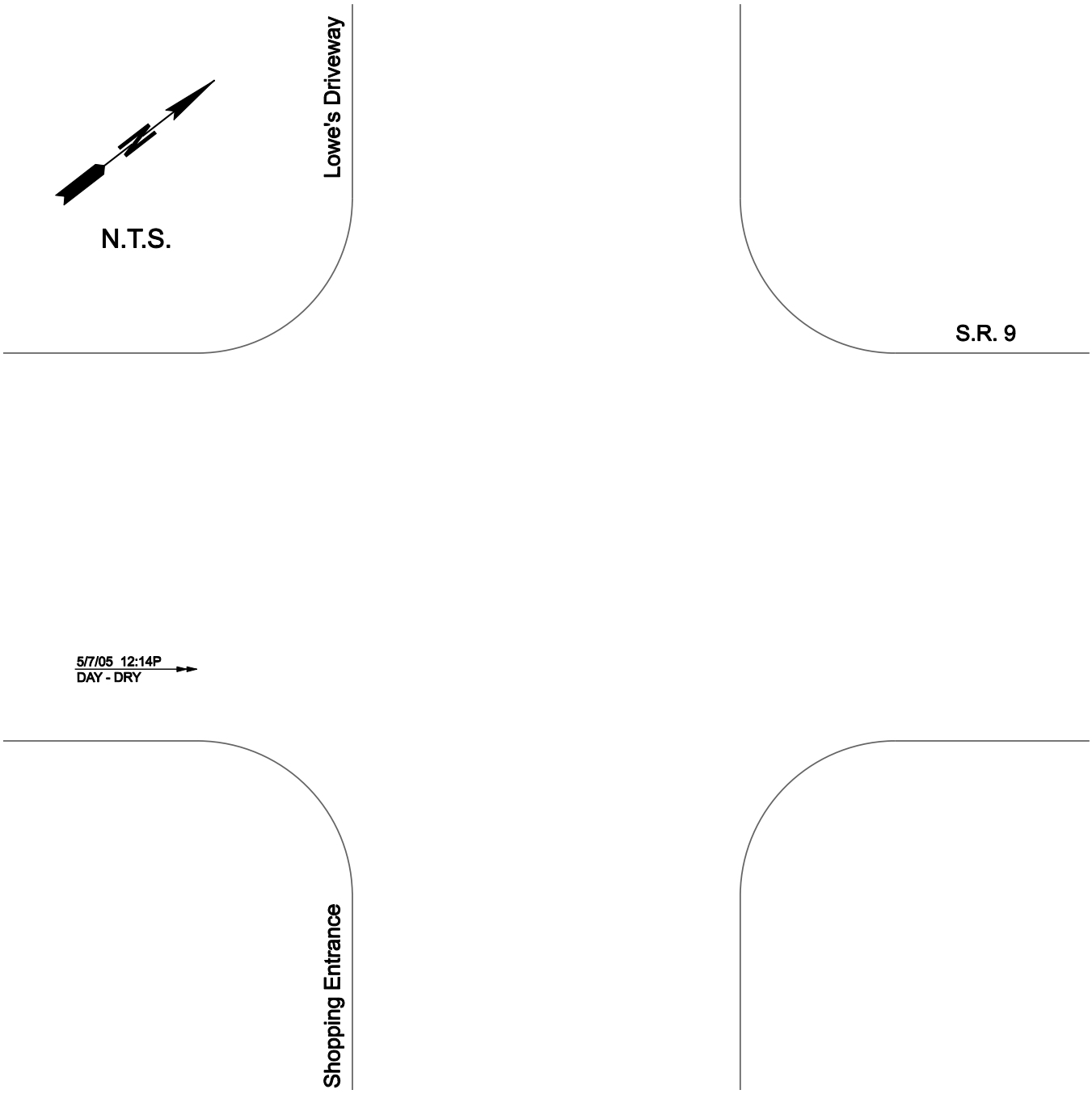
Moving Vehicle (Direction of Travel)	Fixed Object	Time: A = AM P = PM
Read End	Fatal Crash	Road Surface: DRY WET
Angle	Injury Crash	Light Conditions: DAY = Daylight D/D = Dawn/Dusk DL = Dark - Lighted DNL = Dark - Not Lighted
Head On		
Side Swipe		
Out of Control		

TOTAL NUMBER OF CRASHES AT LOCATION

19	Property Damage
6	Injury
0	Fatal
25	Total Crashes

COLLISION DIAGRAM

S.R. 9 AT VAUGHN DRIVE
FROM 2005 TO 2007



LEGEND

Moving Vehicle (Direction of Travel)	Fixed Object	Time: A = AM, P = PM	
Read End	Fatal Crash	Road Surface: DRY, WET	
Angle	Injury Crash	Light Conditions: DAY = Daylight, D/D = Dawn/Dusk, DL = Dark - Lighted, DNL = Dark - Not Lighted	
Head On			
Side Swipe			
Out of Control			

TOTAL NUMBER OF CRASHES AT LOCATION

1	Property Damage
0	Injury
0	Fatal
1	Total Crashes

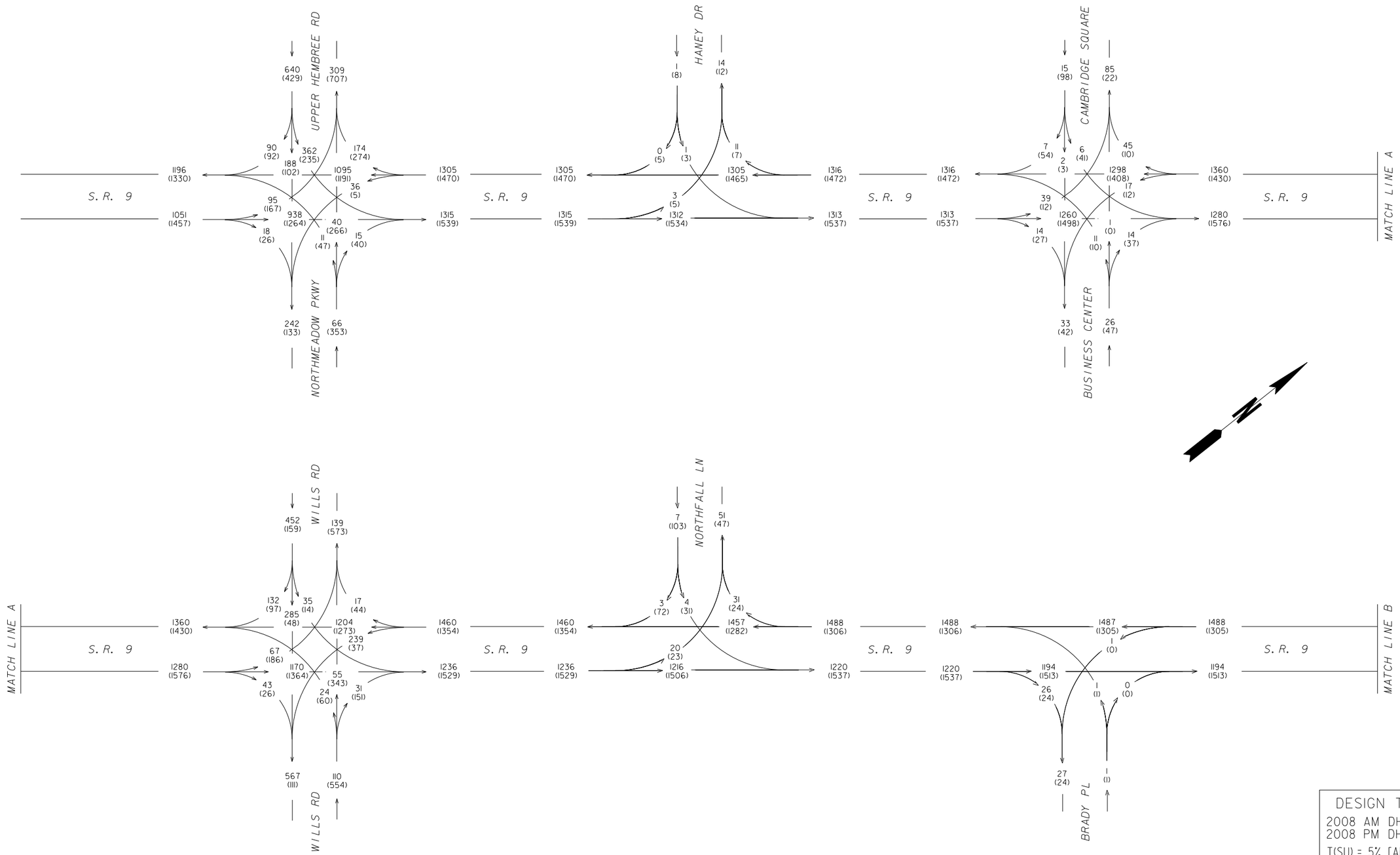
COLLISION DIAGRAM

S.R. 9 AT LOWE'S DRIVEWAY/SHOPPING ENTRANCE
FROM 2005 TO 2007

Attachment 5:

Traffic Diagrams (Approved March 17, 2010)

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2008 AM DHV = 000
2008 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

LONG ENGINEERING, INC.
1780 Corporate Drive
Suite 400
Norcross, Georgia 30093
Tel 770.931.8005
Fax 770.931.855
www.longeng.com

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

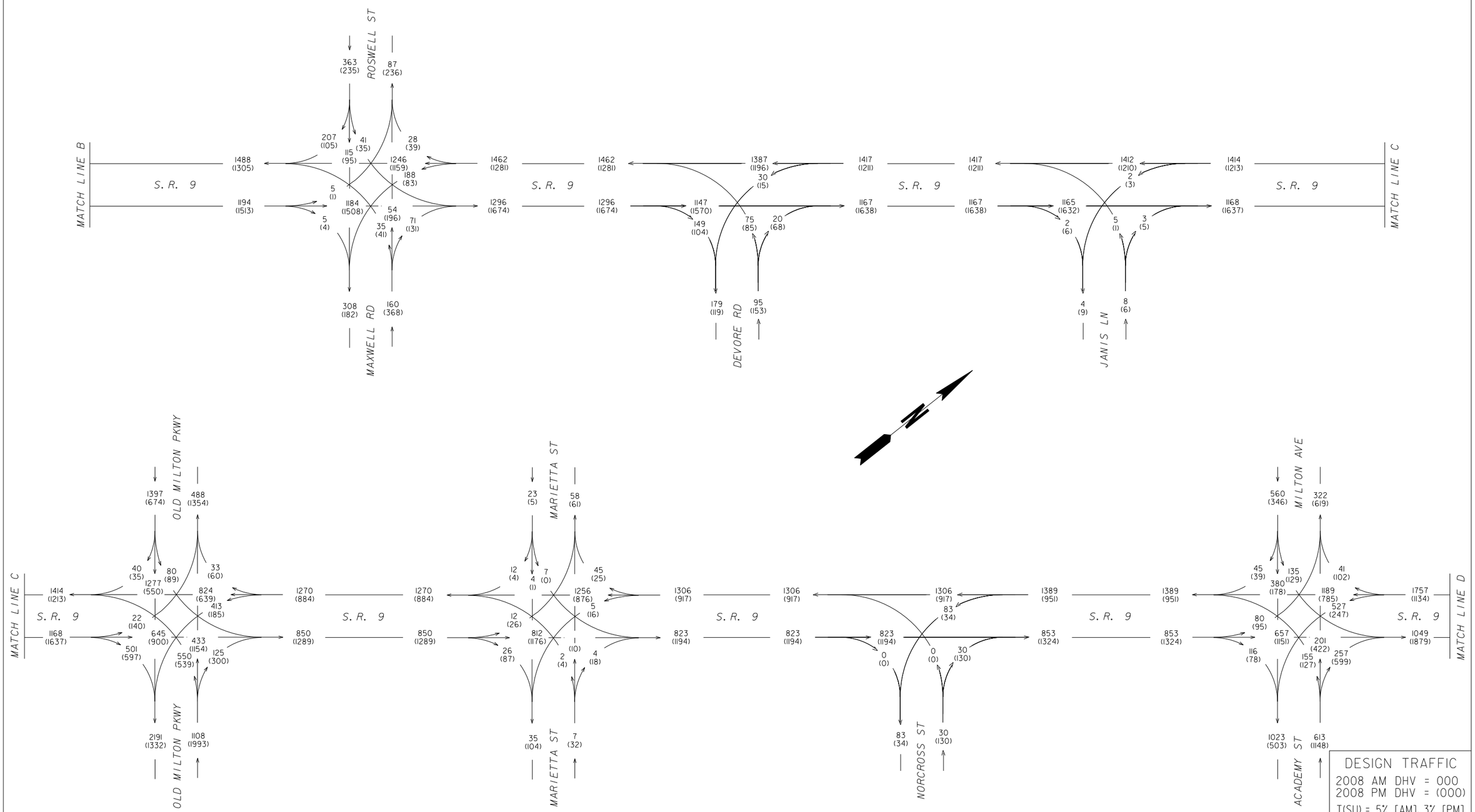
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2008 AM/PM DHV

DRAWING No. 10-01

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2008 AM DHV = 000
2008 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

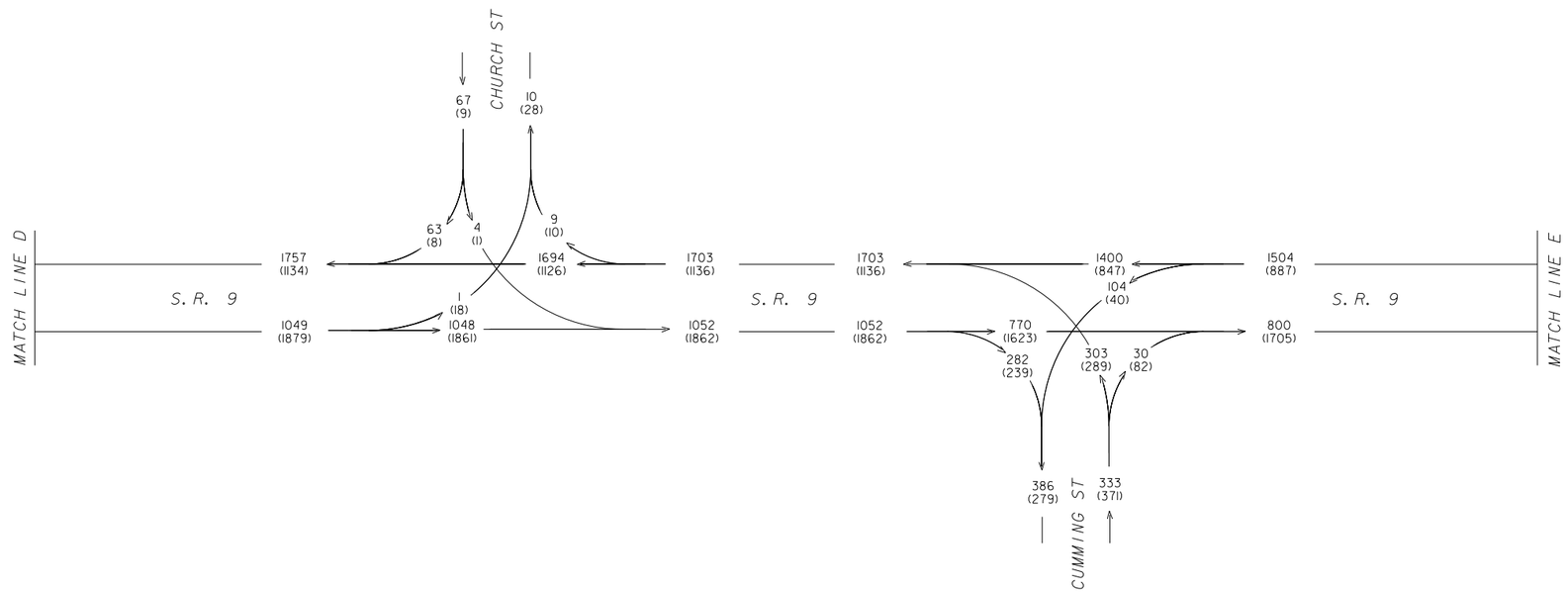
OFFICE: CONSULTANT DESIGN

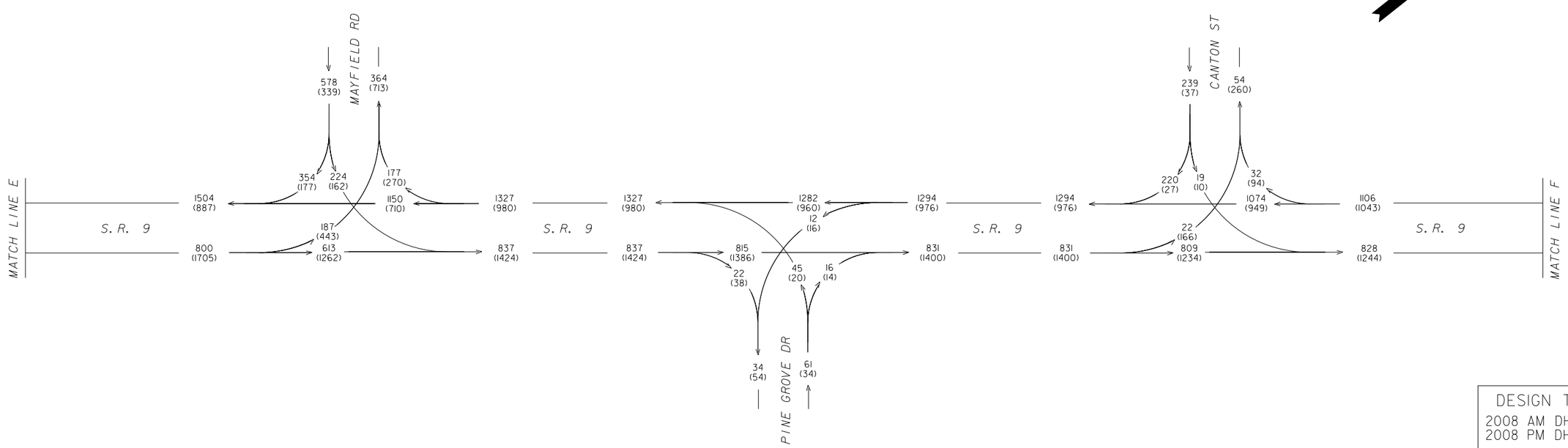
TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2008 AM/PM DHV

DRAWING No. 10-02

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH





DESIGN TRAFFIC

2008 AM DHV = 000
2008 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

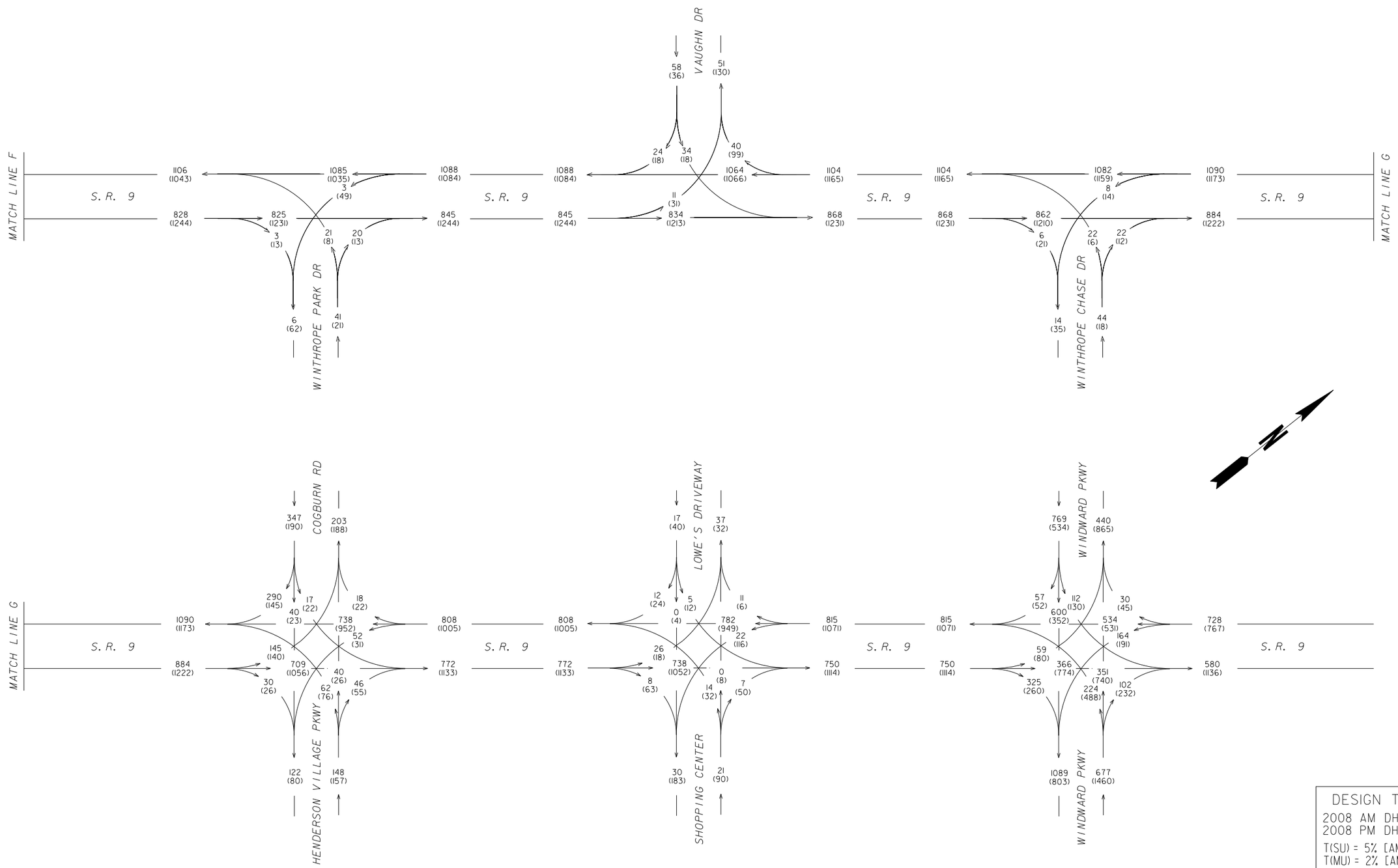
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2008 AM/PM DHV

DRAWING No. 10-03

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC
2008 AM DHV = 000
2008 PM DHV = (000)
T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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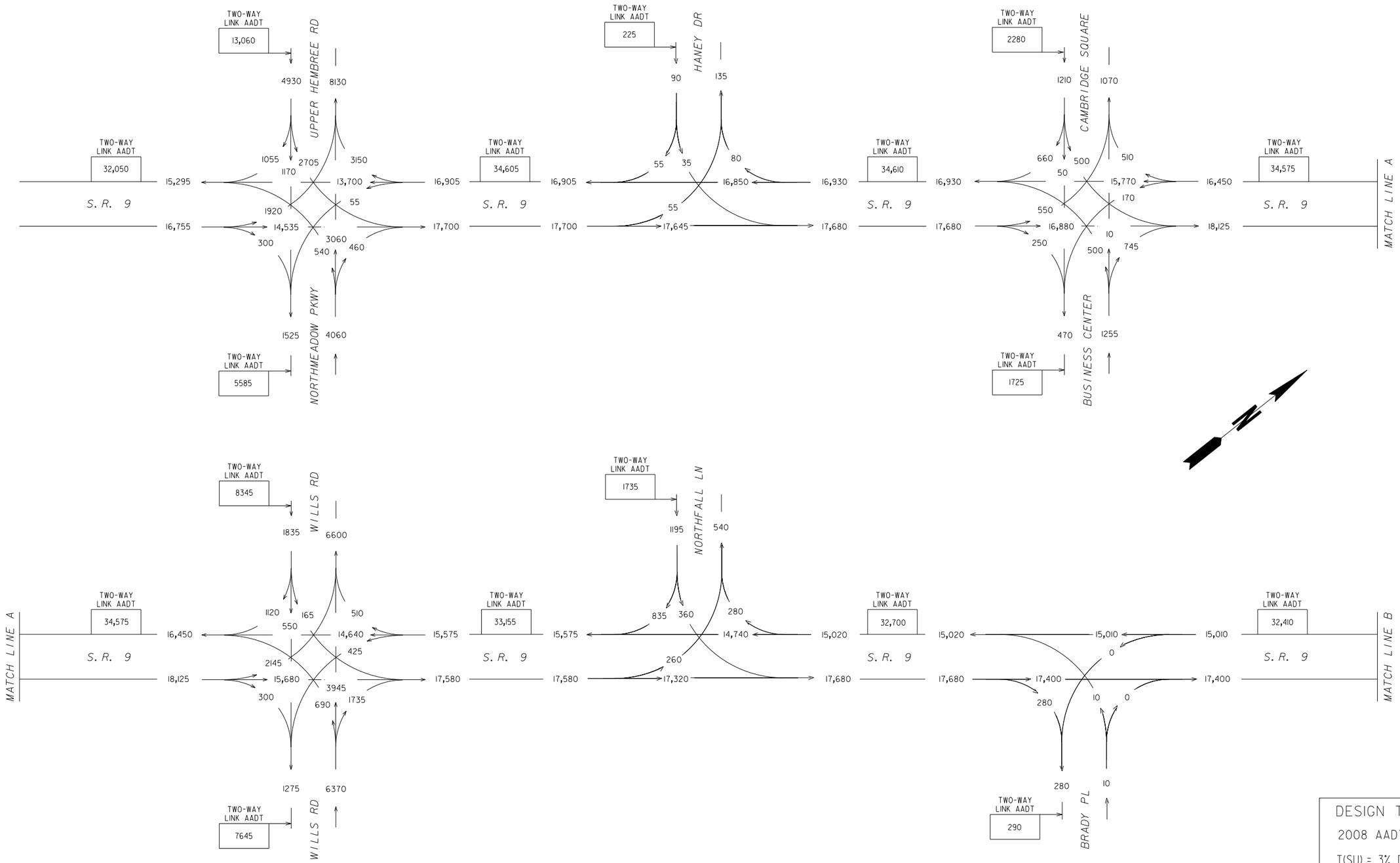
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2008 AM/PM DHV

DRAWING No.
10-04

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2008 AADT = 000

T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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Fax 770.931.855
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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

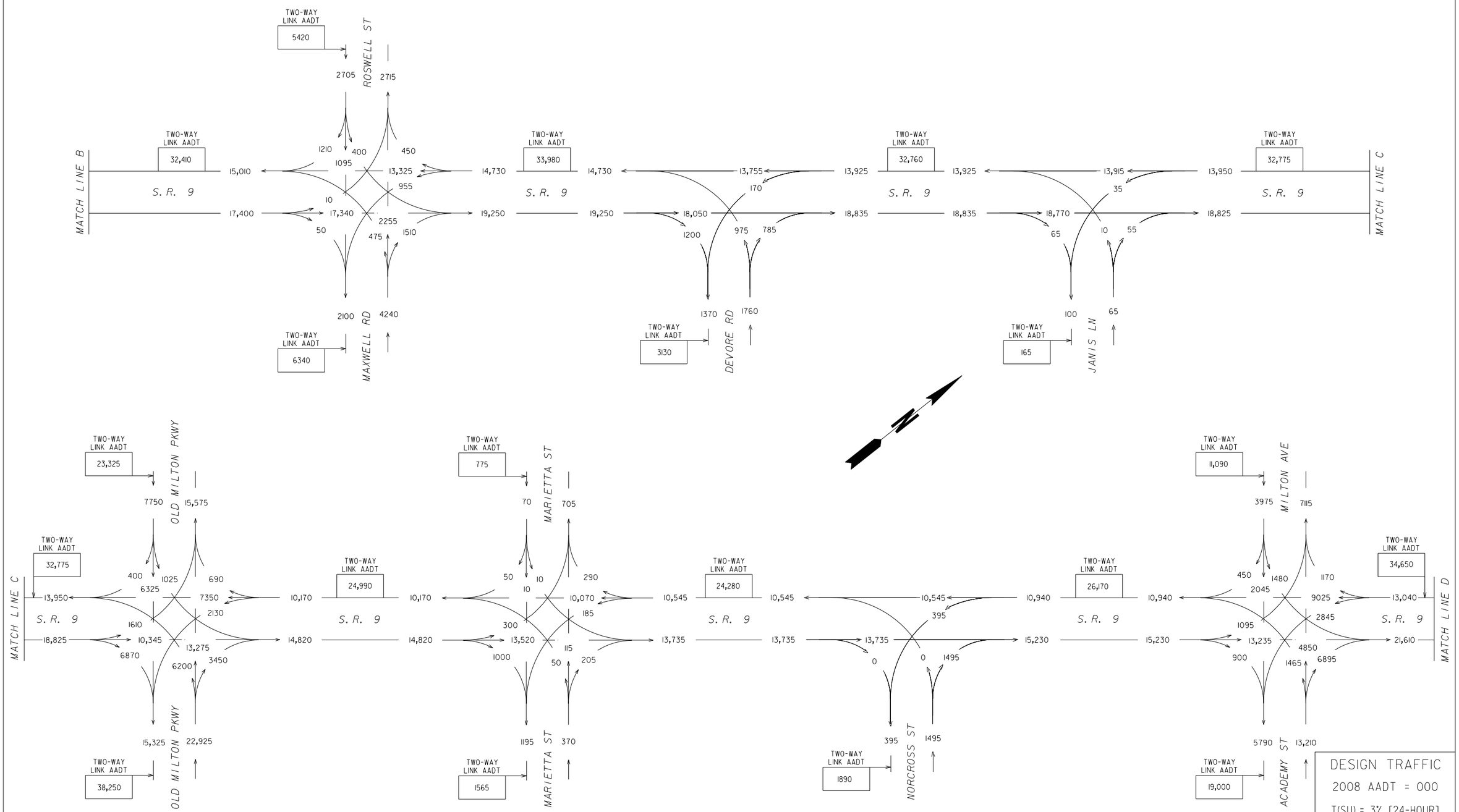
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2008 AADT

DRAWING No.
10-05

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2008 AADT = 000

T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

LONG ENGINEERING, INC.

1780 Corporate Drive
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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

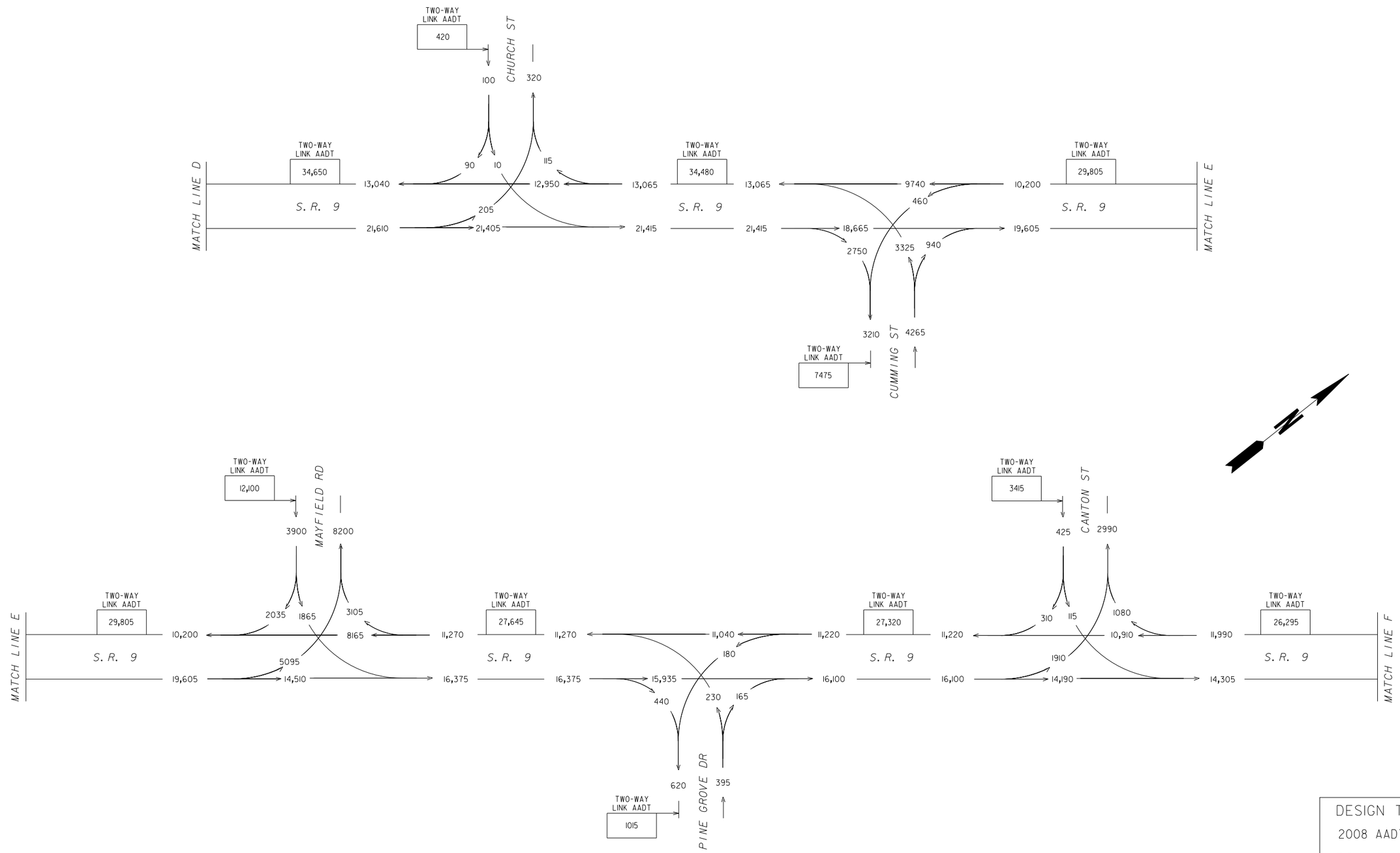
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2008 AADT

DRAWING No.
10-06

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC

2008 AADT = 000

T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
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SKB	N.T.S.

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STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

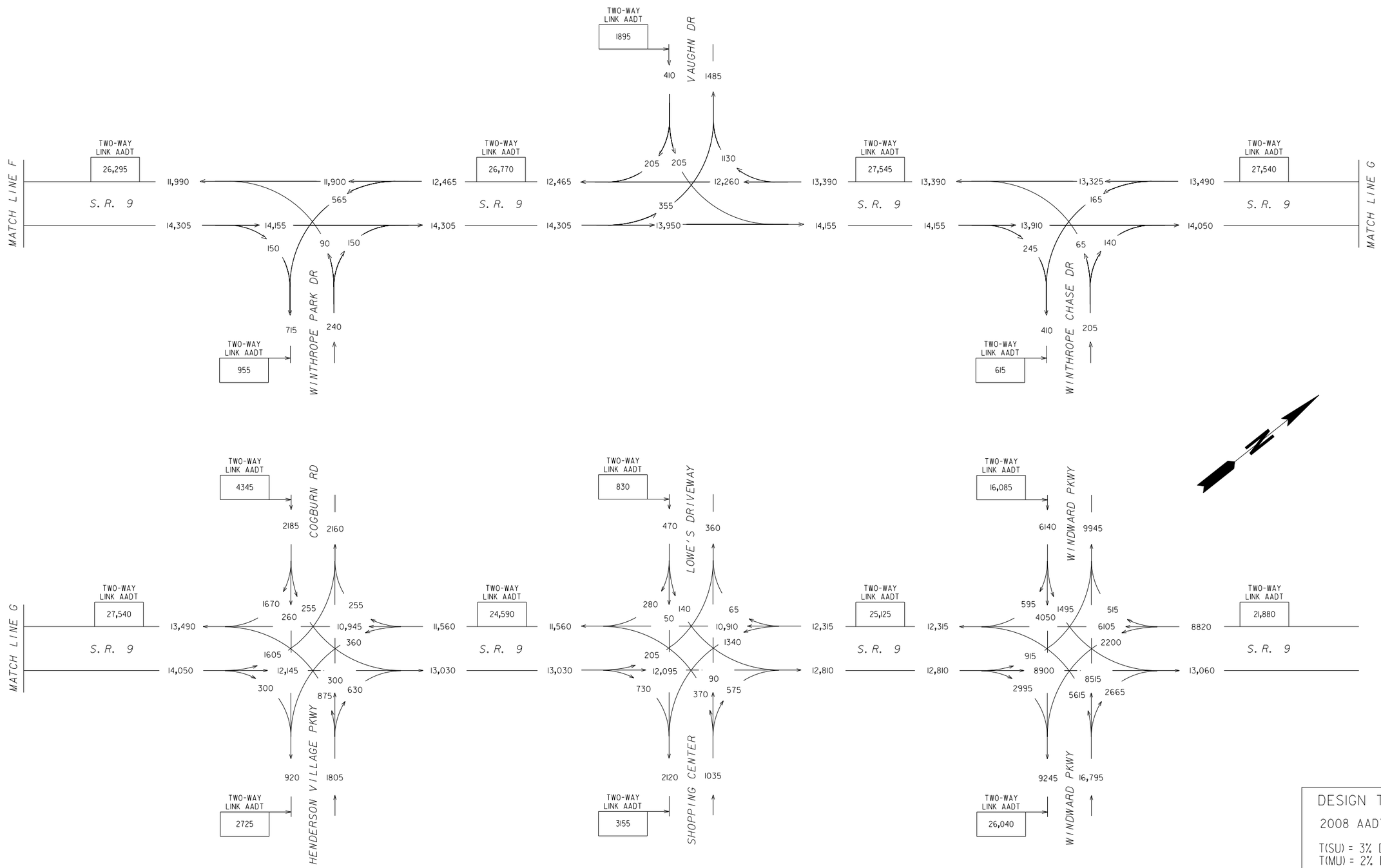
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2008 AADT

DRAWING No.
10-07

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC

2008 AADT = 000

T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: CONSULTANT DESIGN

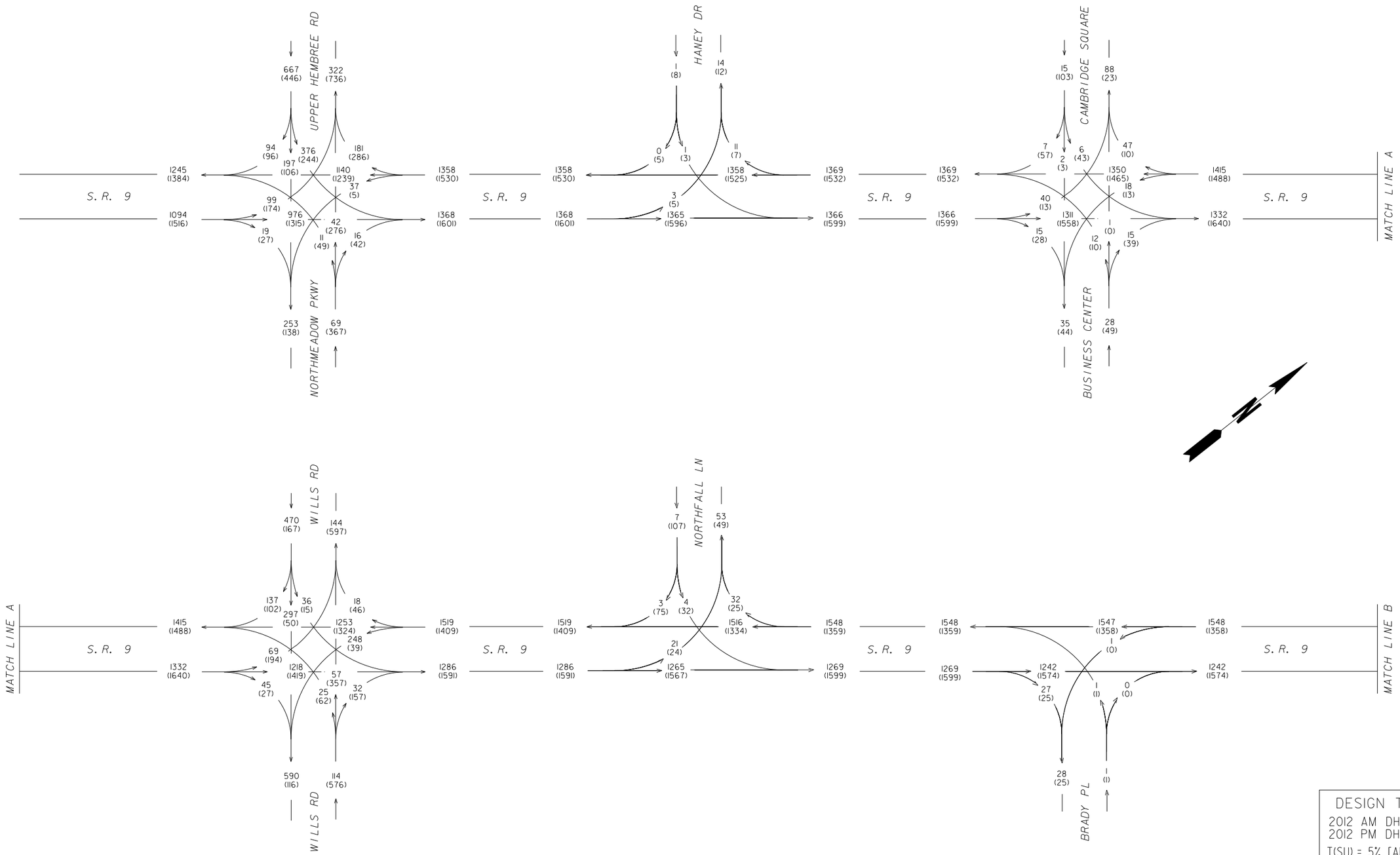
TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2008 AADT

DRAWING No. 10-08

GPLN

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC
2012 AM DHV = 000
2012 PM DHV = (000)
T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
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SKB	N.T.S.

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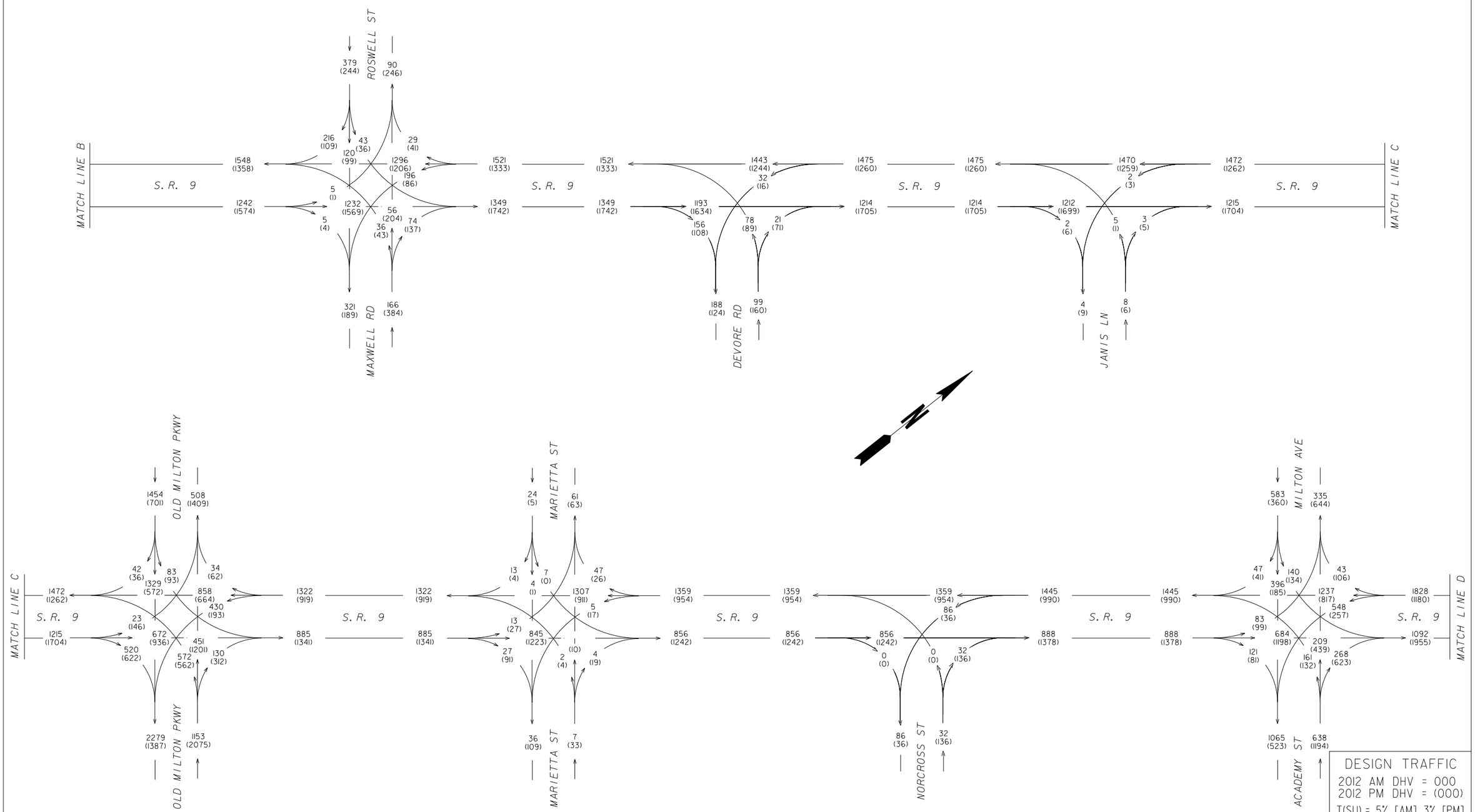
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-09



DESIGN TRAFFIC

2012 AM DHV = 000
2012 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
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SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
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OFFICE: CONSULTANT DESIGN

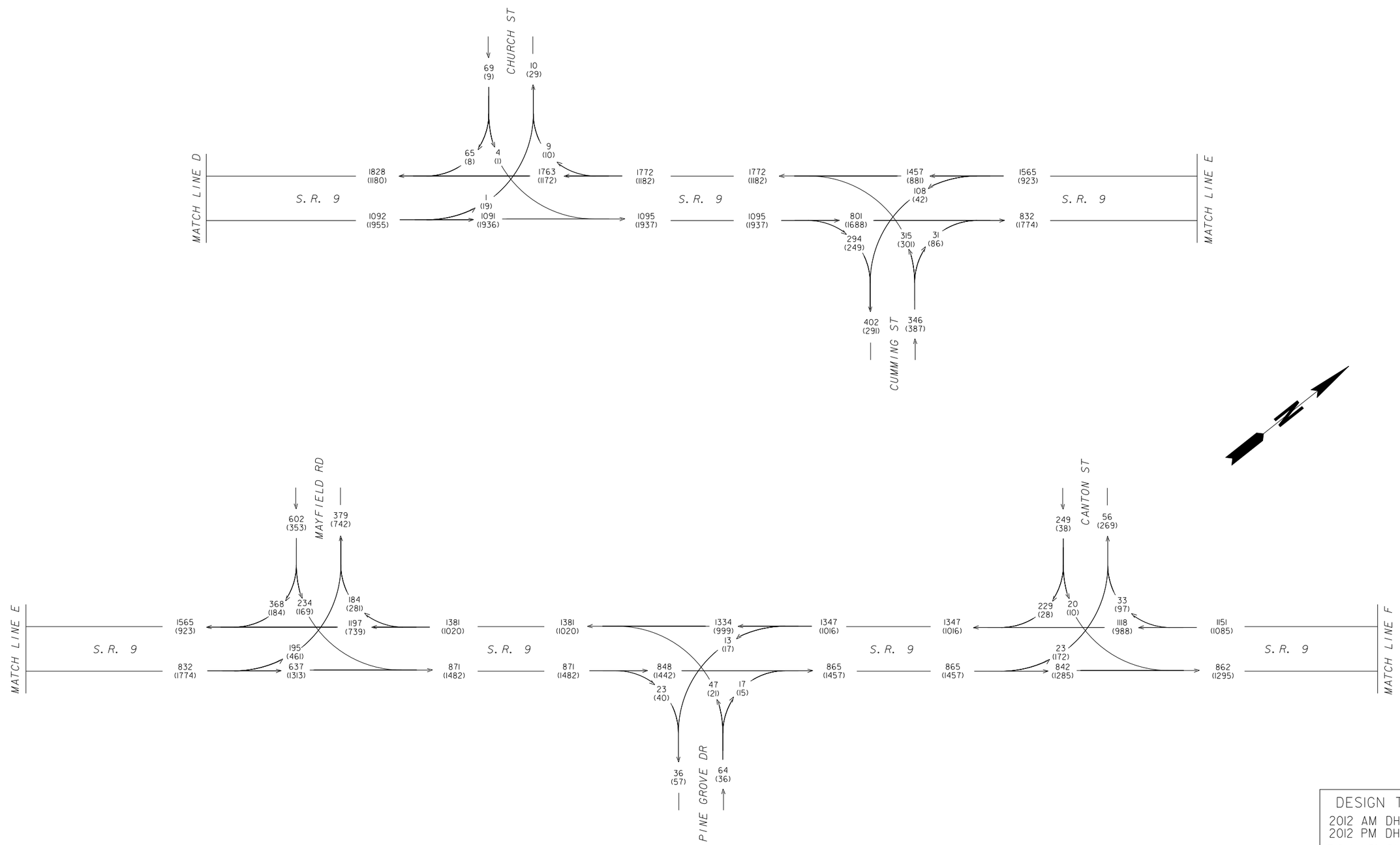
TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-10

GPLN

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC

2012 AM DHV = 000
2012 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
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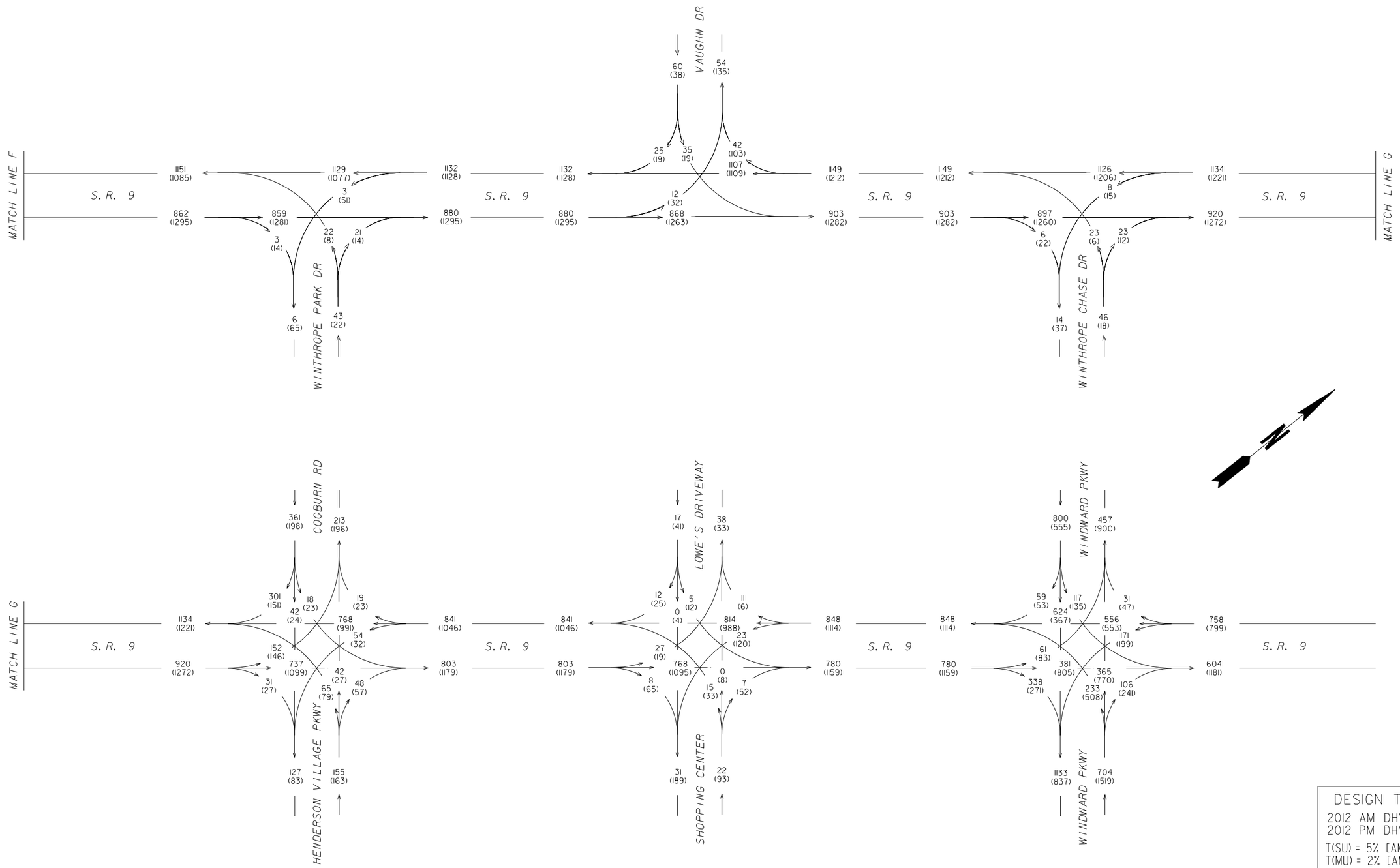
TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-11

GPLN

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC

2012 AM DHV = 000
2012 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
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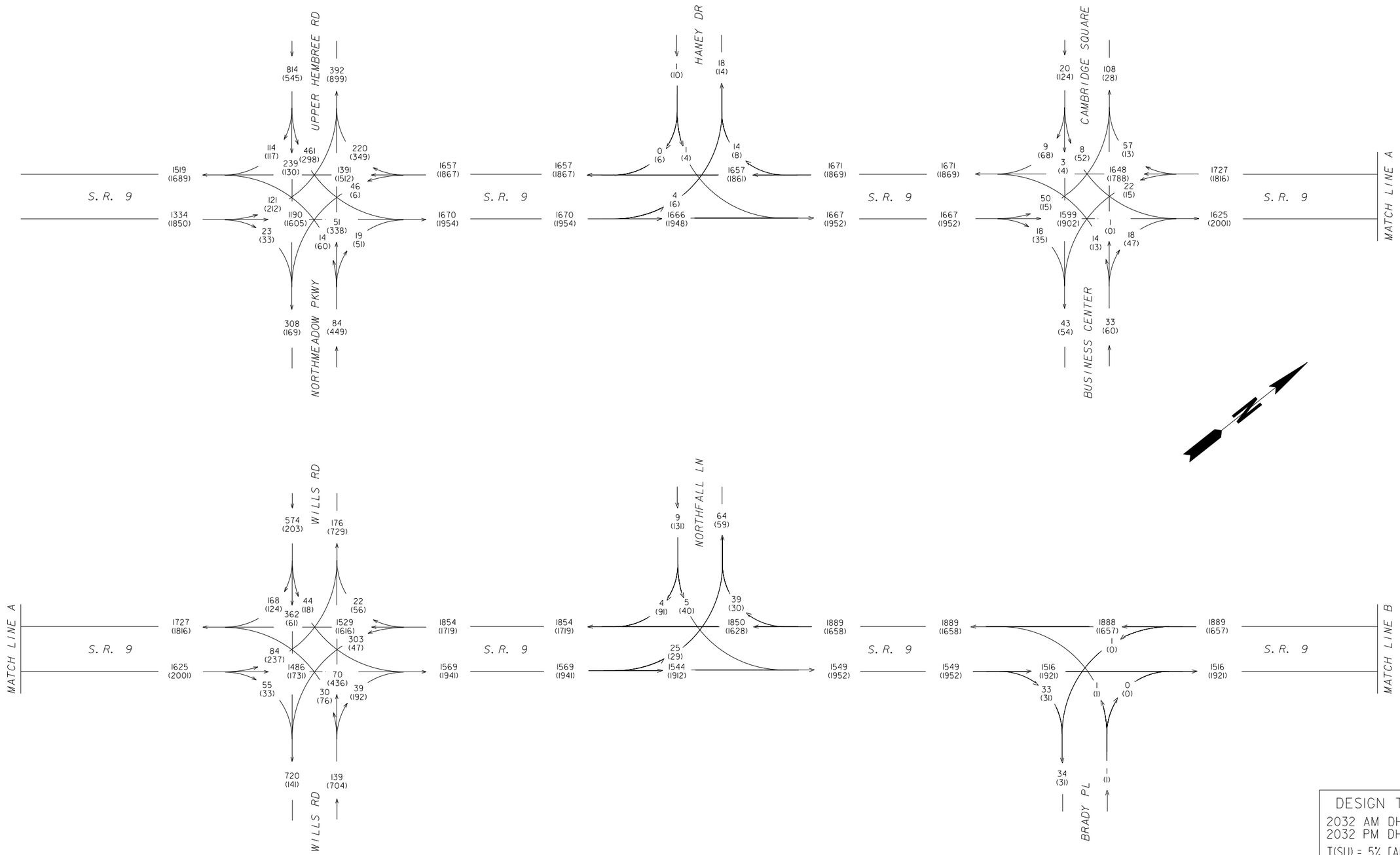
TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2012 AM/PM DHV

DRAWING No.
10-12

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2032 AM DHV = 000
2032 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
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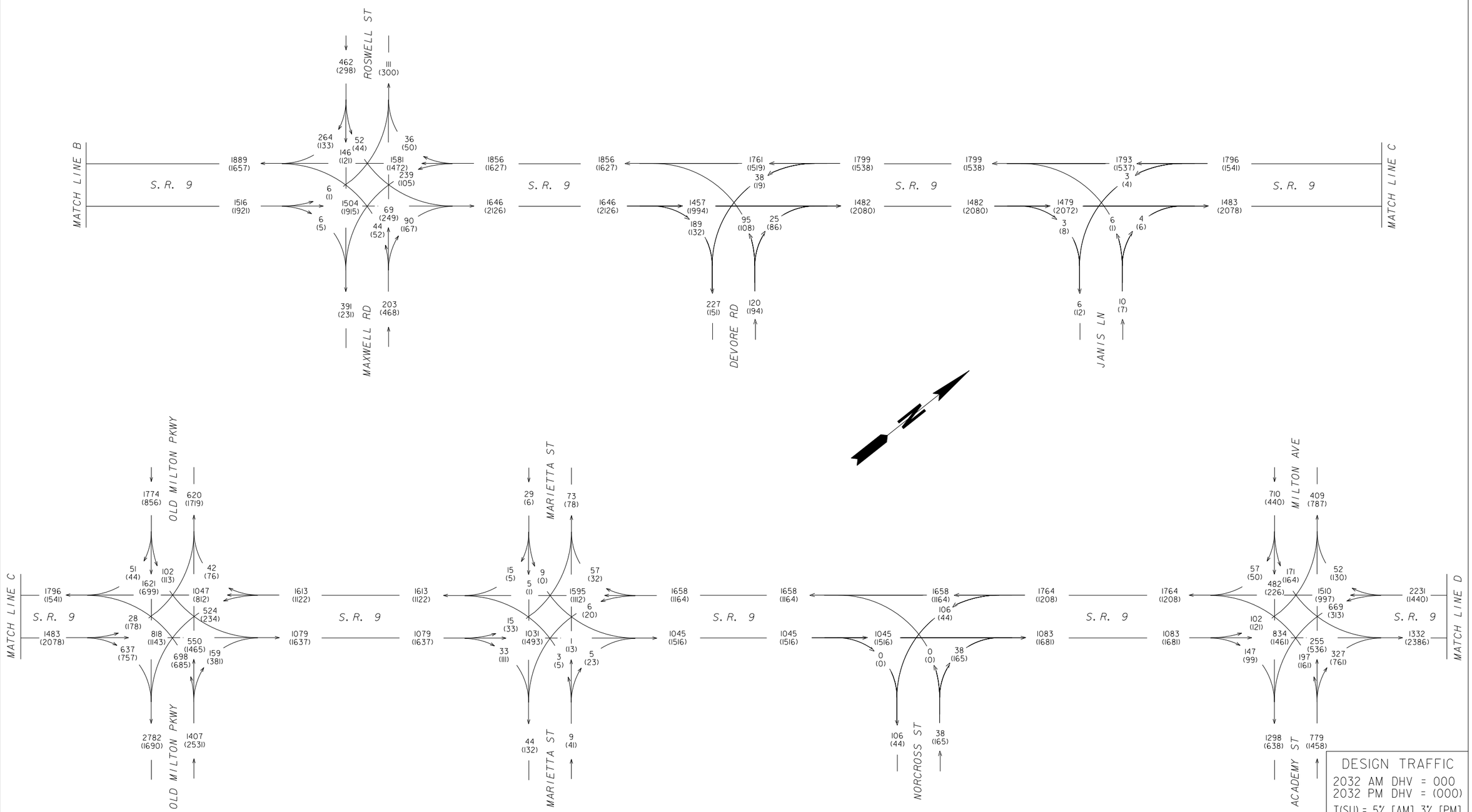
TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-13

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2032 AM DHV = 000
2032 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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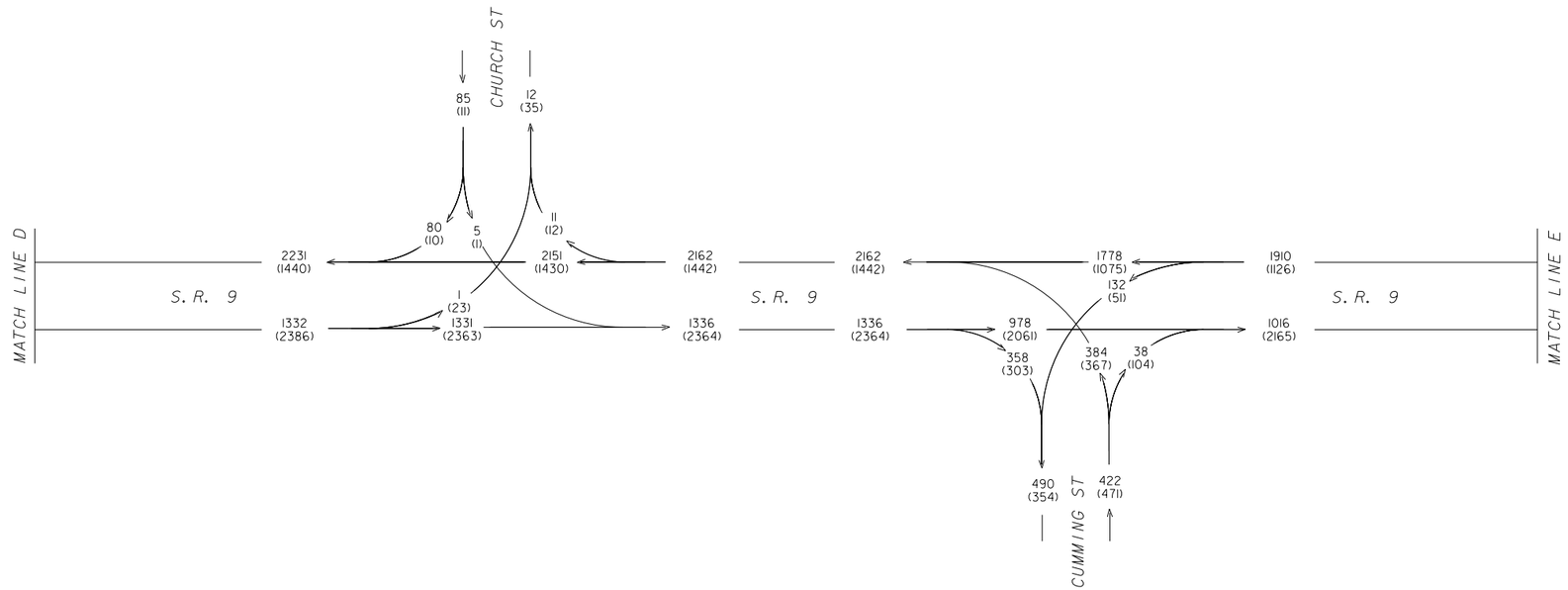
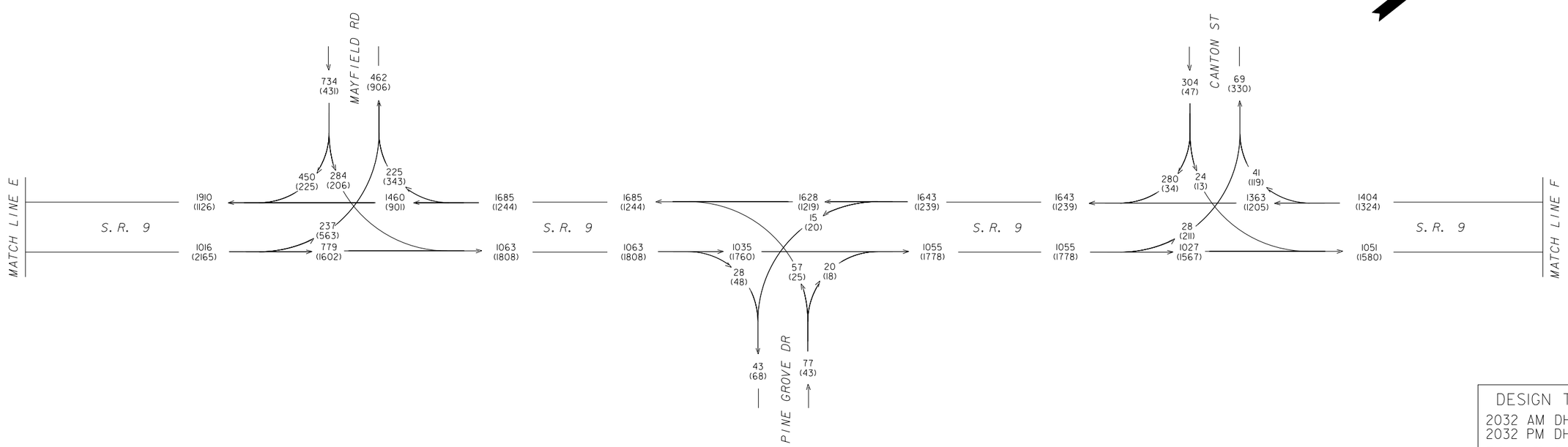
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-14





DESIGN TRAFFIC

2032 AM DHV = 000
2032 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
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SKB	N.T.S.

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REVISION DATES

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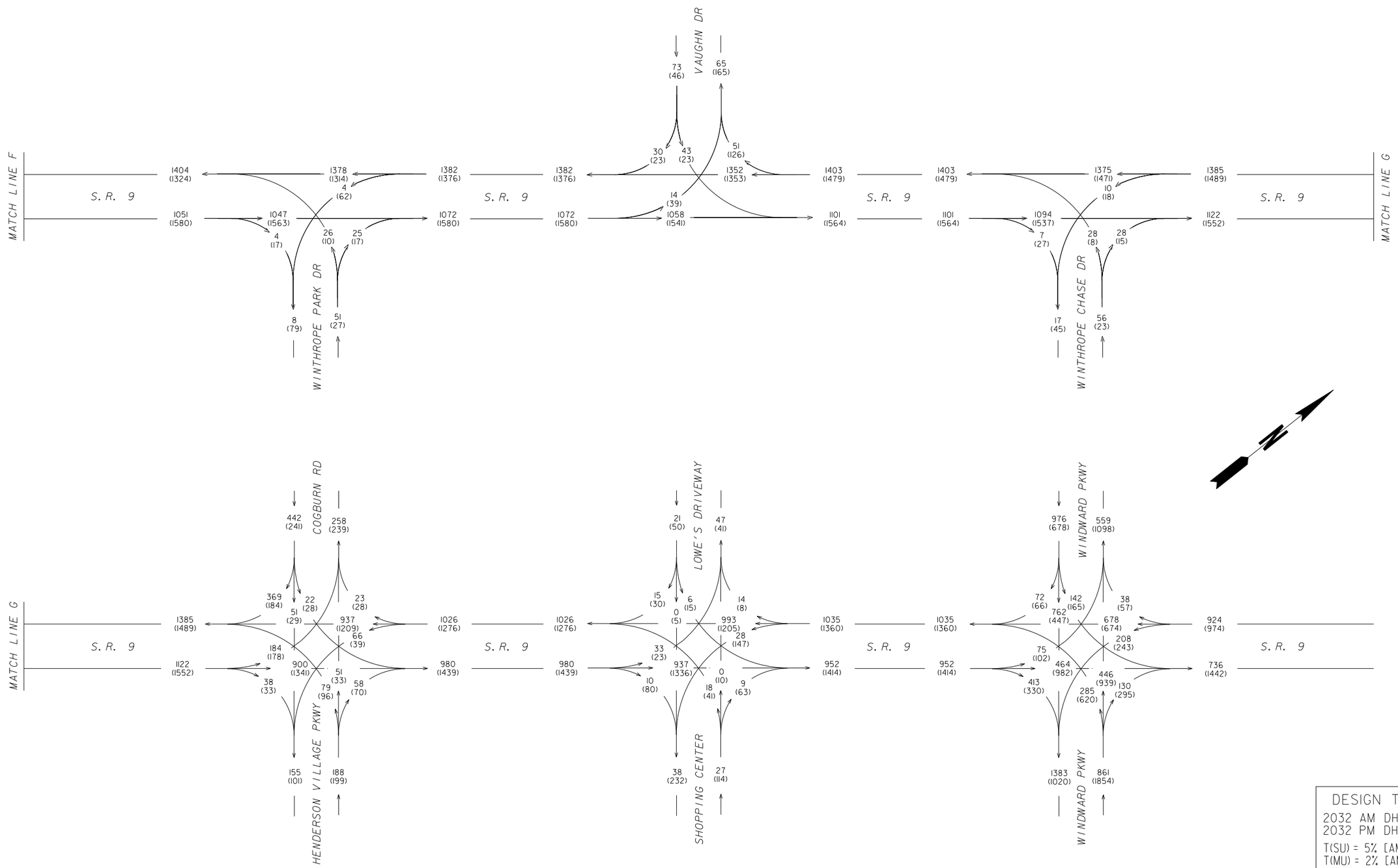
DEPARTMENT OF TRANSPORTATION

OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-15



DESIGN TRAFFIC

2032 AM DHV = 000
2032 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

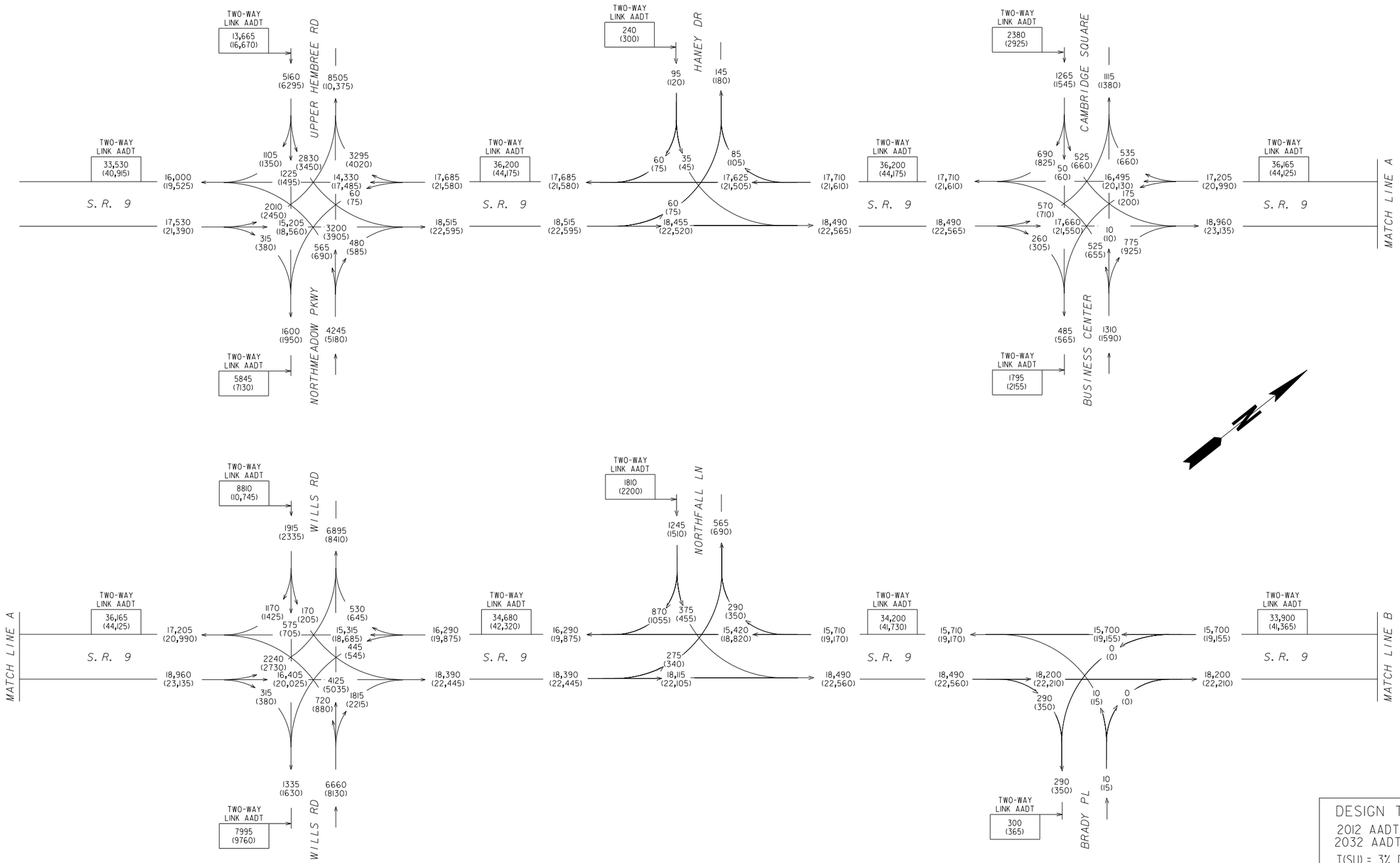
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-16

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2012 AADT = 000
2032 AADT = (000)

T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

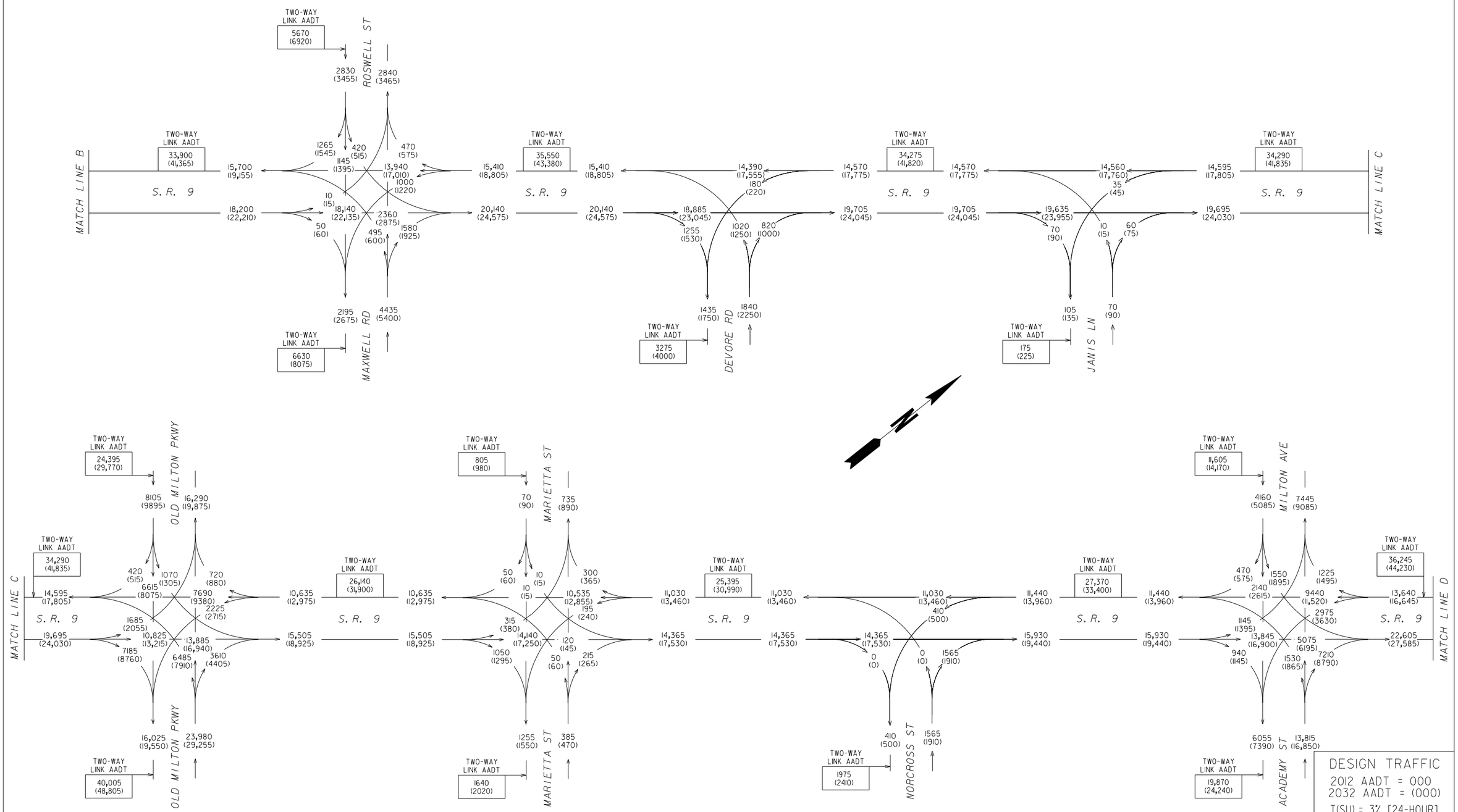
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-17

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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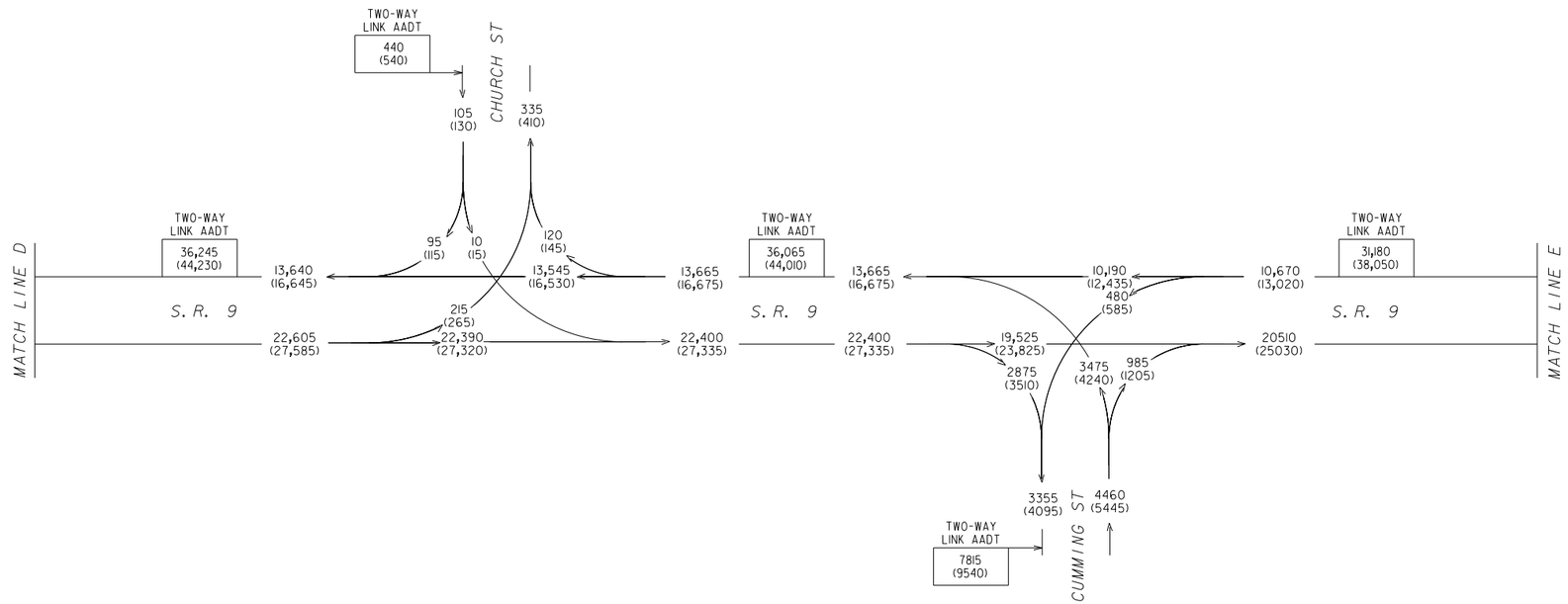
REVISION DATES

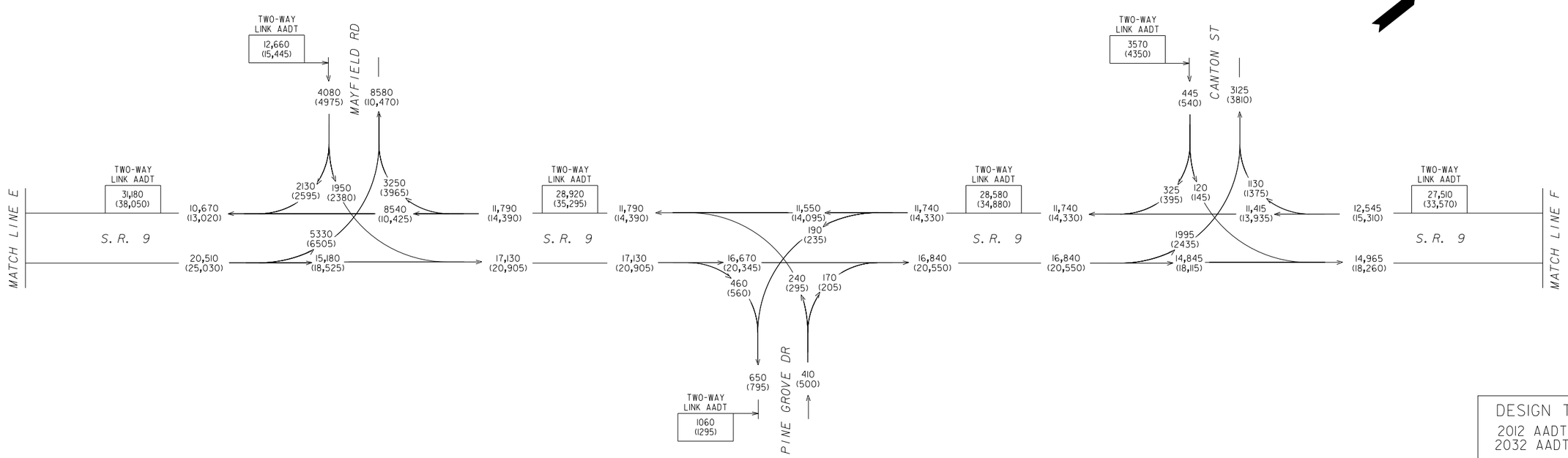
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-18

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH





DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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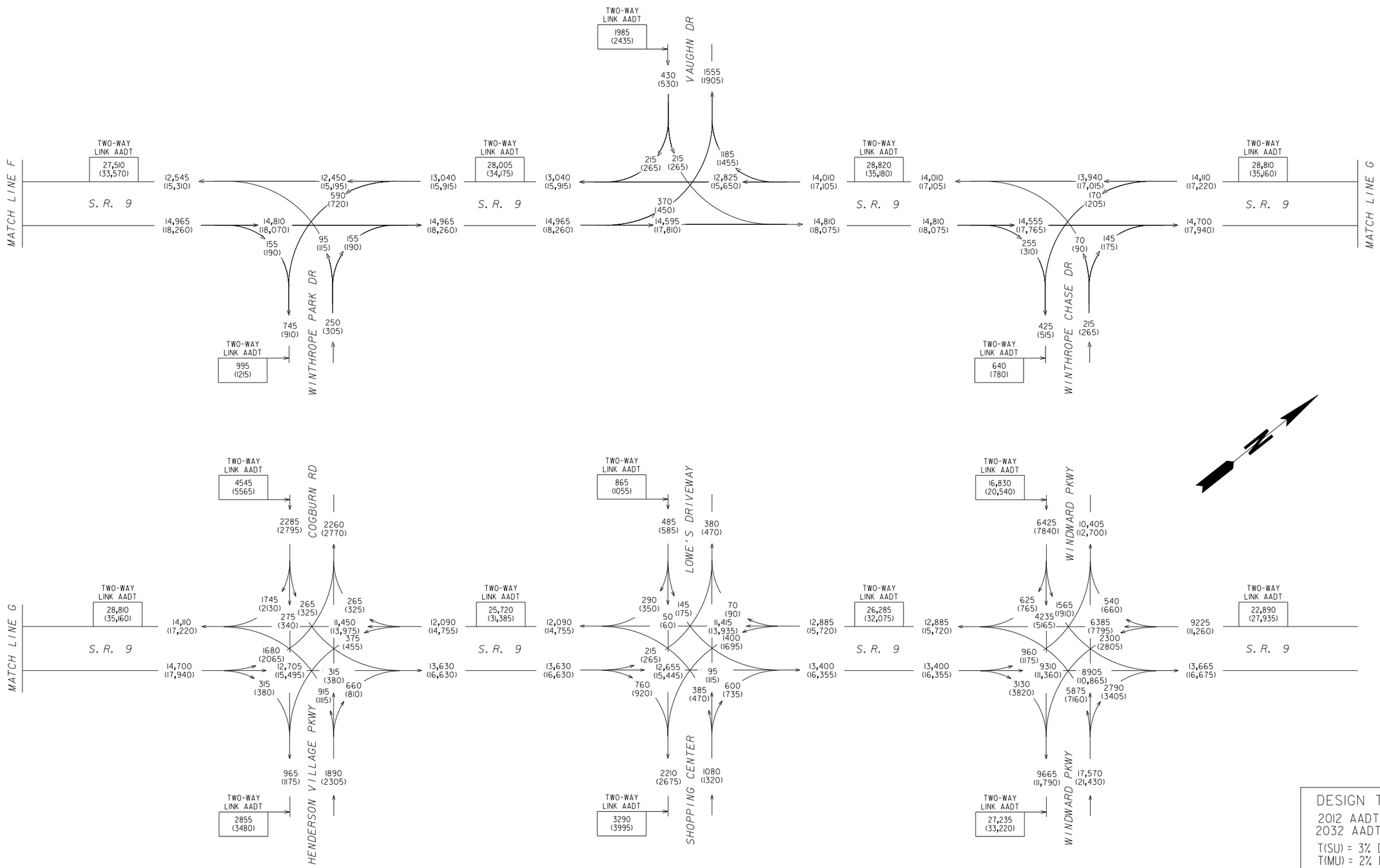
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-19



DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
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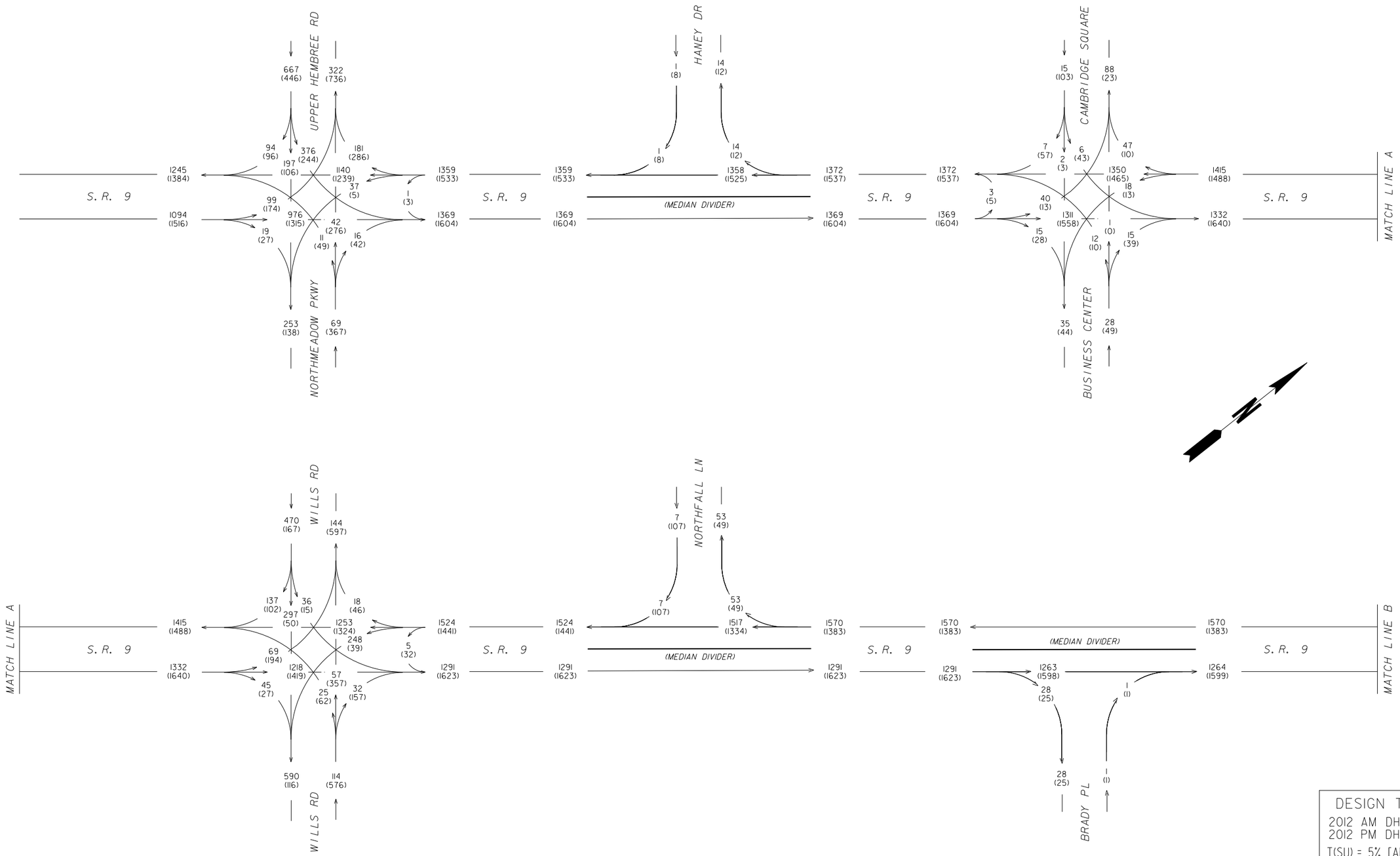
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (EXISTING CONDITIONS)
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-20

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2012 AM DHV = 000
2012 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

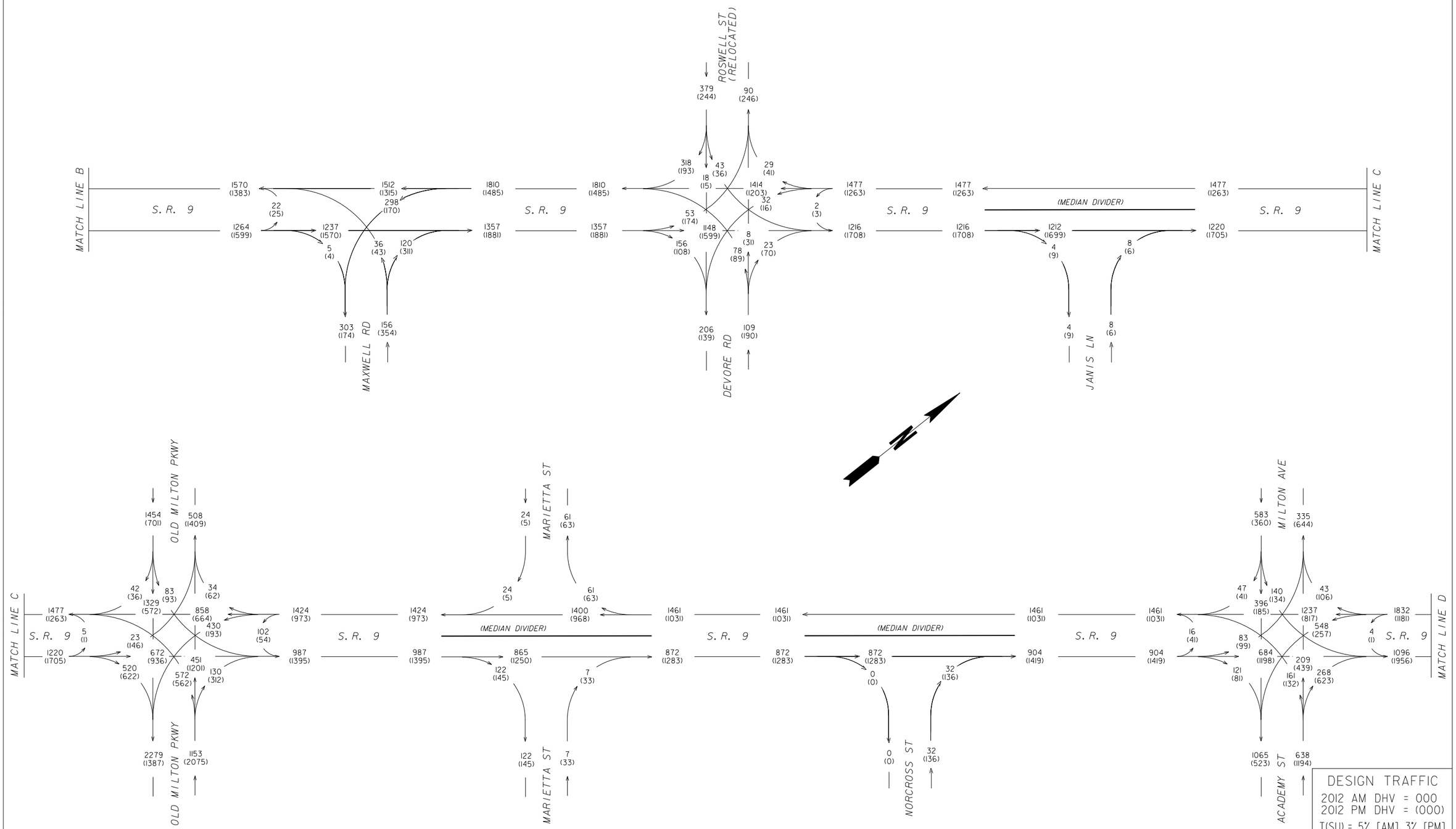
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-21

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC

2012 AM DHV = 000
2012 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
CHECKED BY	SCALE
SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: CONSULTANT DESIGN

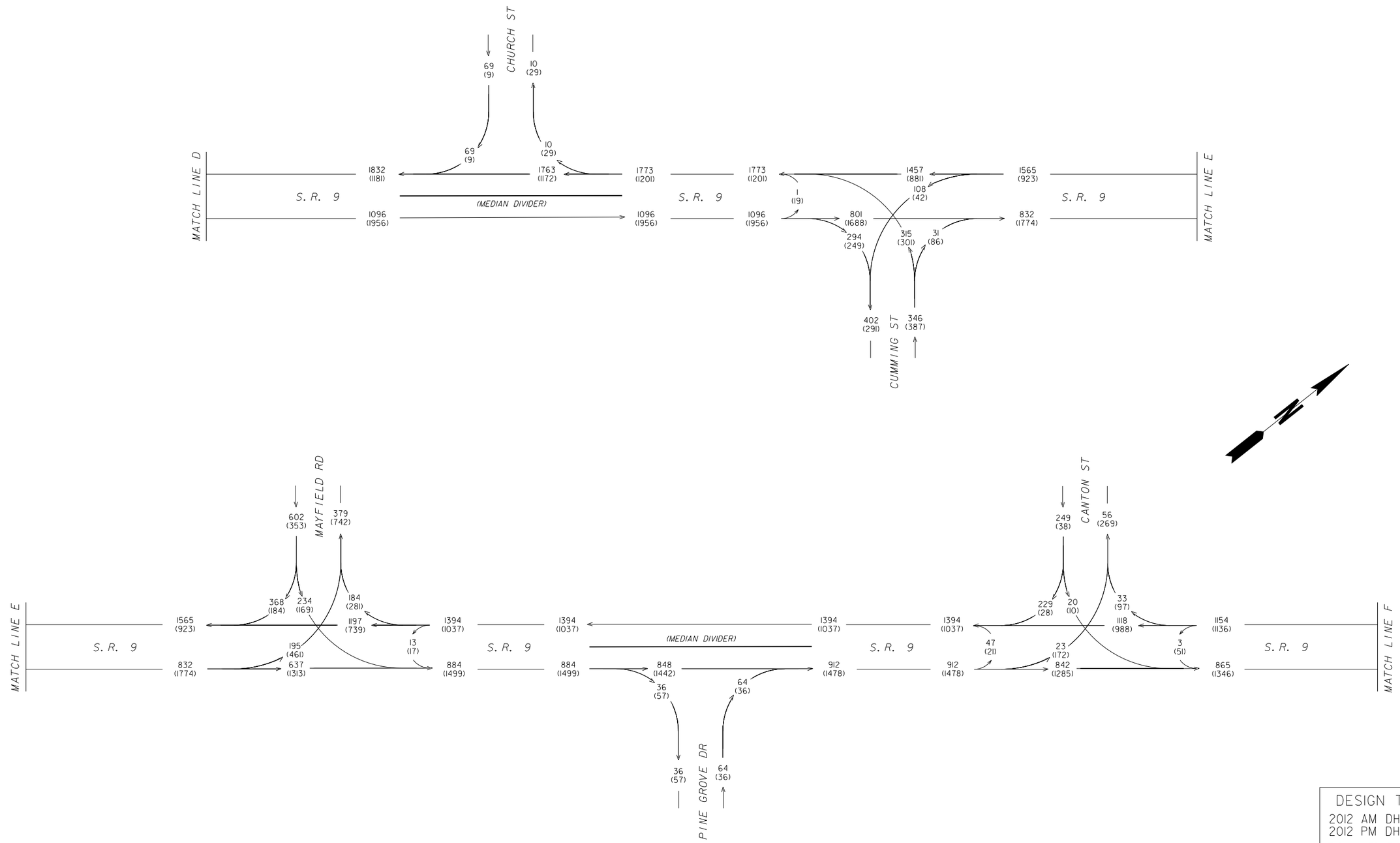
TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-22

GPLN

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH



DESIGN TRAFFIC

2012 AM DHV = 000
2012 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
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BC	3/10/10
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REVISION DATES

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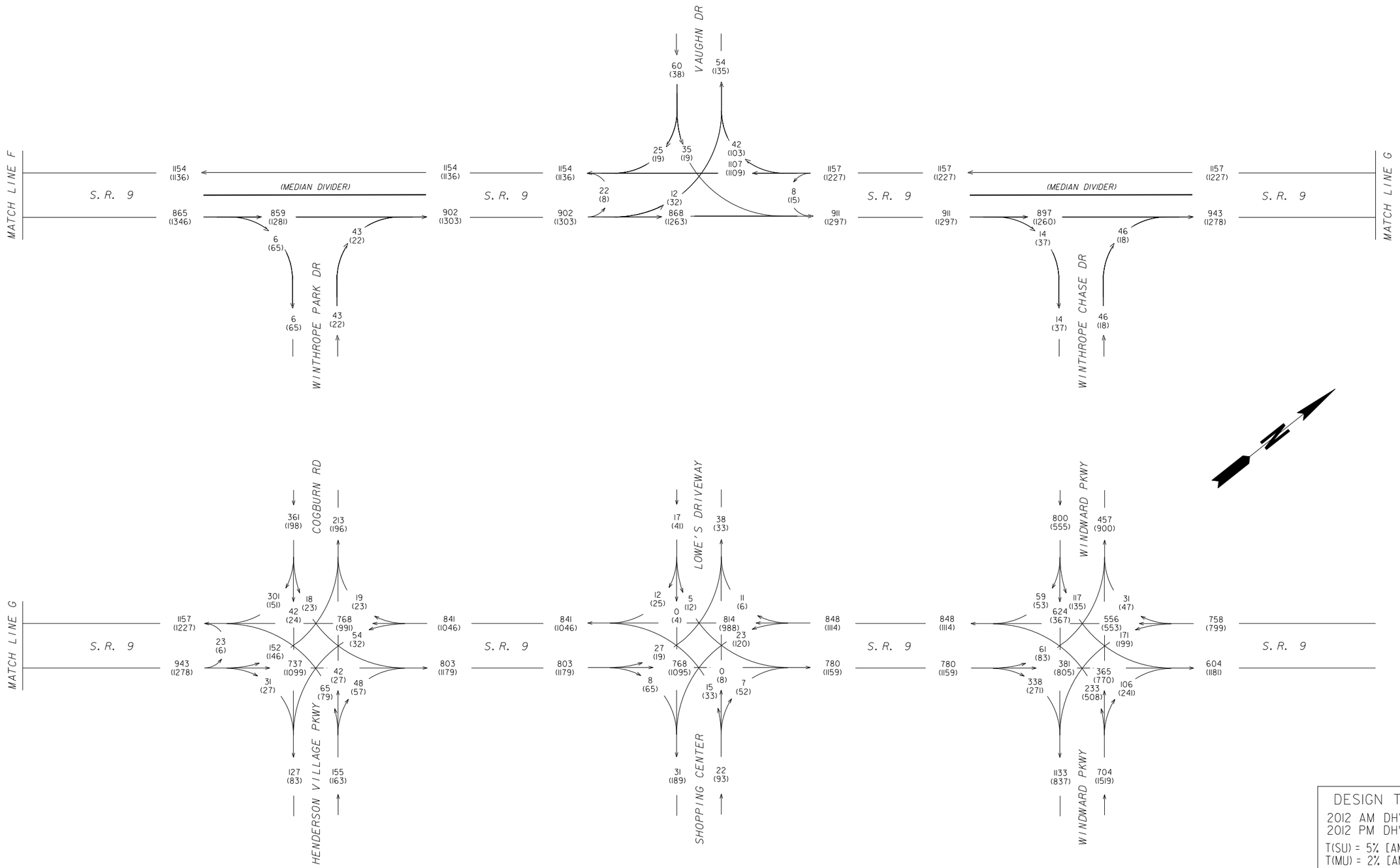
TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-23

GPLN



DESIGN TRAFFIC

2012 AM DHV = 000
2012 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
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BC	3/10/10
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SKB	N.T.S.

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2012 AM/PM DHV

DRAWING No. 10-24

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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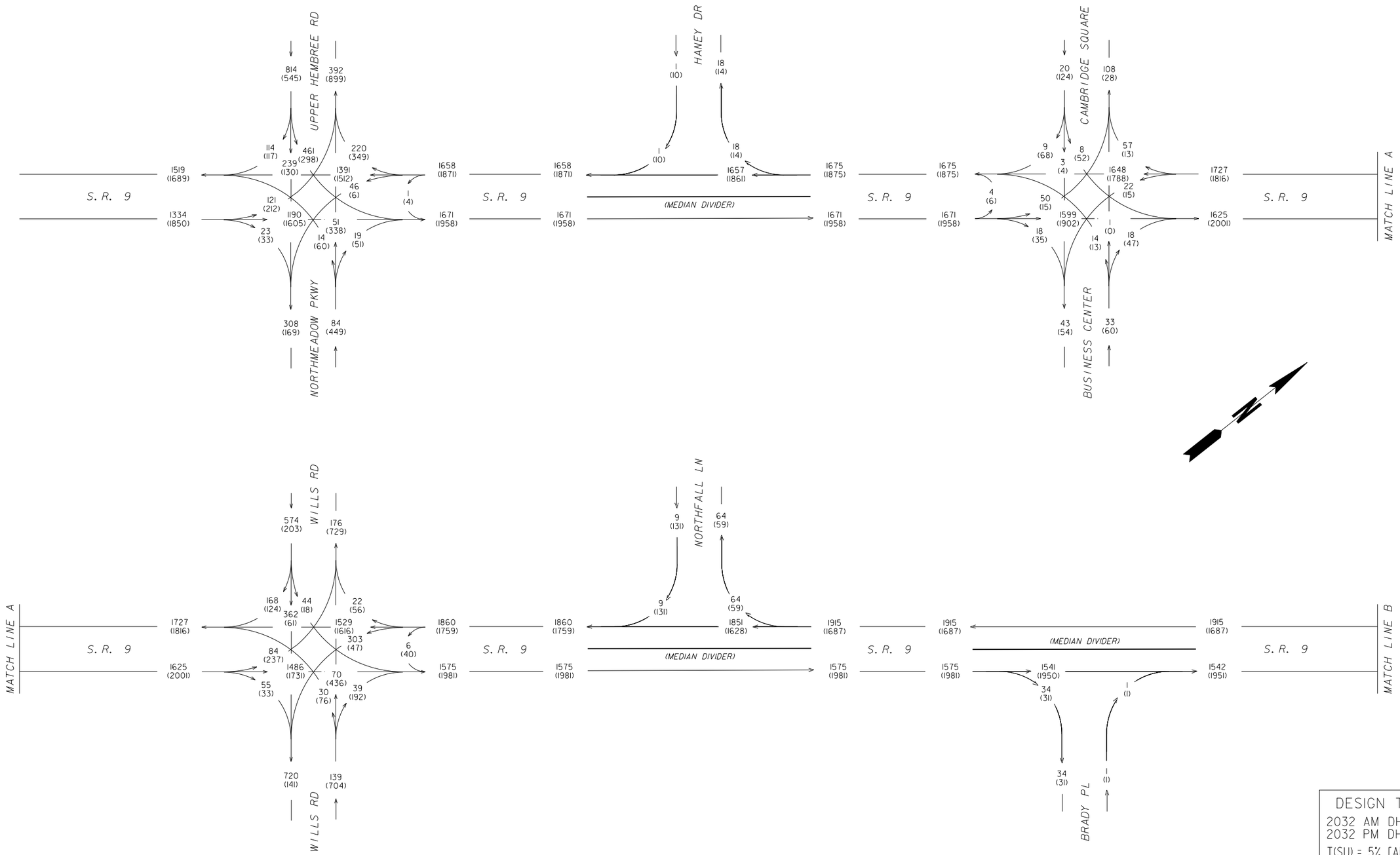

DESIGN TRAFFIC

2032 AM DHV = 000
2032 PM DHV = (000)

T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

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TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-25

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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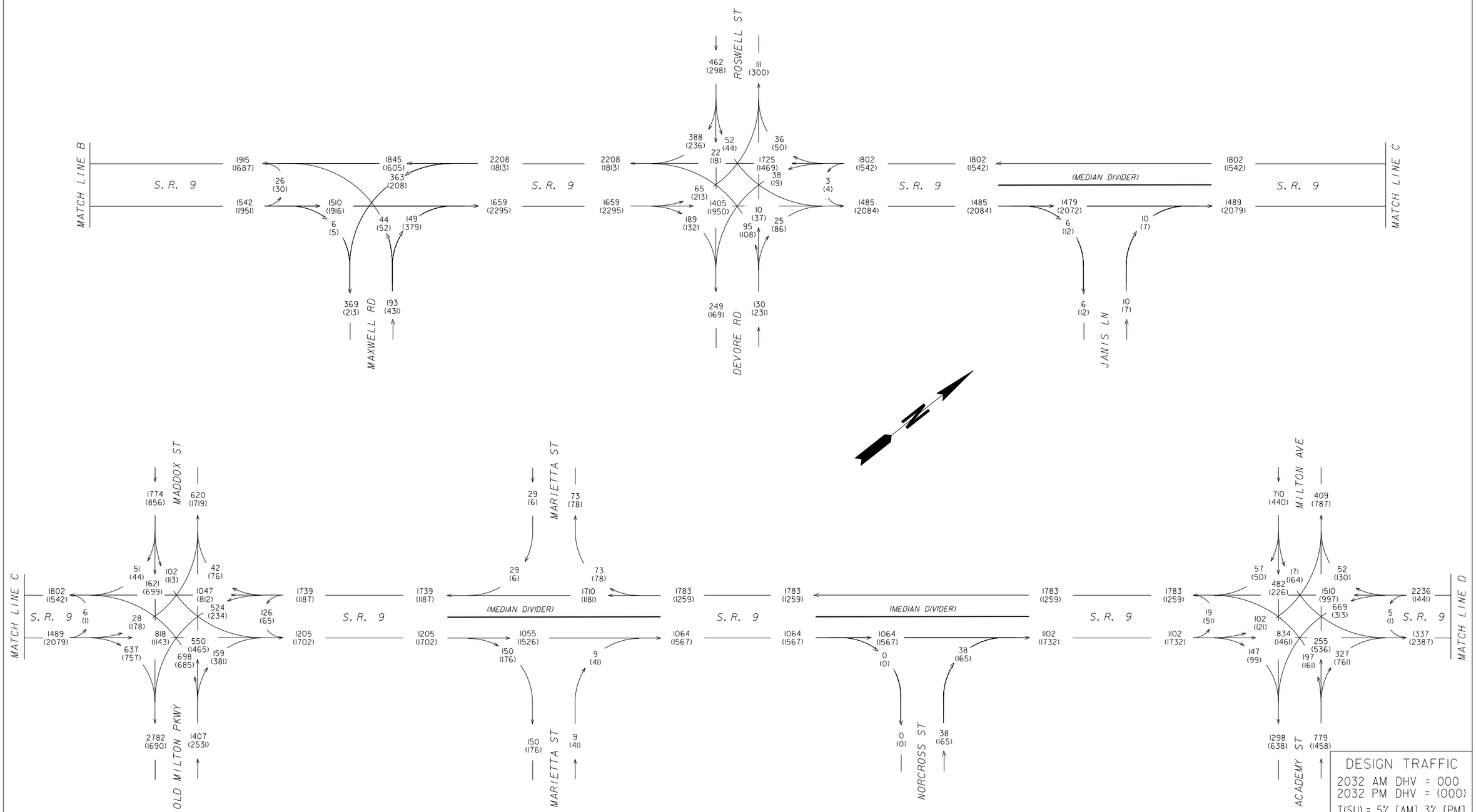

DESIGN TRAFFIC

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T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

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DRAWN BY	DATE
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REVISION DATES

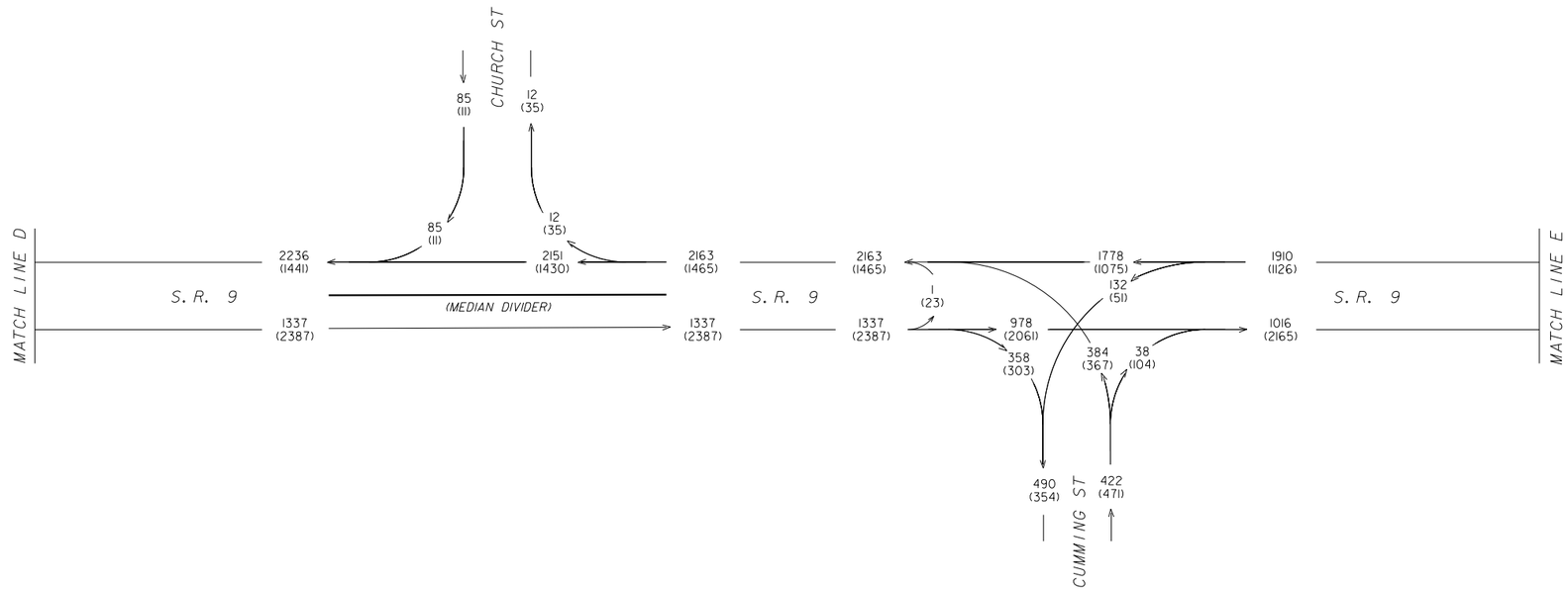
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

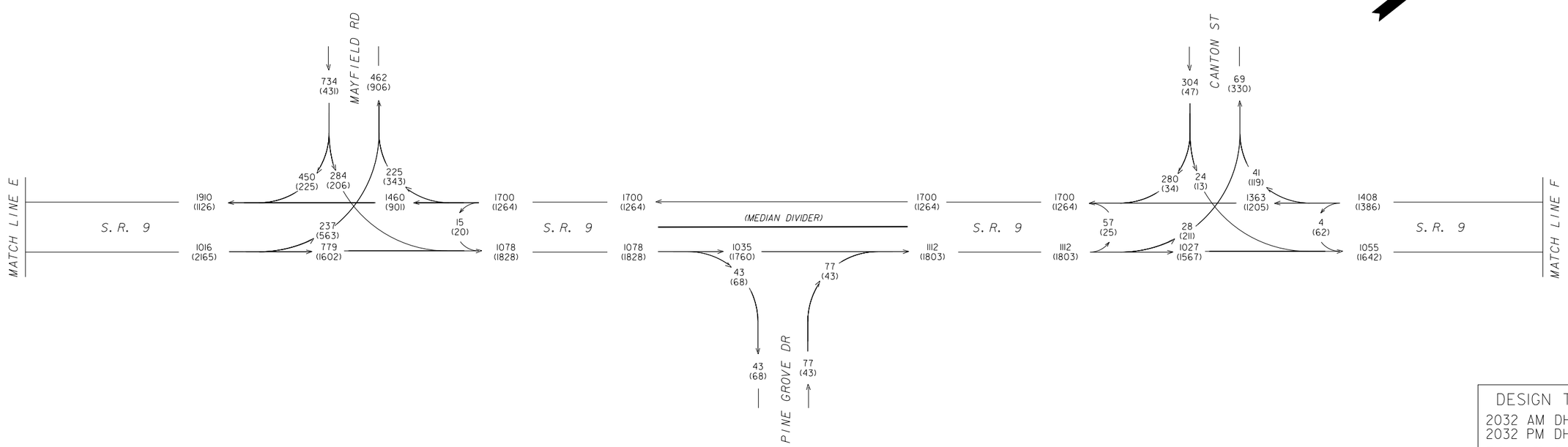
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-26





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T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
DRAWN BY	DATE
BC	3/10/10
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SKB	N.T.S.

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REVISION DATES

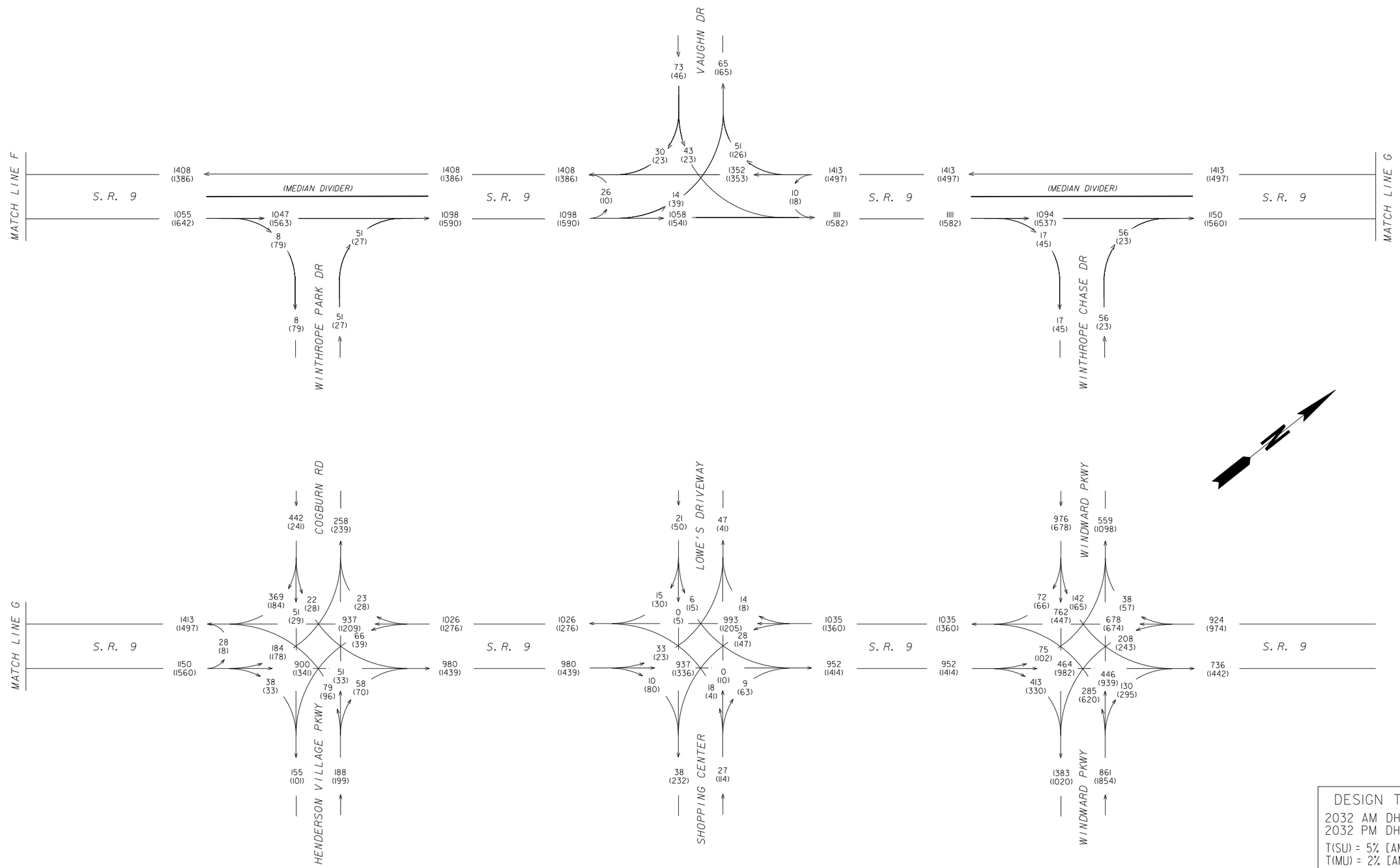
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2032 AM/PM DHV

DRAWING No.
10-27



DESIGN TRAFFIC
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2032 PM DHV = (000)
T(SU) = 5% [AM], 3% [PM]
T(MU) = 2% [AM], 2% [PM]

DESIGNED BY	LONG JOB NO.
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STATE OF GEORGIA
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OFFICE: CONSULTANT DESIGN

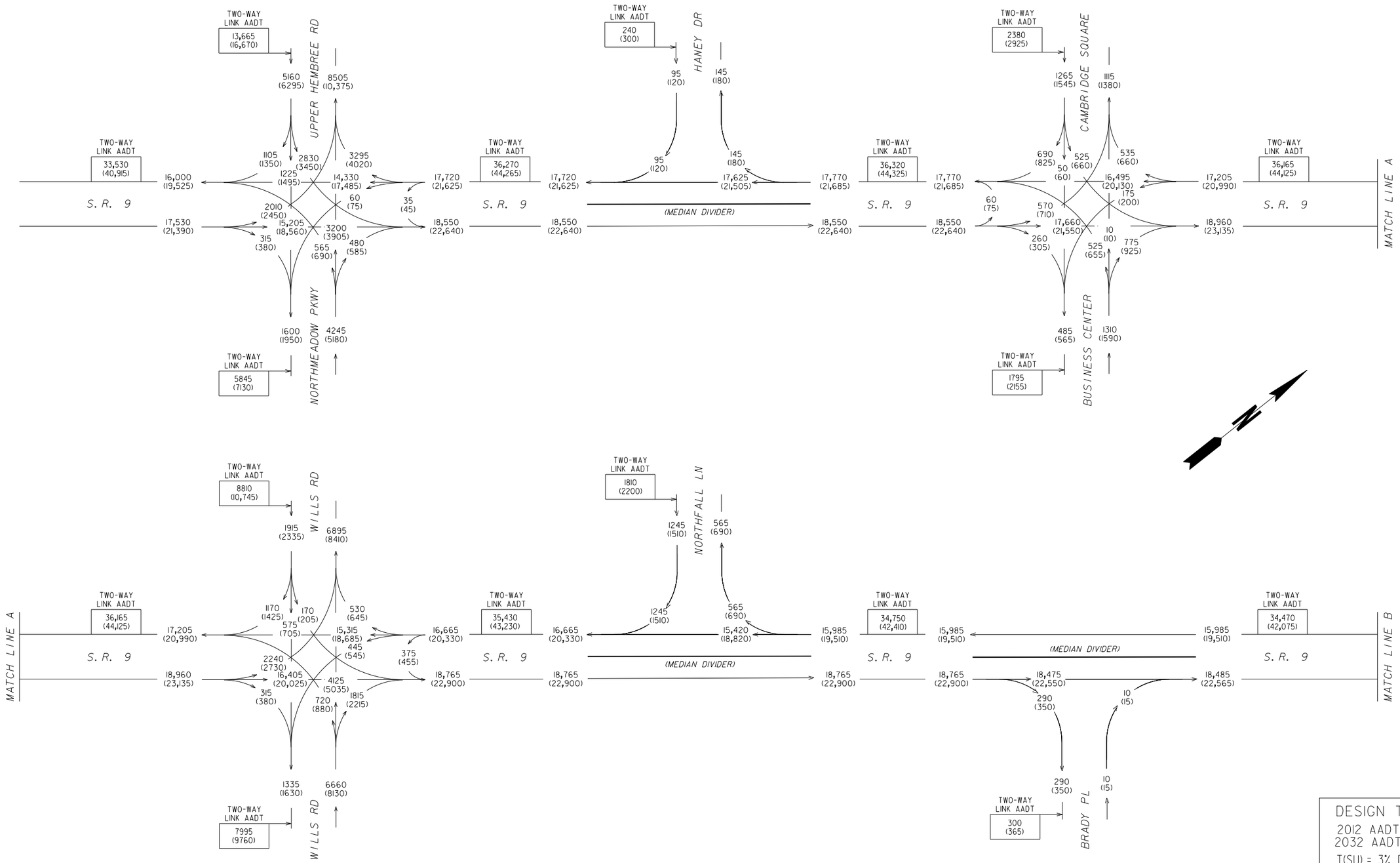
TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2032 AM/PM DHV

DRAWING No. 10-28

GPLN

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(85)	0506	SH



DESIGN TRAFFIC
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2032 AADT = (000)
T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
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STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-29

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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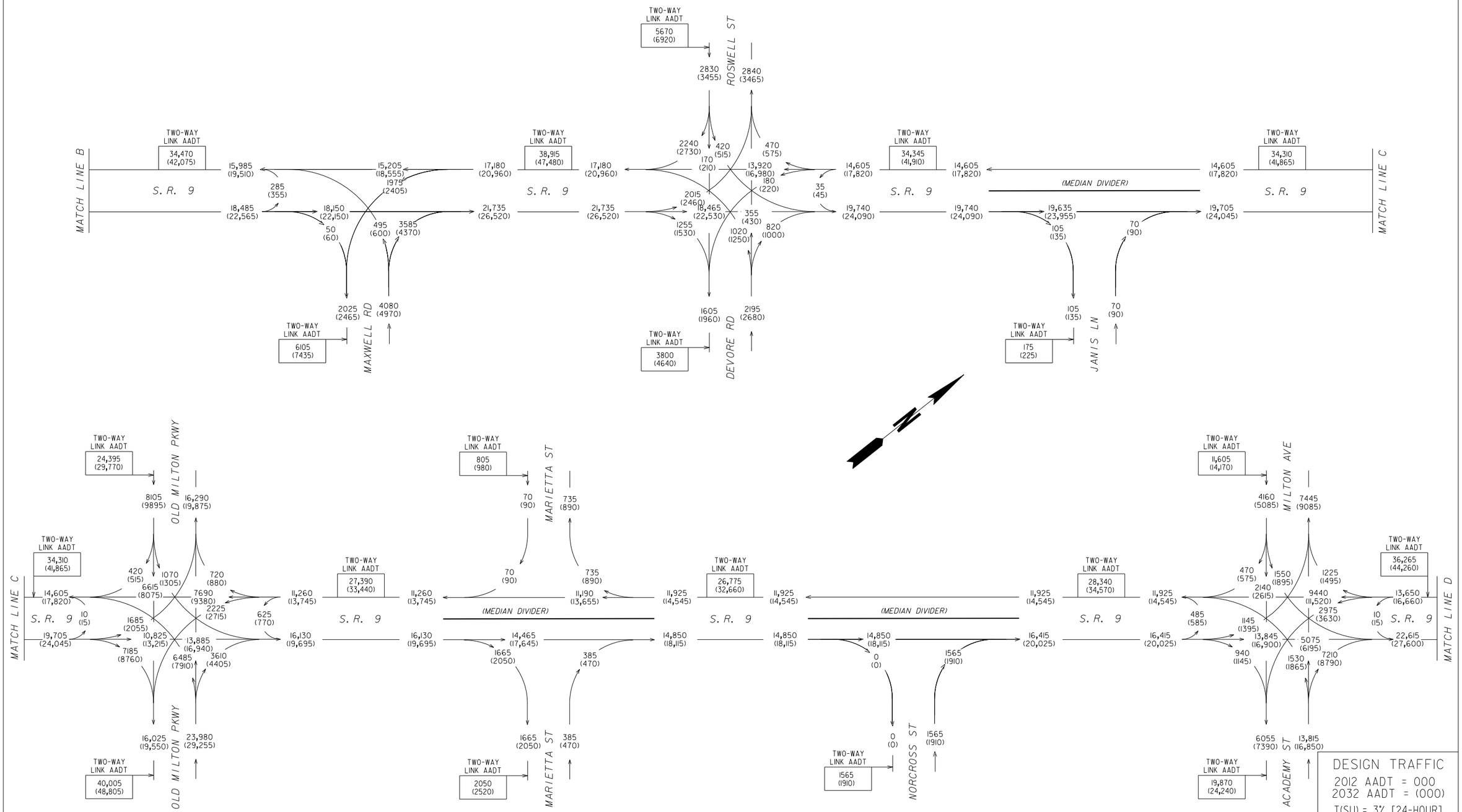

DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
SKB	0073-0230
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REVISION DATES

STATE OF GEORGIA
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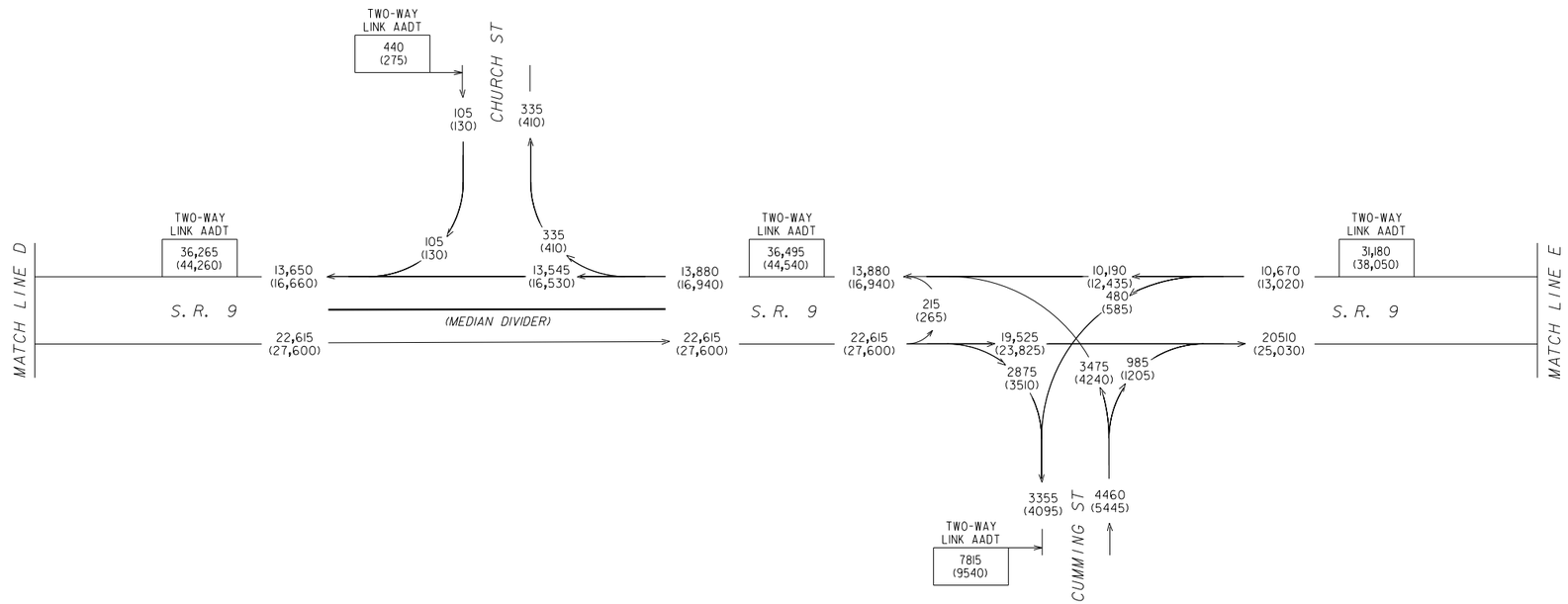
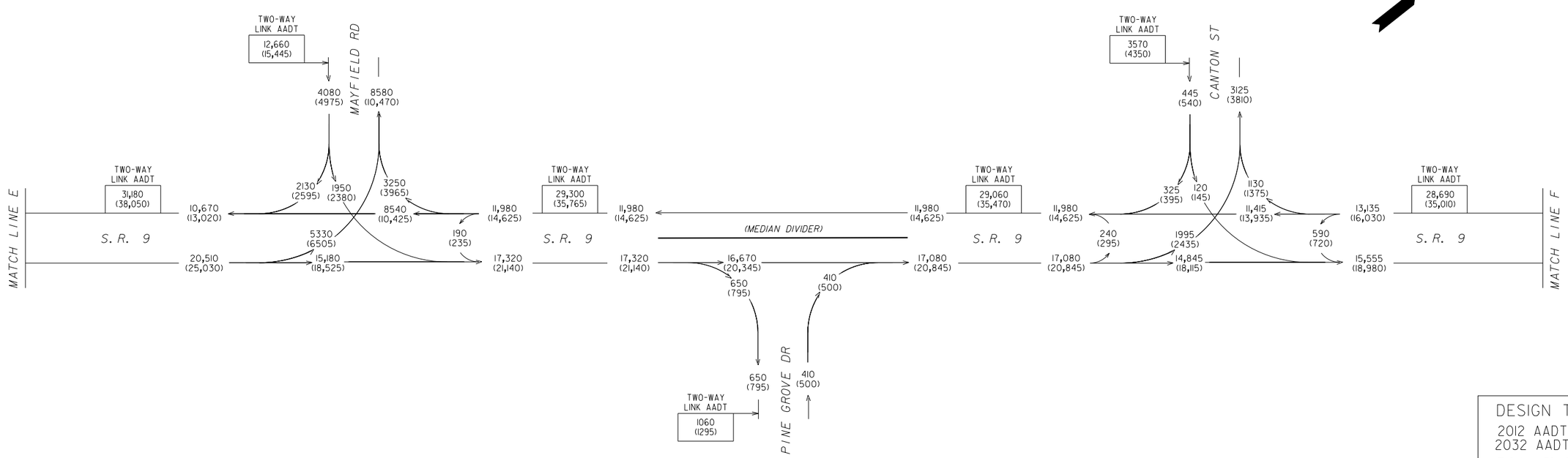
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-30

DATETIME$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	STP-114-1(84)	0506	SH





DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

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STATE OF GEORGIA
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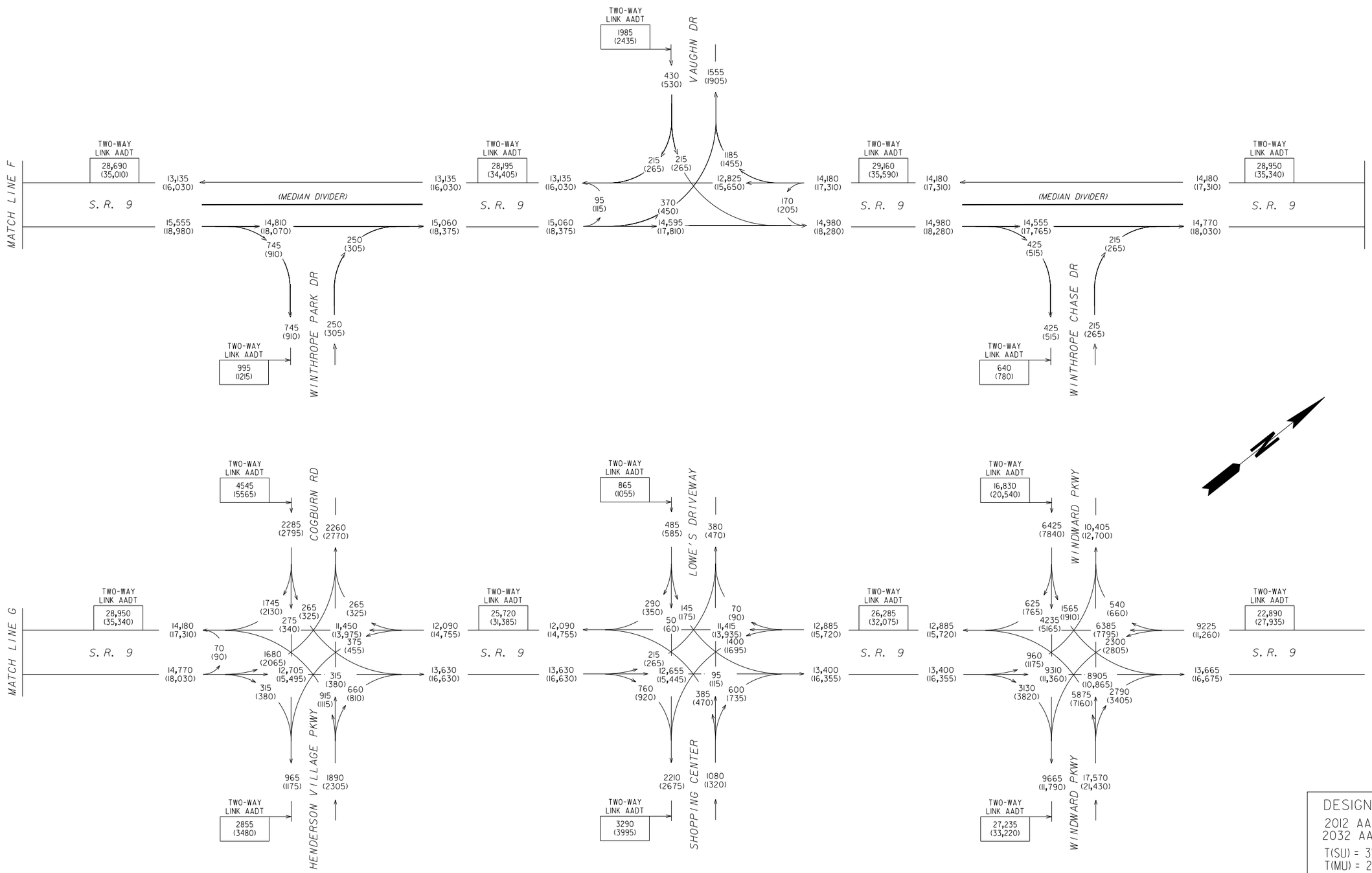
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM
S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-31



DESIGN TRAFFIC
2012 AADT = 000
2032 AADT = (000)
T(SU) = 3% [24-HOUR]
T(MU) = 2% [24-HOUR]

DESIGNED BY	LONG JOB NO.
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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: CONSULTANT DESIGN

TRAFFIC DIAGRAM

S.R. 9 (PROPOSED CONDITIONS)
FULTON COUNTY
2012/2032 AADT

DRAWING No. 10-32

Attachment 6:

Capacity Analysis Summary

Attachment 6:

Capacity Analysis Summary

Existing and Projected Traffic Conditions

A capacity analysis was conducted to determine the operating level-of-service (LOS) at each intersection within the project limits for both the AM and PM peak periods. The overall LOS is presented in this study for each signalized intersection and the S.R. 9 left turn along with the minor street left turn LOS are presented for each unsignalized intersection (if two approaches, then the worst LOS is shown). The following is a summary of the S.R. 9 capacity analysis results for each existing and proposed traffic condition.

Existing Traffic Conditions

The capacity analysis results for the existing traffic conditions are summarized in ***Table 1.*** As shown in ***Table 1***, the only signalized intersection within the S.R. 9 study corridor that has a LOS F utilizing the 2012 traffic volumes is the S.R. 9 at Maddox Street/old Milton Parkway intersection. However, utilizing the 2032 traffic volumes, six of the signalized study intersections are LOS F. At the unsignalized intersections, the S.R. 9 left turn onto the minor street is LOS D or better with the exception of the S.R. 9 southbound left turn onto Pine Grove Road during the PM peak period, which is LOS F. This LOS F occurred utilizing the 2008, 2012, and 2032 traffic volumes. The minor street LOS at unsignalized intersections was LOS D or worse for each analysis.

Table 1
S.R. 9 Capacity Analysis Results (Existing Traffic Conditions)

S.R. 9 Intersection at:	AM Peak Period			PM Peak Period		
	2008	2012	2032	2008	2012	2032
Upper Hembree Road/ Northmeadow Parkway	**C**	**C**	**C**	**C**	**D**	**E**
Haney Drive	B / F	B / F	C / F	B / F	C / F	C / F
Cambridge Square	B / F	B / F	C / F	C / F	C / F	C / F
Wills Road	**C**	**C**	**E**	**C**	**D**	**E**
Northfall Lane	C / F	C / F	C / F	B / F	B / F	C / F
Brady Place	A / F	A / F	A / F	A / F	A / F	A / F
Roswell Street/Maxwell Road	**B**	**B**	**D**	**B**	**B**	**D**
Devore Road	A / F	A / F	A / F	A / F	A / F	A / F
Janis Lane	A / F	A / F	B / F	B / F	B / F	C / F
Maddox Street/Old Milton Parkway	**E**	**F**	**F**	**D**	**D**	**E**
Marietta Street	A / D	A / E	A / F	A / E	A / E	A / F
Norcross Street	B / -	B / -	D / -	B / -	B / -	D / -
Milton Avenue/Academy Street	**D**	**D**	**F**	**D**	**E**	**F**
Church Street	A / F	A / F	A / F	A / D	A / D	A / F
Cumming Street	**C**	**D**	**F**	**B**	**B**	**E**
Mayfield Road	**B**	**C**	**D**	**C**	**C**	**E**
Pine Grove Drive	B / F	B / F	B / F	F / F	F / F	F / F
Canton Street	A / F	B / F	B / F	B / F	B / F	C / F
Winthrope Park Drive	A / E	A / E	A / F	A / F	A / F	A / F
Vaughn Drive	A / F	A / F	A / F	A / F	A / F	A / F
Winthrope Chase Drive	A / F	A / F	A / F	A / F	A / F	C / F
Cogburn Road/Henderson Village Parkway	**B**	**B**	**D**	**C**	**C**	**F**
Lowe's Driveway/Shopping Center Entrance	**B**	**B**	**B**	**C**	**C**	**F**
Windward Parkway	**D**	**D**	**E**	**E**	**E**	**F**

Note: The signalized intersection capacity results are shown in bold.

Proposed Traffic Conditions

To reduce crash and increase roadway capacity along the S.R. 9 study corridor, a number of improvements were identified at each of the study intersections. First, the entire study corridor is proposed to include four through travel lanes (i.e. two lanes in each direction). This recommendation will provide the greatest benefit to the motorist in terms of both capacity and lane continuity.

Second, left-turn lanes and right-turn lanes are being proposed at the intersections where traffic volumes warrant their need. In some cases, multiple turn lanes are being proposed.

Third, raised islands are being proposed in the median that will reduce crash by eliminating or restricting turning movements at certain intersections. For the proposed traffic conditions, ten of the 24 study intersections were subject to these right-in/right-out travel movement restrictions because of this raised median improvement. These ten intersections include the following: Haney Drive, Northfall Lane, Brandy Place, Janis Lane, Marietta Street, Norcross Street, Church Street, Pine Grove Drive, Winthrope Park Drive, and Winthrope Chase Drive.

Fourth, a proposed improvement includes the relocation of Roswell Street from the existing skewed intersection with Maxwell Road and realign it to near 90º with S.R. 9 connecting to Devore Road. The realignment of Maxwell Road near 90º with S.R. 9 is also proposed along with signalizing both intersections.

The remaining intersection improvements are the addition of turn lanes or at each of 14 study intersections under the proposed traffic conditions.

The capacity analysis results for the proposed traffic conditions are summarized in ***Table 2***.

Table 2
S.R. 9 Capacity Analysis Results (Proposed Traffic Conditions)

S.R. 9 Intersection at:	AM Peak Period		PM Peak Period	
	2012	2032	2012	2032
Upper Hembree Road/Northmeadow Parkway	**C**	**C**	**C**	**E**
Cambridge Square	B / F	C / F	C / F	C / F
Wills Road	**C**	**E**	**C**	**C**
Maxwell Road	**A**	**A**	**A**	**B**
Roswell Street (Relocated)/Devore Road	**B**	**B**	**B**	**B**
Maddox Street/Old Milton Parkway	**D**	**F**	**D**	**E**
Milton Avenue/Academy Street	**D**	**E**	**C**	**E**
Cumming Street	**B**	**B**	**C**	**D**
Mayfield Road	**B**	**C**	**B**	**B**
Canton Street	B / F	C / F	B / F	C / F
Vaughn Drive	B / F	B / F	B / F	C / F
Cogburn Road/ Henderson Village Parkway	**B**	**B**	**B**	**B**
Lowe's Driveway/ Shopping Center Entrance	**B**	**B**	**B**	**B**
Windward Parkway	**D**	**D**	**C**	**D**

Note: The signalized intersection capacity results are shown in bold.

As shown in ***Table 2*** all of the signalized intersections within the S.R. 9 study corridor are LOS D or better utilizing the 2012 traffic volumes. However, utilizing the 2032 traffic volumes, the only signalized intersection that has a LOS F is the S.R. 9 at Maddox Street/Old Milton Parkway intersection. To relieve the LOS F at this intersection, additional through lane capacity would need implementation for either the S.R. 9 northbound/southbound approaches or the Old Milton Parkway westbound approach. It should be noted that existing physical constraints may prevent these improvements from consideration. At the unsignalized intersections for each analysis, the S.R. 9 left turn onto the minor street is LOS C or better and the minor street was LOS F.

Existing and Proposed Traffic Conditions Comparison

The 2012 and 2032 capacity analysis comparison between the existing and proposed traffic conditions are shown in ***Table 3*** and ***Table 4***, respectively.

Table 3
S.R. 9 2012 Existing and Proposed Traffic Conditions
Capacity Analysis Comparison

S.R. 9 Intersection at:	AM Peak Period		PM Peak Period	
	Existing	Proposed	Existing	Proposed
Upper Hembree Road/ Northmeadow Parkway	**C**	**C**	**D**	**C**
Haney Drive	B / F	-	C / F	-
Cambridge Square	B / F	B / F	C / F	C / F
Wills Road	**C**	**C**	**D**	**C**
Northfall Lane	C / F	-	B / F	-
Brady Place	A / F	-	A / F	-
Existing: Roswell Street/Maxwell Road Proposed: Maxwell Road	**B**	**A**	**B**	**A**
Existing: Devore Road **Proposed: Roswell Street/Devore Road**	A / F	**B**	A / F	**B**
Janis Lane	A / F	-	B / F	-
Maddox Street/Old Milton Parkway	**F**	**D**	**D**	**D**
Marietta Street	A / E	-	A / E	-
Norcross Street	B / -	-	B / -	-
Milton Avenue/Academy Street	**D**	**D**	**E**	**C**
Church Street	A / F	-	A / D	-
Cumming Street	**D**	**B**	**B**	**C**
Mayfield Road	**C**	**B**	**C**	**B**
Pine Grove Drive	B / F	-	F / F	-
Canton Street	B / F	B / F	B / F	B / F
Winthrope Park Drive	A / E	-	A / F	-
Vaughn Drive	A / F	B / F	A / F	B / F
Winthrope Chase Drive	A / F	-	A / F	-
Cogburn Road/ Henderson Village Parkway	**B**	**B**	**C**	**B**
Lowe's Driveway/ Shopping Center Entrance	**B**	**B**	**C**	**B**
Windward Parkway	**D**	**D**	**E**	**C**

Note: The signalized intersection capacity results are shown in bold.

Table 4
S.R. 9 2032 Existing and Proposed Traffic Conditions
Capacity Analysis Comparison

S.R. 9 Intersection at:	AM Peak Period		PM Peak Period	
	Existing	Proposed	Existing	Proposed
Upper Hembree Road/Northmeadow Parkway	**C**	**C**	**E**	**E**
Haney Drive	C / F	-	C / F	-
Cambridge Square	C / F	C / F	C / F	C / F
Wills Road	**E**	**E**	**E**	**C**
Northfall Lane	C / F	-	C / F	-
Brady Place	A / F	-	A / F	-
Existing: Roswell Street/Maxwell Road **Proposed: Maxwell Road**	**D**	**A**	**D**	**B**
Existing: Devore Road **Proposed: Roswell Street/Devore Road**	A / F	**B**	A / F	**B**
Janis Lane	B / F	-	C / F	-
Maddox Street/Old Milton Parkway	**F**	**F**	**E**	**E**
Marietta Street	A / F	-	A / F	-
Norcross Street	D / -	-	D / -	-
Milton Avenue/Academy Street	**F**	**E**	**F**	**E**
Church Street	A / F	-	A / F	-
Cumming Street	**F**	**B**	**E**	**D**
Mayfield Road	**D**	**C**	**E**	**B**
Pine Grove Drive	B / F	-	F / F	-
Canton Street	B / F	C / F	C / F	C / F
Winthrope Park Drive	A / F	-	A / F	-
Vaughn Drive	A / F	B / F	A / F	C / F
Winthrope Chase Drive	A / F	-	C / F	-
Cogburn Road/ **Henderson Village Parkway**	**D**	**B**	**F**	**B**
Lowe's Driveway/ **Shopping Center Entrance**	**B**	**B**	**F**	**B**
Windward Parkway	**E**	**D**	**F**	**D**

Note: The signalized intersection capacity results are shown in bold.

As shown in ***Table 3*** and ***Table 4***, the LOS improved as expected within the S.R. 9 study corridor under the proposed traffic conditions, with the exception of two unsignalized intersections (Canton Street and Vaughn Drive). Even though the S.R. 9 left turn LOS did not improve at these two intersections the LOS was still acceptable being LOS C or better.

Attachment 7:

Initial Concept Team Meeting

POND

Pond & Company, Inc.

Architects
Engineers
Planners

3500 Parkway Lane
Suite 600
Norcross, GA 30092

P 678.336.7740
F 678.336.7744
www pondco.com

MEETING MINUTES

Project : SR 9 Widening, Fulton County - PI No.'s 721790 and 721780
Pond Project No. : 07058.001 and 07058.002
Meeting : Initial Concept Team Meeting
Meeting Location : GDOT District 7 Office, Chamblee GA
Meeting Date : 3/11/09

Minutes prepared by : Kevin Skinner
Prepared on : March 20, 2009
Copies: File
Attendees

Attendees:

Name	Company/Dept./Branch	email
Kevin Skinner	Pond & Company	skinnerk@pondco.com
Ron Osterloh	Pond & Company	osterlohr@pondco.com
Mark Edwards	Pond & Company	edwardsm@pondco.com
Susan Thomas	Edwards Pitman Environmental, Inc.	sthomas@edwards-pitman.com
Steve Bryan	Long Engineering	sbryan@longeng.com
Brad Winkler	Long Engineering	bwinkler@longeng.com
Kimberly Nesbitt	GDOT-OCD	knesbitt@dot.ga.gov
Amber Phillips	GDOT-OEL	aphillips@dot.ga.gov
Steve Walker	GDOT	stwalker@dot.ga.gov
Mike Lobdell	GDOT	mlobdell@dot.ga.gov
Bruce Savage	GDOT	bsavage@dot.ga.gov
James Drinkard	City of Alpharetta	jdrinkard@alpharetta.ga.us
Eric Graves	City of Alpharetta	egraves@alpharetta.ga.us
Pete Sewczwicz	City of Alpharetta	psewczwicz@alpharetta.ga.us
Bashan Mann	GDOT	bamann@dot.ga.gov
Abul Howlader	Fulton County	abul.howlader@fultoncountyga.gov
Earl Burrell	Fulton County	earl.burrell@fultoncountyga.gov
Edlin Regis	GDOT	eregis@dot.ga.gov
Clyde Cunningham	GDOT	ccunningham@dot.ga.gov
Pete Hughes	Sawnee EMC	pete.hughes@sawnee.com
Fred Babb	AGL	fbabb@aglresources.com
Tony Pritchett	Georgia Transmission Corporation	tony.pritchett@gatrans.com

PURPOSE OF MEETING:

On March 11, 2009 an initial concept team meeting was held at the Georgia Department of Transportation (GDOT) District 7 office in Chamblee, Ga. to present the draft concept report and roll plots. The meeting began at approximately 10:30 am and the above were in attendance.

Kimberly Nesbitt (of the Office of Consultant Design/Program Delivery) is the Project Manager for GDOT. Kevin Skinner is the Project Manager for the Design Consultant, Pond & Company. Copies of the draft concept report, including construction cost estimate, typical sections, and traffic analysis and traffic flow diagrams were provided to all attendees.

It was noted that the Benefit/Cost (B/C) Ratio needs to be included in the concept report before approval. GDOT Planning office is doing this.

The concept roll plots on aerial photography were presented and Kevin gave an overview of the project and walked through the draft concept report and the need and purpose statement.

The project has been around for at least twenty years in some form or another, and has included options such as one-way pairs on Canton Street/Roswell Street and Main Street, and the possibility of converting the newly constructed Westwide Parkway to S.R. 9.

The proposed typical section includes four eleven foot travel lanes and a raised 17 foot wide grassed median. Urban shoulders 12 feet wide with a 5 foot wide sidewalk and 2 foot landscape strip. This project does require bicycle lanes in accordance with the Fulton County Bike/Ped. Plan, pg 17. A 4 foot wide bicycle lane is proposed in each direction. Since a large portion of this corridor is already 4 or 5 lane, the widening is minimal and the improvements could be described as a series of intersection improvements, but with the addition of a raised median. PI 721790 begins at Upper Hembree and ends at Academy Street. It consists of a five lane section from the project beginning to Old Milton Pkwy., then the section changes to a four lane section, up to Academy Street. PI 721780 begins at Academy Street and continues the four lane section to Mayfield Road, where is changes to a two-southbound, one-northbound, center turn lane section up to Canton Street. From there, the section reduces to a 2 lane section up to Winward Parkway.

In addition to various added turn lanes, the combined projects will provide 15 median openings. Ten intersections will be cut off from left turns and will be forced to allow only right-in/right-out travel movements. The intersection at Maxwell Drive will be slightly realigned to intersect Main Street at 90 degrees. Additionally, 500 LF of Roswell Street will be relocated to the north so as to intersect with Devore Road at a single point.

It was noted that the 35 MPH zone extends from Maxwell to Mayfield, not Maxwell to Cumming.

There are 6 resources determined to be eligible for inclusion in the National Register of Historic Places. The two projects currently require 8 displacements, none of which are eligible.

Amber noted that the project will require logical termini. At the south end (Upper Hembree Road), the proposed section matches the existing section. At the north end, the terminus is likely justified by the traffic drop off at Winward Parkway. The environmental consultant will need to meet with FHWA to get agreement on logical termini. [This meeting with FHWA has now been scheduled for April 2]

A 36" water line is currently running along S.R. 9 from Old Milton to Mayfield. Fulton County is building a new waterline in the vicinity, but the City was requested the design to not follow S.R. 9. The new waterline will cross over S.R. 9 at S.R. 120, but not go down S.R. 9.

The traffic conditions were reviewed, and proposed level of service (LOS) presented. The proposed traffic conditions are improved in all intersections, with the exception of Canton Street and Vaughn Drive, which are still LOS C or better. The design year 2032 traffic is based on a conservatively-high annual growth of 1%. It was noted that these numbers may not have adequately factored in the recent opening of Westside Parkway. Long Engineering to coordinate with the City of Alpharetta to ensure the traffic numbers are the latest available numbers.

The crash data obtained from 2004 to 2006 is presented in the Draft Concept Report and shows a substantially higher frequency and severity of crashed in the study area. Kimberly mentioned that more recent data will be available soon. Pond will verify that the latest data available is included.

Mike Lobdell noted that a design exception for horizontal clearance is not needed unless the clearance is less than 18" from the face of curb. Pond will adjust the design exception chart.

The time to purchase Right of Way was noted to be too short. Recommend extending to at least 24 months.

Kevin noted that the Subsurface Utility Engineering (SUE) is underway by Wolverton and the SUE consultant has noted extensive fiber optics in the area, mostly within an Atlanta Gas Light (AGL) duct run.

Georgia Transmission Corporation (a separate entity from Georgia Power) has noted that some of their transmission poles are on private property.

Kimberly noted that the cost estimate format has changed regarding an asphalt/fuel index as well as construction contingency.

Alpharetta noted that fiber optic signal connectivity is currently being installed and directed to the Alpharetta Traffic Control Center.

Alpharetta officials requested information that can be passed on to the public. Kimberly agreed to let Alpharettta take the displays, but stated it would be best to schedule a Public Information Open House (PIOH) before the displays are made public. It was noted that due to the multiple displacements, the historical should be reviewed by Office of Environment/Location prior to a PIOH.

The meeting was concluded at approximately 11:15 am.

END OF MEETING MINUTES

ADDITIONAL COMMENTS:

Attachment 8:

Final Concept Team Meeting

Georgia Department of Transportation
600 West Peachtree Street, NW, Atlanta GA 30308
T 404.631.1158 F 404.631.1588 www.dot.ga.gov

MEETING MINUTES

Subject:	**STP00-0114-01(084), P.I. No. 721780** S.R. 9/North Main Street from Academy Street to Windward Parkway **STP00-0114-01(085), P.I. No. 721790** S.R. 9/South Main Street from Upper Hembree Road to Academy Street Fulton County, Georgia
Meeting Date:	October 06, 2009 (10:00am – 11:45am)
Location:	District Seven Conference Room (#144/145) in Chamblee
Transcription Date:	October 16, 2009
Distributed Materials:	Draft Concept Report, Alignment Profiles & Cross-sections drawing, and Comment/Question sheet
Presented Materials:	Conceptual Roll Plots

Attendees:	**Organization & Title**	**Phone**
Peter B. Emmanuel	*GDOT OPD – Project Manager*	404-631-1158
Amber Phillips	*GDOT OEL – NEPA Specialist*	404-631-1117
Ian Rish	*GDOT OMR – Geotechnical Engineer*	404-363-7579
Susan Thomas	*Edwards Pitman Environmental, Inc.*	770-333-9484
Bryon Letourneau	*Pond & Company, Inc.*	678-336-7740
Kevin Skinner	*Pond & Company, Inc.*	678-336-7740
Ron Osterloh	*Pond & Company, Inc.*	678-336-7740
Steve Bryan	*Long Engineering*	615-221-1131
Bhargavi Chavali	*Long Engineering*	770-931-8005
Butch Jones	*Georgia Transmission Corporation*	770-270-7161
Craig Price	*Georgia Power Company*	770-740-7734
Mike Watkins	*Georgia Power Company*	770-216-1433
Kaycee Mertz	*GDOT Planning – Planner*	404-347-0245
Mike Lobdell	*GDOT D7 – Preconstruction Engineer*	770-986-1257
Clyde Cunningham	*GDOT D7 – Metro Utilities Engineer*	770-986-1117
Dale Ferris	*GDOT D7 – Area 2 Assistant Area Engineer*	770-528-3238
Charity Belford	*GDOT Traffic Operations – Traffic Design Supervisor*	404-635-8154
C. Paulk-Buchanan	*GDOT Communications – Media Relations Project MGR.*	404-631-1835
Ernest Slaughter	*Fulton County - Deputy Director of Transportation*	404-612-8325
Abul K. Howlader	*Fulton County*	404-612-7537
Jerri Russell	*City of Atlanta*	404-589-2722
Joseph M. Carpenter	*City of Atlanta*	404-235-2087
Michael Nduka	*City of Atlanta*	404-235-2067
Pete Sewczwicz	*City of Alpharetta*	678-297-6200
Eric Graves	*City of Alpharetta – Senior Traffic Engineer*	678-297-6200

Purpose: **SR 9 Projects Concept Team Meeting**

- Meeting started with Peter Emmanuel discussing the agenda and giving an overview of the project including the status, schedule, budget, right-of-way & construction cost estimates, consultant contracts, and GDOT preliminary need & purpose statement about logical termini, tier 1 project designation,

FHWA full oversight, types of arterial, existing road usage, existing and proposed speed limit, existing and proposed traffic, traffic delay reduction, existing and proposed signalized intersection, safety concerns, operational improvements, widening to a four lane facility, and the project length.

- Peter Emmanuel noted that until logical termini for the SR 9 corridor is resolved, environmental document approval is unlikely; and that a meeting will take place on October 13, 2009 with GDOT Chief Engineer to get a decision on the issues.

■ Peter Emmanuel said today's meeting will be conducted such that everyone that has questions/comments can write it down on the comment sheet, and state their name before presenting their concerns.

■ In addition, Peter Emmanuel stated that any questions asked/written as well as comments/concerns will be added and answered in the meeting minutes. Peter Emmanuel, also, said if any of the comments-concerns-suggestions are feasible, it will be incorporated into the projects. Peter Emmanuel distributed a copy of the draft concept report, profiles, and cross-sections of the preferred alignment for the attendees to review.

- Peter Emmanuel also stated that the prime consultant hired by GDOT, Pond & Company, has more in-depth history of the project and their sub-consultants, Edwards-Pitman, and Long Engineering, Steve Bryant, will brief the attendees on the environmental document and traffic study, respectively.

■ Kevin Skinner discussed the project background and history, system linkage – SR 9 Corrridor, B/C ratios, Need & Purpose, existing conditions and typical sections, proposed typical section, existing substandard vertical grade in some areas, the proposed vertical grade, overview of the project layouts, changes since initial concept team meeting, number of parcels & displacements, proposed median openings, and cost estimates.

- Since the Initial Concept Team Meeting, Kevin Skinner noted that the following updates has occurred to the draft concept report and the conceptual roll plots: GDOT project prioritization information, two additional properties to the History Survey Report, refinement of the construction limits on the conceptual layouts due to the completed database, generation of design profiles and cross-sections, addition of walls where right of ways was an issue, incorporation of Alpharetta LCI/Downtown Circulation study, and careful assessment of the design to utilized as much of the existing right of way footprints - which may warrant a need for design variance.
- Ernest Slaughter asked about correcting the existing vertical grade issues since the project is still in the Long Range.
  - Peter Emmanuel stated that the project may not be in Long Range for long if the meeting with GDOT Management on October 13, 2009 on the logical termini issues yields positive results, and an approved concept report and environmental document can be obtained, since the project is a Tier 1 (high priority). Peter Emmanuel also stated that an establish project with concept report and environmental document approval is the key, and that the existing vertical grade can be improved and refined if the projects gets to preliminary engineering.

■ Ron Osterloh noted that several design exceptions are proposed in order to minimize impacts to properties, and further discussed the project types, alternatives that has been considered before and rejected to date, the current preferred alignment, the profiles, and cross-sections provided to the attendees, as well as his company cooperation with the City of Alpharetta. Ron Osterloh also discussed about the retaining walls on the project, construction limits, and the maximization of the existing right-of-way footprints.

■ Craig Price asked whether the closing at Mansell and Westside Parkway has been accounted for in the traffic study and the impact to local road in the area. Ron Osterloh responded that it has somewhat, but it is tough to predict.

■ Craig Price also asked if before the project is constructed would Westside Parkway to Webb Bridge Road be completed. City of Alpharetta responded that this is a private development and will be complete by the time SR 9 is improved and widened.

■ In addition, Craig Price asked about the extending of Westside Parkway through "Prospect Park". Pete Sewczwicz responded that it is being looked at, but the issue is held up with the developer.

- Ernest Slaughter asked if GDOT consider programming the project in phases so that it can be constructed the way it needs to be done ("think outside the box so that a road is not constructed that still cannot handle traffic flow, especially when emergency situations occur that might shut down SR 400"). Moreover, Ernest Slaughter said thinking outside the box can consist of looking at alternate intersection designs, moving SR designation, and one way pairs.
  - Peter Emmanuel stated that the projects history shows that the public does not support one way pairs. Ernest Slaughter asked if SR 9 is a truck route. Mike Lobdell said all State Route (SR) is a truck route; however, SR 9 truck traffic does not appear to be high on this route. Eric Graves said truck traffic is not a problem in the downtown area.
  - Ernest Slaughter asked if GDOT ever considered multilane roadway that can accommodate the true usage of SR 9 both for emergency purposes, local traffics, and alternative to SR 400. Peter Emmanuel responded that he has looked into it; for example, a six-lane highway will be too costly both in R/W and the amount of businesses that will be displaced – hurting the revenue bases for the City of Alpharetta. Moreover, Peter Emmanuel stated that public support or lack of it is important to the SR 9 corridor and do not believe Alpharetta citizens/businesses will support such a facility at this time no matter how it is explained to them due to the projects history. Peter Emmanuel also, said the proposed four-lane roadway facility since it is mainly within the existing R/W can be explained well to the citizens/businesses when a PIOH is held.
- Kevin Skinner added that the Subsurface Utility Engineering (SUE) deliverables for the project is quality level "D" and is pending GDOT approval.
  - Butch Jones noted that several 100' power transmission poles owned by Georgia Transmission Corporation (GTC) exist along the first ½ mile of the project and wanted to know what efforts GDOT is making to avoid impacting the poles.
  - Kevin Skinner noted that every attempt will be made to avoid impacting and relocating these poles. Butch Jones noted that many of the transmission poles have prior rights and any relocations may be due reimbursement from GDOT, despite being within the R/W. Kevin Skinner noted that each pole and easement will need to be evaluated individually.
  - Kevin Skinner noted that existing waterlines will be impacted by the projects. Abul Howlader noted that a proposed 40" water main is planned in the area, and wants to know GDOT timeline to determine if it can be incorporated into the project.
  - Peter Emmanuel stated that the timeframe is uncertain and depends on the ability to get concept report and environmental document approved.
  - Mike Watkins asked if utility relocations are considered when determining the amount of ROW required on this project. Kevin Skinner said yes for the most part but will need to double check.
  - Peter Emmanuel noted that no reimbursement utility is currently listed per the Utility cost estimate letter obtained from Clyde Cunningham, and asked the utilities companies' attendees if the estimate is still the same.
  - Some of the utilities company representatives stated they will have to look at the available details plan and prior rights to check if no reimbursements will remain the same.
- Susan Thomas discussed the status of the special studies needed for the environmental document, location of environmental resources, the type of environmental document required, EA/FONSI, and the logical termini issues.
- Steve Bryan discussed the traffic, accident history, capacity analysis for the Build Alternative and No-Build Alternatives, as well as a general overview of the capacity analysis results.
  - Charity Belford asked about the growth rate showing for the traffic projections and travel time.
  - Steve Bryan responded that a 1% growth rate was approved by OEL-Traffic Analysis section.
  - Peter Emmanuel asked Steve Bryan to add/include travel time delays and savings to the LOS table to explain in details the improvement made to each intersection if the LOS remains the same. Peter Emmanuel also requested that Steve Bryan look into the possibility of continuous flow intersections as requested by GDOT District 7 during the review of the Concept Report traffic for the possibility of signal coordination since the existing signals are interconnected.
  - A question was asked about the type of mast arms that will be used. Peter Emmanuel stated that currently there is no local agreement for special types of mast arms and Charity Belford said when there is no agreement, the Department uses standard design.

MEETING MINUTES

- Peter Emmanuel continued the meeting with a discussion of the type of access for the proposed facility, maintenance of traffic, any maintenance problems existing along the projects, potential improvements recommended for the intersections along projects, and the constructability of proposed projects.
- Dale Ferris stated since the project is mostly widening there is not a major maintenance of traffic problems that would come up in construction.
- Peter Emmanuel stated that a VE Study on the projects is currently underway (October 5 – 9, 2009) and any recommendations that are feasible will be incorporated into the project final concept report.
- Peter Emmanuel thanked everyone for coming, their cooperation, and concluded the meeting at approximately 11:45 am.

- The following written questions/comments were submitted at the Concept Team Meeting, the responses are followed in italics:
  - Eric Graves – The city does not use the street name: Maddox Street. Should remove reference.
    - *Will label the street as "Old Milton Parkway" instead. The concept report will be updated.*
  - Mike Lobdell – Is this really Full Oversight?
    - *Both projects are "Exempt", not "Full Oversight". The concept report will be updated.*
  - Mike Lobdell – Can District get a copy of the synchro analysis and appendix D of the study?
    - *The Synchro analysis is available in Appendix C of the 500 page traffic appendices. This document is available on request from the Project Manager, Peter Emmanuel.*
  - Mike Lobdell – Realign driveways at 115+00 to be across from each other?
    - *Will attempt to line up drives. The concept layout/rollout plot will be updated.*
  - Mike Lobdell – Where are the highest crash locations?
    - *The crash analysis file is contained in Appendix D. The traffic study report is currently being revised based on the comments from the team concept meeting and the full traffic study report with appendices will be forwarded when completed.*
  - Pete Sewczwicz – what is the cross section between Old Milton Parkway and Mayfield Road?
    - *Currently, the cross section in this area is the same as other areas; 17' raised median, 11' right/left turn lanes, 4' bike lanes, 12' shoulder including 30" curb and gutter, 2' grass strip, 5' sidewalk. In accordance with the City of Alpharetta's LCI study, there is potential for the City to provide limited landscaping in the raised median, and shoulders. GDOT plans to acquire only the R/W and easements needed for the footprint. Improvements beyond the above typical section would require coordination with GDOT and City of Alpharetta funding.*
  - Ernest Slaughter – GDOT has not considered addressing vertical alignment of the road. GDOT should come out of the box and address all issues, since traffic in the Metro area remains to be a continuous problem, now if the time to address improvements needed for the future. Based on population and growth in the area, consider designs to pull traffic out of major intersections. Add streetscape improvements for residence of the area. Be aware that after 20 years of the project being on the books, many factors associated with living lifestyle. GDOT should consider moving traffic out of intersection and consider relocating state route out of downtown areas of Alpharetta. The flooding of 2009 raised questions and issues about alternative routes in cases of emergency. Now is the time to address these issues and not wait for an emergency to occur. Spending $52 (million) in easements is not a good use of spending tax payer's dollars. Traffic projects for growth of 1% sounds low.
    - *The concerns over high cost of R/W are noted. A value engineering study is also looking at this issue. Five permanent traffic count stations along the study corridor that have shown a flat to negative growth trend since 1992, especially over the past 8 – 10 years. Through discussions with GDOT, the Atlanta Regional Commission (ARC), and the City of Alpharetta, the flat to negative growth trend in traffic volumes determined the result of other major highway improvement projects in the area, most notably to State Route 400 around 2002. The ARC 20-year long-range travel model showed a steady 0.51% annual growth rate from 2005 to 2030, which is similar to the average annual growth rate obtained from the traffic count stations. After reviewing all of the gathered data, the overall consensus between GDOT, the ARC, and the City of Alpharetta was that low-moderate traffic growth*

between 0.5% and 1.0% annually over the next 20 years would be expected on SR 9. As a result, the 1.0% growth rate was used to be on the conservative side of the expectations. With other roadway widening improvements projects planned in the vicinity of the study corridor before this project would be considered, a high growth rate would be unrealistic.

- Craig Price – Before starting these 2 projects, complete Westside Parkway from Old Milton Parkway to Webb Bridge Road and also widen Hembree Road from Wills Road to Morrison Parkway. This will reduce traffic on Highway 9 during construction.
  - *This is the City of Alpharetta jurisdiction. GDOT has no jurisdiction over the roads mentioned. If this project proceeds to final design, a detailed maintenance of traffic plan, including any detours, will be submitted and approved by GDOT.*
- Mike Watkins – Are you considering utility relocation in the R/W or acquiring enough R/W for utilities?
  - *Yes, the proposed concept proposes to acquire 12' shoulder, not including the bike lanes. In many areas, the existing R/W is even greater.*
- David "Butch" Jones – GTC has 6 structures within project corridor from Upper Hembree to Wills Rd. Several of these are located on private property. When preliminary plans are available, more concise conflict assessment can be accomplished
  - *Agreed. Coordination with GTC will allow avoidance or minimization of impacts to transmission towers.*
- Abul K. Howlader – Fulton County existing waterline maybe conflict this project. Waterline relocation work shall be under GDOT contract. Fulton County proposed transmission waterline may be conflict this project.
  - *Continued coordination with Fulton County water, the City of Alpharetta, and GDOT is necessary.*
- Amber Phillips – Delete last sentence on page 3 of concept report stating traffic drop off north of windward Parkway is significant. This is not true, only 13% drop and only because of southbound traffic.
  - *Agreed. Will state the actual drop off and let the numbers speak of themselves.*
- Ian Rish – Rock possibly shallow. Blasting may be required for walls & utilities. Vertical grade changes will likely encounter rock that will require blasting.
  - *If vertical grade changes are included, consideration for the added cost of blasting will be added to the cost estimate.*

- The following are GDOT's Management reviews of the Draft Concept Report, the responses are followed in italics:
  - Rachel S. Brown (District 7 Acting Engineer)/Mike Lobdell – The project Need and Purpose Statement clearly shows that SR 9 is failing to handle the traffic demands and that operations are expected to continue to deteriorate in the future. The proposed improvements still show a failing level of service in the design year. What are the build vs. no-build delay times?
    - *The build and no build delay times are being compiled into a simple chart and will be added to the Concept Report.*
  - Rachel S. Brown (District 7 Acting Engineer)/Mike Lobdell – Assuming that the build delay times are significantly better, then the project is still worthwhile as proposed. Has a non-standard intersection design been considered? A continuous flow intersection may be a viable option at some intersections.
    - *Continuous flow intersections will be evaluated in more detail throughout the design process. The Concept Report was prepared using standard intersection designs.*
  - Rachel S. Brown (District 7 Acting Engineer)/Mike Lobdell – project is correctly noted as being located in a non-attainment area. Does the Atlanta Regional Commission have the project properly modeled in their air quality conformity model?
    - *The current Envision6 RTP and FY 2008-2013 TIP (amended 9/9/09) includes both projects, PI 721790 and PI 721780 as TIP Nos. FN-067B and FN-067A, respectively. The projects termini and laneage in the TIP are as described in the Concept Report. The projects are included in the air quality conformity model.*

- Glen S. Bowman (State Environmental/Location Engineer) – There are at least six (6) historic resources and one archaeological site previously determined to have National Register eligibility located adjacent to the project corridor (see page 13 in Concept Report). If significant impacts to historic (4)f resources cannot be avoided, then the proposed environmental schedule must be revised significantly.
  - *Agreed. In order to maintain the schedule, the avoidance of these resources is critical.*
- Glen S. Bowman (State Environmental/Location Engineer) – Please list who is responsible for the environmental work in the Project Responsibilities section.
  - *Edwards Pitman has been added to the Project Responsibilities Section.*
- Glen S. Bowman (State Environmental/Location Engineer) – It appears the southern terminus was chosen since it is the dividing line between Roswell and Alpharetta?
  - *The southern terminus is per GDOT's Transportation Improvement Program.*
- Glen S. Bowman (State Environmental/Location Engineer) – A logical termini justification report will need to be created and submitted to FHWA for review (it will need to justify our Northern terminus too). This should happen soon (preferably before the concept report is approved).
  - *Agreed. The issue of logical termini is critical to the projects. Discussion over logical termini is ongoing between GDOT and FHWA.*
- Glen S. Bowman (State Environmental/Location Engineer) – If ROW is required from any eligible historic resource, it is likely that we'll have an adverse effect and we'll have to compete a Full Section 4F review/evaluation. This would require an extensive alternative analysis and require review for legal sufficiency likely causing additional impacts to the scope/schedule/budget.
  - *Agreed. The design layout is set to avoid purchasing R/W from eligible historic resources, although some easements may be required.*

ATTENDANCE SIGN IN SHEET

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
PI NO.: 721780 and 721790
COUNTY/COUNTIES: Fulton

SUBJECT: Concept Team Meeting
DATE: Tuesday, October 6, 2009
TIME: 10:00 AM – 12:00 NOON

NOTE: *Everyone attending this meeting is requested to sign below. Attendees representing agencies or companies outside DOT and desiring a copy of the minutes of this meeting are requested to print their name, email address, organization, and telephone number below.*

NAME	ORGANIZATION	EMAIL ADDRESS	PHONE NUMBER
Peter B. Emmanuel	*GDOT*	*pemmanuel@dot.ga.gov*	*404-631-1158*
Amber Phillips	GDOT	aphillips @ dot.ga.gov	404-631-1117
Ian Rish	GDOT	irish @ dot.ga.gov	404-363-7579
Susan Thomas	Edwards-Pitman Environmental	sthomas@edwards-pitman.com	7)3339484
Bryon Letourneau	Pond and Company	LetourneauB@pondco.com	678.336.7740
Kevin Skinner	POND	SkinnerK@pondco.com	678 336 7740
Ron Osterlohr	Pond & Company	OSTERLOHR@POND CO.COM	678-336-7740
STEVE BRYAN	LONG ENGINEERING	sbryan @ longeng.com	615-221-1131
Butch Jones	GTC	LSCNTR65@GA TRANS.COM	770-270-7161
Bhargavi Chavali	LONG ENGINEERING	BCHAVALI @ LONGENG.COM	770-931-8005
CRAIG PRICE	GEORGIA POWER COMPANY	JCPRICE @ SOUTHERNCO.COM	770-740-7734
Mike Watkins	Georgia Power Company	MTWATKIN@Southernco.com	770 216 1433
Kaycee Mertz	GDOT - Planning	kmertz @ dot.ga.gov	404-347-0245
Ernest Slaughter	Fulton County	Ernest.Slaughter@FultonCountyga.gov	404.612.8325
Pete Sewczuicz	City of Alpharetta	psewczuicz@alpharetta.ga.us	678-297-6200
Mike Lobdell	GDOT - D7	mlobdell @ . . .	770-986-1257
Jerri Russell	City of Atlanta	jrussell @ atlantaga.gov	404-589-2722
ABUL K. HOWLADER	FULTON COUNTY	~~Fulton~~ abul.howlader@FultonCountyga.gov	(4)-612-7537
Eric Graves	Alpharetta	egraves@alpharetta.ga.us	8-297-6200
Clyde Cunningham	GDOT	CCUNNINGHAM @ dot.GA.GOV	7)986-1117
Joseph M. Carpenter	City of Atlanta	joe.carpenter@atlwater.com	404-235-2087
Dale Ferris	GDOT	Dferris @ dot.ga.gov	770-528-3238

ATTENDANCE SIGN IN SHEET

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
PI NO.: 721780 and 721790
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NAME	ORGANIZATION	EMAIL ADDRESS	PHONE NUMBER
Michael Nduka	CITY OF ATLANTA	Michael.Nduka@ATLWater.com	404 235-7067
Charity Belford	GDOT - Traffic Ops		4)635-8154
Crystal Paul-Buchanan	GDOT - Communications		
			404-631-1835

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
PI NO.: 721780 and 721790
COUNTY/COUNTIES: Fulton

SUBJECT: Concept Team Meeting
DATE: Tuesday, October 6, 2009
TIME: 10:00 AM – 12:00 NOON

NOTE: *The questions/comments below will be added to the concept team meeting minutes and may be incorporated into the projects if it is feasible.*

NAME Eric Graves	**Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects**

QUESTIONS/COMMENTS

(1) The City does not use the street name: Maddox Street. Should remove reference.

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
PI NO.: 721780 and 721790
COUNTY/COUNTIES: Fulton

SUBJECT: Concept Team Meeting
DATE: Tuesday, October 6, 2009
TIME: 10:00 AM – 12:00 NOON

NOTE: *The questions/comments below will be added to the concept team meeting minutes and may be incorporated into the projects if it is feasible.*

NAME Mike Lobdell	**Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects**

QUESTIONS/COMMENTS

Is this really Full Oversight?

Can District get a copy of Synchro analysis? and Appendix D of study?

Re-align driveways @ 115 tod to be across from each other.

Where are the highest crash locations?

These sheets are a good idea.

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
PI NO.: 721780 and 721790
COUNTY/COUNTIES: Fulton

SUBJECT: Concept Team Meeting
DATE: Tuesday, October 6, 2009
TIME: 10:00 AM – 12:00 NOON

NOTE: *The questions/comments below will be added to the concept team meeting minutes and may be incorporated into the projects if it is feasible.*

NAME Pete Senczwicz	**Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects**

QUESTIONS/COMMENTS

what is the cross-section b/w Old Milton Pkwy & Mayfield Rd?

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
PI NO.: 721780 and 721790
COUNTY/COUNTIES: Fulton

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TIME: 10:00 AM – 12:00 NOON

NOTE: *The questions/comments below will be added to the concept team meeting minutes and may be incorporated into the projects if it is feasible.*

NAME Ernest Slaughter	**Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects**

QUESTIONS/COMMENTS

1) GDOT has not considered addressing vertical alignment of the Road. GDOT should come out of the box and address all issues, since traffic in the METRO area remains to be a continuous problem, now is the time to address improvements needed for the future. Based on population and growth in the area, consider designs to pull traffic out of major intersections.

2) Add street scape improvements for residence of the area. Be aware that after 20 years of the project being on the books, many factors associated with living life style

3) GDOT should consider moving traffic out of intersection and consider relocating State Routes out of Downtown areas of Alpharetta. The Flooding of 2009 raised questions and issues about alternative routes in cases of Emergency. Now is the time to address these issues and not wait for an emergency to occur. Spending $52 million in easements is not a good use of spending tax payers dollars.

4) Traffic projects for growth of 1% sounds low.

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
PI NO.: 721780 and 721790
COUNTY/COUNTIES: Fulton

SUBJECT: Concept Team Meeting
DATE: Tuesday, October 6, 2009
TIME: 10:00 AM – 12:00 NOON

NOTE: *The questions/comments below will be added to the concept team meeting minutes and may be incorporated into the projects if it is feasible.*

NAME CRAIG PRICE	**Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects**

QUESTIONS/COMMENTS

BEFORE STARTING THESE 2 PROJECTS, COMPLETE WESTSIDE PARKWAY FROM OLD MILTON PARKWAY TO WEBB BRIDGE ROAD AND ALSO WIDEN HEMBREE ROAD FROM WILLS ROAD TO MORRISON PARKWAY. THIS WILL REDUCE TRAFFIC ON HIGHWAY 9 DURING CONSTRUCTION.

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
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NOTE: *The questions/comments below will be added to the concept team meeting minutes and may be incorporated into the projects if it is feasible.*

NAME Mike Watkins GPC	**Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects**

QUESTIONS/COMMENTS

Are you considering utility Relocation in the R/W or acquiring enough R/W for utilities?

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
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GA TRANSMISSION CORPORATION

NAME	Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects
DAVID "Butch" JONES	

QUESTIONS/COMMENTS

GTC HAS 8 STRUCTURES WITHIN PROJECT CORRIDOR - FROM UPPER HEMBREE TO WILLS RD.
SEVERAL OF THESE ARE LOCATED ON PRIVATE PROPERTY. WHEN PRELIMINARY PLANS ARE AVAILABLE MORE CONCISE CONFLICT ASSESSMENT CAN BE ACCOMPLISHED.

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
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NAME	Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects
QUESTIONS/COMMENTS Abul K. Howlader.	- Fulton County existing waterline maybe conflict this Project. Waterline relocation work shall be under GDOT Contract. - Fulton County proposed transmission waterline may be conflict this project.

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
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Amber Phillips OBL

NAME	**Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects**

QUESTIONS/COMMENTS

Delete last sentence on page 3 of Concept Report stating Traffic drop off north of Windward Parkway is significant.

This is not true only 13% drop and only because of Southbound traffic

SR 9 MEETING COMMENTS/QUESTIONS

Project Number: STP00-0114-01(084) & STP00-0114-01(085)
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NAME Geotechnical GDOT IAN RISH	**Please provides us comments on the concept and write down any questions that you will like for us to address or incorporate into the projects**

QUESTIONS/COMMENTS

Rock possibly shallow.
Blasting may be required for walls + utilities.
Vertical grade changes will likely encounter rock that will require blasting.

Attachment 9:

Minutes of Meetings (showing support or objection to the concept)

a. PIOH Held February 16, 2010
b. Meeting Held with DATA March 15, 2010
c. PIOH Held May 18, 2010
d. City of Alpharetta Letter of Support, August 10, 2010
   GDOT Letter of Reply, August 18, 2010
e. Initial Draft Concept Report Review

Vance C. Smith, Jr., P.E., Commissioner

DEPARTMENT OF TRANSPORTATION

One Georgia Center, 600 West Peachtree Street, NW
Atlanta, Georgia 30308
Telephone: (404) 631-1000

May 14, 2010

Re: Projects STP00-0114-01(085) & STP00-0114-01(084), Fulton County - P.I. Nos. 721790 & 721780 – SR 9/South Main Street/Cumming Highway Widening from Upper Hembree Road to Windward Parkway

Thank you for your comments concerning the proposed projects referenced above. We appreciate all of the input that was received as a result of the February 16, 2010 Public Information Open House (PIOH), and every comment will be made part of the official record of the project. Please accept our apologies for the delay in sending this response.

A total of 73 people attended the PIOH held for both projects. From those attending, 19 comment forms, 0 letters, and 1 verbal statement were received. An additional 75 comments were received during the comment period, which was extended from 10 days to 14 days following the PIOH, for a total of 95 comments. Of the comments received, 11 were in support of the project, 63 were opposed to the project, 6 were uncommitted, and 15 expressed conditional support for the project.

Those persons sending in comments raised the following questions and concerns. The Georgia Department of Transportation (Department) has prepared this one response letter that addresses all comments received so that everyone can be aware of the concerns raised and the responses given. Please find the comments summarized below (*in italics*) followed by our response.

- *The proposed raised median will create a major inconvenience to the residents of the Mannings Ridge and Winthrop Park subdivisions, and other homeowners along SR 9. Most school activities and shopping are accessed by turning left out of subdivision. Access will be too limited and the necessary u-turn will create a safety problem. The proposed raised median will cut off access and create a major inconvenience to the residents.*

Raised medians are recommended for roadways with current traffic volumes of greater than 18,000 vehicles per day and future traffic volumes of greater than 24,000 vehicles per day to reduce the potential for points of conflict. Average Annual Daily Traffic (AADT) volumes along SR 9/N. Main Street and S. Main Street are estimated to be 36,245 vehicles in the year 2012 and 44,230 vehicles in the year 2032, both of which exceed the minimum requirements for a raised median.

The safety and operational improvements of raised medians along high traffic roads have been thoroughly explored by the Department. In our experience, crash rates and congestion are reduced, flow is improved, landscaping and aesthetic opportunities are provided, and pedestrian refuge is provided. As currently proposed, it is anticipated that U-turns will be allowed at all median openings. A brochure entitled "Benefits of Installing Medians" can be obtained by calling the Department's Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a PowerPoint slideshow, accessible at:
http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx

Lastly, this project is in the early preliminary engineering phase, which includes concept development and environmental documentation. As the project development process moves forward, the Department will continue to work with the residents to develop a context sensitive design that will allow the project needs to be met while minimizing impacts to residential property owners.

- *Concerned about the loss of green space and the tree canopy. The project should include a comprehensive landscape plan that is in line with current Alpharetta standards.*

The footprint has been narrowed as much as possible to minimize impacts to adjacent properties. The project proposes to add the raised median, which at a minimum will be grassed. As the design progresses, there will be options for landscaping within the raised median and the shoulders.

- *The proposed median will destroy the character and aesthetics of downtown Alpharetta.*

The purpose of the proposed median through downtown Alpharetta is to improve safety and the operational characteristics of the roadway. The proposed raised median will allow opportunities for landscaping. A pedestrian friendly environment will be encouraged because the raised median will provide refuge for pedestrians crossing SR 9. In addition, the proposed project includes other amenities such as bike lanes and sidewalks and these features are expected to help maintain the character of downtown Alpharetta.

The project is also being developed in compliance with the National Environmental Policy Act (NEPA). In accordance with NEPA requirements, the social environment (including community impacts) and natural environment are being considered during the project development process. The project is being designed to minimize impacts to the communities along SR 9. The Department will continue to work with the community to develop a context sensitive design that will allow the project needs to be met while preserving and perhaps enhancing the character and aesthetics of downtown Alpharetta.

- *The proposed median and widening of SR 9 will adversely affect the downtown businesses and pedestrians by limiting access and increasing speeds.*

Some inconveniences may occur as a result of the median installation; however, some studies show that the business community may actually benefit from the proposed raised median. A study by Iowa State University found that thoroughfares with completed medians tend to have higher retail sales than surrounding communities without medians. The study also found that over 90 percent of surveyed motorists held favorable attitudes towards medians, about 80 percent of businesses expressed no customer complaints on ease of access to businesses after project completion, and about 80 percent of business owners stated that their level of sales were as high or higher with the installation of medians.

Pedestrian safety is another benefit of raised median. A pedestrian friendly environment will be encouraged because the raised median will provide refuge from traffic and prevent two-way left-turn movements in a high traffic area.

- *Please consider either a left turn break or the installation of a weight operated traffic light at the intersection of Pine Grove Drive and SR 9/Main Street. An assessment of the homeowners in the Mannings Ridge subdivision could be used to offset the cost.*

A median opening is warranted at Mayfield Drive, but Pine Grove Drive is too close to Mayfield Drive to allow for another median opening without adversely affecting safety and traffic operations. In an effort to provide quicker south bound access for residents coming off Pine Grove Drive, as well as for businesses south of Canton Street, a median

opening may be added between Mayfield Drive and Canton Street. The exact location for this opening has not been determined yet.

- *The proposed median will adversely affect neighborhoods and residential property values.*

The Department does not anticipate residential property values to be adversely affected by the addition of the raised median.

- *How high is the proposed gravity wall? Not excited about the retaining walls.*

None of the retaining walls are anticipated to be over six feet high. Most are proposed in order to minimize property acquisition from owners. If the adjacent properties prefer, a decorative wall facing may be used. Handrail would be provided for pedestrian safety.

- *I am opposed to the gravity wall proposed right next to my house. It will not control noise and will decrease the value of my home.*

Small walls are proposed on this project to minimize the right-of-way (value) impacts and not to reduce noise levels.

- *Make certain that the median curbing does not impede the two lanes of Windward turning left onto SR 9 south.*

The raised median would be located to allow for dual left turns from Windward Parkway to SR 9 southbound.

- *I agree with the widening and other turn lane improvements, but disagree with the raised median because of the negative effect on access. Please consider the use of a center turn lane instead. Concerned that the large median will pose a safety problem for emergency vehicle access.*

The proposed raised median with channelized left-turn lanes is expected to reduce intersection crashes, improve intersection traffic flow, access, and signal timing. As currently proposed, it is anticipated that U-turns will be allowed at all proposed median openings.

- *Request a traffic signal SR 9 and Vaughn Drive or Canton Street to make safer access to the Orchards at Alpharetta.*

There will be median openings at Vaughn Drive and at Canton Street. However, based on current traffic volumes and based on the current Manual on Uniform Traffic Control Devices (MUTCD) requirements, a traffic signal is not warranted at either location. As the design progresses, future traffic evaluations will occur and a signal may become necessary at these intersections.

- *I am pleased with the proposed four-foot bike lanes. Alpharetta should become more bicycle-friendly.*

The projects are in the Fulton County Bike and Pedestrian Plan as a bicycle corridor. Bicycle facilities have been added to the corridor and include a proposed four-foot wide bike lane in each direction adjacent to the travel lanes.

- *Widening of SR 9 is a poor use of funds. Funds would be better used elsewhere.*

Funds have been allocated to this project because of the existing operational deficiency and safety problems along SR 9 as evidenced by the existing and future congestion and high crash rates within the project area.

- *Meeting too far in advance of the start of construction.*

The first phase of the project development process includes public involvement. Gaining public input is a key element of successful project development. It is essential that public involvement occur early in the project development process in order to identify issues that may affect the design. Public involvement is required as part of the environmental evaluation of the project. Additional public involvement will occur as the project moves forward to subsequent right-of-way acquisition and construction phases. Right-of-way acquisition is currently scheduled to begin in 2014. This project is programmed to begin construction in 2018.

- *On Maxwell Road, most left turning traffic on Maxwell to SR 9 south from the First Colony Bank driveway – recommend looking at joint access so that can relocate driveway further back from intersection. If the bank would be displaced – recommend improve intersection angle and approach of Devore Rd. and SR 9 major cut through from Haynes Bridge to SR 9.*

Relocating First Colony Bank's access slightly further down Maxwell Road (away from SR 9) is a necessary improvement in order to keep the access point away from the intersection and avoid conflicts with the storage bay.

- *There doesn't appear that sufficient storage is provided at many of the turn lanes (Old Milton).*

Based on the traffic study, the proposed improvements would provide adequate storage on SR 9. As a result, there would be enough storage length (stacking distance) for left turning movements.

- *Recommend dual left-turn lanes at SR 9 and Academy Storage. Traffic packs up to Methodist church in AM peak hour.*

According to our analysis which uses peak-hour, 20-year traffic projections, Academy Street does not warrant dual left turns.

- *Close driveway for Windward Promenade north of traffic signal on SR 9 and extend right turn lane for Windward Parkway on SR 9.*

The Department wishes to maintain a second access point to Windward Promenade and the Hodge Property (corner lot). The feasibility of a continuous right turn lane from the southern traffic signal to Windward Parkway will be evaluated. This continuous turn lane could include a right-in/right-out access at the existing drive.

- *Traffic signal at Canton St. and SR 9 or refuge for left turning vehicles turning left from Canton to SR 9 northbound.*

Dedicated turn lanes are being added at Canton Street.

- *Please explain the project purpose. How will this project relieve traffic congestion? The congestion in downtown Alpharetta does not warrant this project. There are many other alternative routes to travel. Current system works fine.*

The project proposed is intended to meet an identified transportation need. The purpose of the proposed project is to relieve traffic congestion and to provide safety and operational improvements along SR 9. Without the proposed improvements, continued growth in the area will cause congestion to increase and the intersections to fail in the future. The crash rates and injury rates along SR 9 in the project area exceed the statewide average. The proposed raised median would eliminate or restrict turning movements at certain intersections and the proposed improvements are expected to reduce the high number of rear end and angle type crashes.

- *How much will this project cost? How is funding provided? When will the project begin? What is the project completion date?*

Preliminary estimates indicate that the proposed project will cost approximately $52 million for right-of-way and $22 million for construction. Funding for this project is provided by the Department and the Federal Highway Administration (FHWA) largely from motor fuel taxes collected at the gas pump. Currently, this project is in the concept phase, which includes preliminary engineering and environmental documentation. The subsequent project phases are right-of-way and construction. Right-of-way acquisition is currently scheduled to begin in 2014. This project is programmed to begin construction in 2018. Construction of the proposed improvements is estimated to be completed within 24 months.

- *Is this something Alpharetta citizens approve by a vote?*

The proposed project is not subject to a vote by a group of citizens. The Department is proposing to implement a project that has been identified through the local transportation planning process, and the planning process is open to comments and suggestion from all citizens. Public involvement in the decision-making process is and will continue to be a key consideration as the project is developed further. We pledge to work with all interested citizens affected by the project and to minimize impacts as much as possible while meeting the needs of the traveling public.

- *Is the project funded or in line for funding by GDOT?*

To date, funding has been authorized for the preliminary engineering phase only, and this includes concept development and environmental documentation. Future funding for the subsequent project phases is outlined above.

- *Remove the state route designation on Highway 9 and let the local cities control the road.*

At this time, SR 9 is the designated state route and as such is owned and maintained by the Department. No decision has been made to remove this route from the state highway system.

- *The GDOT should finish Westside Parkway and designate it as the state route, rather than SR 9.*

Westside Parkway, which is currently under construction, has not been developed to serve as the replacement for the current SR 9 roadway corridor and significant improvements to both Westside Parkway and adjoining side roads would likely be required if the State Route were relocated. Also, since Westside Parkway covers multiple jurisdictions, intergovernmental agreements would need to be in place to relocate the state route designations and to construct these necessary improvements to Westside Parkway and the roadways adjoining the existing SR 9. This option has been discussed with the City of Alpharetta. The cities of Alpharetta and Roswell, in coordination with Fulton County, will be

responsible for advancing the proposal of relocating the State Route. If these jurisdictions request this relocation, the Department will further evaluate the feasibility and requirements of the proposed relocation.

- *I would like to discuss my home being purchased instead.*

The right-of-way acquisition phase of this project is programmed to begin in 2014. Unfortunately, we are not able to determine the possible settlement details with individual property owners until that time.

- *Concerned about impacts to parking spaces at my business. The proposed plan will take 3 of the 9 available spaces. This will put me out of business.*

Individual businesses will be evaluated on a case by case basis. As noted above, we are not able to determine the possible settlement details with individual business owners until the right-of-way acquisition phase begins.

- *The proposed widening of SR 9 would reduce the buffer zone and would increase traffic noise.*

A noise impact assessment conducted for this project found that 39 sites would be affected by noise. Noise abatement measures were evaluated, including construction of noise barriers, land use and zoning options, traffic management, and alternative alignments. None of these measures were found to be reasonable and feasible. Noise barriers would not be effective for these receivers due to required access breaks. Due to the density of development along the project corridor, effective land use and zoning and shifts in the alignment would not be effective, and could produce more displacements than the current proposed design. Lastly, traffic management techniques would not be conducive to the proposed scope or purpose of the project.

- *Please continue to have meetings and inform the public about the project.*

The project is being developed in compliance with the National Environmental Policy Act (NEPA). As noted above and as required by NEPA regulations, public involvement will continue as the project is developed. The public notification and comment efforts are done to gain additional information, make changes when possible, and to keep the public involved in the decision-making process. Additional public meetings related to this project will be held. The next open house has been scheduled and the details are noted at the bottom of this letter.

- *Too few people in the community know about this major proposal. Meeting notification was inadequate.*

The public notification for this meeting included an advertisement in the local paper on two different occasions, signs were posted along SR 9 for two weeks in advance of the PIOH, and post cards with a meeting notification were sent to over 500 individuals living along SR 9 within the project area.

Additionally, the Department's calendar of events, conferences, and the documents presented at the open house can be obtained by going to the our website home page www.dot.ga.gov and select Information Center and then click Public Outreach. From there select by project and scroll down to "SR 9/Mainstreet Widening and Reconstruction" and click go.

- *Would like to have more time between the meeting and the deadline for written comments. 30 days would be sufficient.*

This information is appreciated. Although the comment period is generally 10 business days after the PIOH, all comments formally received by GDOT will be considered in the final decision that is made for this project.

All comments are appreciated and will be made a part of the official record of the project.

- *I support the widening through downtown Alpharetta. This project is needed.*

Subsequent to the PIOH, on March 8, 2010, the City of Alpharetta conducted a forum to discuss the proposed project. According to city records, a total of 222 people were in attendance and 65 people left comments. A total of 15 comments indicated support for the project as currently proposed, 44 comments indicated opposition to the project, 1 comment was neutral, and 5 comments indicated support for the project as "maybe".

In addition, a petition was submitted with 195 signatures with the following statements:

"The Georgia Department of Transportation Has a Plan For Highway 9 in Alpharetta That Will Adversely Affect Your Business and Property.

- Plan to install a median that will limit left turns and require right turn in and right turn out for most businesses.
- Plan to widen the highway increasing the speed of traffic through the city.
- Plan will make the highway look like Windward parkway passing through downtown.
- Plan will destroy the proposed vision of a quaint pedestrian friendly downtown Alpharetta."

Lastly, a second petition was submitted with 125 signatures with the following statements:

"The Georgia Department of Transportation is proposing road widening which includes a raised median which would prevent making left hand turns into and out of Willis Chiropractic Center and all business from Upper Hembree Road to Windward Parkway, as part of GDOT Projects STP00-0114-01(085) and STP00-0114-01(084). I DO NOT SUPPORT RAISED MEDIANS in this project and request that GDOT employ the use of a turn lane, like the one currently available to drivers on North Main Street from Mayfield Road to Canton Street."

We would also like to take this opportunity to notify you that the Department will be conducting another Public Information Open House (PIOH) regarding this project on May 18, 2010 between the hours of 1 p.m. and 7 p.m. This PIOH will be held at the Alpharetta City Hall located at, 2 South Main Street, Alpharetta, GA 30009. The purpose of this Open House is show the changes to the proposed project as a result of the comments received at the February 16, 2010 PIOH, to educate the public about the importance of installing medians, and to provide the public with an opportunity to view the proposed project, ask questions, and comment on the proposal.

Thank you again for your comments. All comments will be made a part of the official record of the project. Should you have any further questions concerning this project, please call the Department's project manager Peter Emmanuel at (404) 631-1158 or Amber Phillips of the Office of Environmental Services at (404) 631-1117.

Sincerely,

Glenn Bowman SLT

Glenn Bowman, P.E.
State Environmental Administrator

GB/ALP

cc: Peter Emmanuel - Georgia DOT Project Manager

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. No. 721790 & 721780 **OFFICE:** Environmental Services
DATE: April 8, 2010

FROM: Glenn Bowman, P.E., State Environmental Administrator

TO: Distribution Below

SUBJECT: Projects STP00-0114-01(085) & STP00-0114-01(084), Fulton County, Summary of Comments Received During the Public Comment Period – The proposed project consists of the widening and reconstruction of SR 9, reconfiguration of side roads, pedestrian improvements and signal upgrades.

COMMENT TOTALS:

A total of 73 people attended the public information open house held for the subject project on February 16, 2010. Displays, project handout materials, and comments forms available at the meeting.

From those attending, 19 comment forms, 0 letters, and 1 verbal statement were received. An additional 75 comments were received during the comment period, which was extended from 10 days to 14 days following the public information open house, for a total of 95 comments. They are summarized as follows:

No. Opposed	No. In Support	Uncommitted	Conditional
63	11	6	15

MAJOR CONCERNS:

Written concerns expressed opposition to the raised median, or lack of median break, in front of the Manning Ridge and Winthrop Park subdivisions; concern that the proposed widening would adversely affect the character and business economy of downtown Alpharetta; and many suggested that the money would be better spent on completing Westside Parkway as an alternative to SR 9.

OFFICIALS:

Officials attending included the following:

Mayor Arthur Letchas, City of Alpharetta

MEDIA:

None

DISPOSITION OF COMMENTS:

Pond and Company and Edwards-Pitman Environmental, Inc. will respond to all comments on behalf of the Department of Transportation. The GDOT offices below are asked to review the responses provided by the consultant for the comments in their section. The project manager will review all responses.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design	8, 9, 10, 24, 25, 26, 27, 28, 29, 30, 33, 34, 36, 37, 38, 40, 42, 43, 44, 45, 47, 48, 50, 51, 54, 55, 59, 60, 69, 70, 71, 72, 73, 74, 81, 87, 88, 89, 90, 92,	The proposed raised median will create a major inconvenience to the residents of the Mannings Ridge and Winthrop Park subdivisions, and other homeowners along SR 9. Most school activities and shopping are accessed by turning left out of subdivision. Access will be too limited and the necessary u-turn will create a safety problem. The proposed raised median will cut off access and create a major inconvenience to the residents.	Raised medians are recommended for roadways with current traffic volumes of greater than 18,000 vehicles per day and future traffic volumes of greater than 24,000 vehicles per day to reduce the potential for points of conflict. Average Annual Daily Traffic (AADT) volumes along SR 9/N. Main Street and S. Main Street are estimated to be 36,245 vehicles in the year 2012 and 44,230 vehicles in the year 2032, both of which exceed the minimum requirements for a raised median. The safety and operational improvements of raised medians along high traffic roads have been detailed by the Georgia Department of Transportation (GDOT). Crash rates and congestion are reduced, flow is improved, landscaping and aesthetic opportunities are provided, and pedestrian refuge is provided. U-turns will be allowed at all median openings. A brochure entitled "Benefits of Installing Medians" can be obtained by calling the GDOT Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a powerpoint slideshow, accessible at: http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx Lastly, this project is in the preliminary engineering phase of this project, which includes concept development and environmental documentation. As the project development process moves forward, GDOT will continue to work with the residents to develop a context sensitive design that will allow the project need to be met while minimizing impacts to residential property owners.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	6, 39	Concerned about the loss of green space and the tree canopy. The project should include a comprehensive landscape plan that is in line with current Alpharetta standards.	The footprint has been narrowed as much as possible to minimize impacts to adjacent properties. The project proposes to add the raised median, which at a minimum will be grassed. As the design progresses, there will be options for landscaping within the raised median and the shoulders.
	18, 32, 39, 40, 44, 49, 65, 68, 71, 82, 91,	The proposed median will destroy the character and aesthetics of downtown Alpharetta.	The purpose of the proposed median through downtown Alpharetta is to improve safety and the operational characteristics of the roadway. The proposed raised median will allow opportunities for landscaping. A pedestrian friendly environment will be encouraged because the raised median will provide refuge for pedestrians crossing SR 9. In addition, the proposed project includes other amenities such as bike lanes and sidewalks, which will help maintain the character of downtown Alpharetta. The project is also being developed in compliance with the National Environmental Policy Act (NEPA). In accordance with NEPA requirements, the social environment (including community impacts) and natural environment are being considered during the project development process. The project is being designed to minimize impacts to the communities along SR 9. GDOT will continue to work with the community to develop a context sensitive design that will allow the project need to be met while preserving and perhaps enhancing the character and aesthetics of downtown Alpharetta.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	11, 14, 18, 21, 23, 30, 37, 57, 43, 44, 62, 64, 66, 67, 68, 71, 76, 83, 86,	The proposed median and widening of SR 9 will adversely affect the downtown business by limiting access, increasing speeds, especially for pedestrians.	Studies show that the business community may benefit from the proposed raised median. A study by Iowa State University found that thoroughfares with completed medians tend to have higher retail sales than surrounding communities without medians, 90 – 100 percent of surveyed motorists held favorable attitudes towards medians, about 80 percent of businesses expressed no customer complaints on ease of access to businesses after project completion, and about 80 percent of business owners stated that level of sales were as high or higher with the installation of medians. This and other studies outlining the economic impacts resulting from median installations and business concerns can be found in the brochure entitled "Benefits of Installing Medians", which be obtained by calling the GDOT Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a powerpoint slideshow, accessible at: http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx Pedestrian safety is another benefit of raised median. A pedestrian friendly environment will be encouraged because the raised median will provide refuge from traffic and avoid two-way left-turn movements.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	31	Please consider either a left turn break or the installation of a weight operated traffic light at the intersection of Pine Grove Drive and SR 9/Main Street. An assessment of the homeowners in the Mannings Ridge subdivision could be used to offset the cost.	A median opening is warranted at Mayfield Drive, but Pine Grove Drive is too close to allow another median opening. In an effort to provide quicker south bound access for residents coming off Pine Grove Drive, as well as businesses south of Canton Street, a median opening may be added between Mayfield Drive and Canton Street. This exact location has not been determined yet.
	1, 21, 76,	The proposed median will adversely affect neighborhoods and residential property values.	The Department does not anticipate residential property values to be adversely affected by the addition of the raised median. In fact, evidence suggests that raised medians do not adversely affect residential property values.
	11, 18	How high is the proposed gravity wall? Not excited about the retaining walls.	None of the retaining walls are anticipated to be over 6 feet high. Most are proposed in order to minimize property acquisition from owners. If the adjacent properties warrant, a decorative wall facing may be used. Handrail would be provided for pedestrian safety.
	42	I am opposed to the gravity wall proposed right next to my house. It will not control noise and will decrease the value of my home. I would like to discuss my home being purchased instead.	Gravity walls are utilized on this project to reduce the right-of-way impacts. The right-of-way acquisition phase of this project is programmed to begin in 2014. Your comment has been forwarded to our right-of-way office.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	2, 3	Make certain that the median curbing does not impede the two lanes of Windward turning left onto SR 9 south.	The raised median would be located to allow for dual left turns from Windward Parkway to SR 9 southbound.
	22	Concerned about the proposed temporary construction easement on the Public Storage property.	***Property owner was responded to directly by GDOT – comments were site specific and did not pertain to the overall project.***
	42, 58, 94, 95 6, 84	I agree with the widening and other turn lane improvements, but disagree with the raised median because of the negative effect on access. Please consider the use of a center turn lane instead. Concerned that the large median will pose a safety problem for emergency vehicle access.	The proposed raised median with channelized left turn lanes would reduce intersection crashes, improve intersection traffic flow, access, and signal timing. Median openings would be provided at all intersections U-turns will be allowed at all median openings.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Traffic Operations	39, 61, 63, 93	Request a traffic signal SR 9 and Vaughn Drive or Canton Street to make safer access to the Orchards at Alpharetta.	There will be median openings at Vaughn Drive and at Canton Street. However, based on current traffic volumes, a traffic signal is not warranted at either location based on the current Manual on Uniform Traffic Control Devices (MUTCD) requirements. As the design progresses, future traffic evaluations will occur and a signal may become necessary at these intersections. This project is programmed to begin construction in 2018.
	2, 3, 8, 9, 10, 77	I am pleased with the proposed four-foot bike lanes. Alpharetta should become more bicycle friendly.	The projects are in the Fulton County Bike and Pedestrian Plan as a bicycle corridor. Bicycle facilities have been added to the corridor and include a proposed four-foot wide bike lane in each direction adjacent to the travel lanes.
	12, 17, 20, 78	Widening of SR 9 is a poor use of funds. Funds would be better used elsewhere.	GDOT has authorized funding for the preliminary engineering phase of this project, which includes concept development and environmental documentation. Funds have been allocated to this project because of the existing operational and safety problems along SR 9 as evidenced by the existing and future congestion and high crash rates within the project area.

	5	Meeting too far in advance of the start of construction.	The first phase of the project development process includes public involvement. Gaining public input is a key element of successful project development. It is essential that public involvement occur early in the project development process in order to identify issues that may affect the design of the project. Public involvement is required as part of the environmental evaluation of the project. Additional public involvement will occur as the project moves forward to subsequent right-of-way acquisition and construction phases. Right-of-way acquisition is currently scheduled to begin in 2014. This project is programmed to begin construction in 2018.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Traffic Operations (continued)	80	On Maxwell Road, most left turning traffic on Maxwell to SR 9 south from the First Colony Bank driveway – recommend looking at joint access so that can relocate driveway further back from intersection. If the bank would be displaced – recommend improve intersection angle and approach of Devore Rd. and SR 9 major cut through from Haynes Bridge to SR 9. There doesn't appear that sufficient storage is provided at many of the turn lanes (Old Milton). Recommend dual left turn lanes at SR and Academy Storage. Traffic packs up to Methodist church in am peak hour. Close driveway for Windward Promenade north of traffic signal on SR 9 and extend right turn lane for Windward Parkway on SR 9. Traffic signal at Canton St. and SR 9 or refuge for left turning vehicles turning left from Canton to SR 9 northbound.	Relocating First Colony Bank's access further down Maxwell Road (away from SR 9) is a necessary improvement. Based on the traffic study, the proposed improvements would provide adequate storage on SR 9. As a result, there would be enough storage length (stacking distance) for left turning movements. Academy Street does not warrant dual left turns. A traffic signal is not warranted at Canton Street based on MUTCD requirements. A separate left turn lane and right turn lane would be good on the Canton Street approach (depends on right-of-way) since over 70% of the daily traffic turns right (over 90% during the AM peak period).

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Traffic Operations (continued)	35, 46, 52, 62, 83	Please explain the project purpose. How will this project relieve traffic congestion? How much will this project cost? Is this something Alpharetta citizens approve by a vote? How is funding provided? When will the project begin? What is the project completion date? The congestion in downtown Alpharetta does not warrant this project. There are many other alternative routes to travel. Current system works fine.	The project proposed by GDOT is intended to meet an identified transportation need. The purpose of the proposed project is to relieve traffic congestion and to provide safety and operational improvements along SR 9. Without the proposed improvements, continued growth in the area will cause congestion to increase and the intersections to fail in the future. The crash rates and injury rates along SR 9 in the project area exceed the statewide average. The proposed raised median would eliminate or restrict turning movements at certain intersections and are expected to reduce the high number of rear end and angle type crashes. The proposed project is not subject to a vote by a group of citizens. However, public involvement in the decision making process is a key consideration as the project is developed further. The GDOT will work with the public that would be affected by the project to minimize adverse impacts, while meeting the needs of the traveling public. GDOT has authorized funding for the preliminary engineering phase of this project, which includes concept development and environmental documentation. The subsequent project phases are right-of-way and construction. Right-of-way acquisition is currently scheduled to begin in 2014. This project is programmed to begin construction in 2018.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Traffic Operations (continued)	5	Is the project funded or in line for funding by GDOT?	GDOT has authorized funding for the preliminary engineering phase of this project, which includes concept development and environmental documentation. The subsequent project phases are right-of-way and construction. Right-of-way acquisition is currently scheduled to begin in 2014. This project is programmed to begin construction in 2018.
	20	Remove the state route designation on Highway 9 and let the local cities control the road.	At this time, SR 9 is the designated state route and as such is owned and maintained by GDOT. Your comment has been forwarded to Bryant Poole, the GDOT District 7 Engineer, for consideration. Additional concerns about state route designation of SR 9 may be sent to Bryant Poole at 5025 New Peachtree Road, Chamblee, Georgia 30341.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Traffic Operations (continued)	7, 21, 30, 38, 41, 44, 49, 50, 52, 53, 55, 56, 58, 65, 68, 72, 73, 81, 87, 91,	The GDOT should finish Westside Parkway and designate it as the state route, rather than SR 9.	The need and purpose of the proposed project is to provide operational and safety improvements, as well as relieve traffic congestion along the SR 9 roadway corridor. State Route 9 is currently the main State Route and Truck Route through northern Fulton County. If the State Route designation was moved to Westside Parkway, the City of Alpharetta could then limit truck traffic along the Alpharetta portion of SR 9; however, any safety and operational improvements or traffic congestion improvements would then need to be constructed by the City since this section of the roadway would no longer be a State Route. With the completion of Westside Parkway construction and the elimination of truck traffic along SR 9, there would still be a need for safety and operational improvements, as well as traffic congestion improvements along the project corridor Westside Parkway, which is currently under construction, has not been developed to serve as the replacement for the current SR 9 roadway corridor and significant improvements to both Westside Parkway and adjoining side roads would likely be required if the State Route were relocated. Also, since Westside Parkway covers multiple jurisdictions, intergovernmental agreements would need to be in place to relocate the state route designations and to construct these necessary improvements to Westside Parkway and the roadways adjoining the existing SR 9. This option has been discussed with the City of Alpharetta. The cities of Alpharetta and Roswell, in coordination with Fulton County, will be responsible for advancing the proposal of relocating the State Route. If these jurisdictions request this relocation, GDOT will further evaluate the feasibility and requirements of the proposed relocation.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Right of Way	42	I would like to discuss my home being purchased instead.	The right-of-way acquisition phase of this project is programmed to begin in 2014. Your comment has been forwarded to our right-of-way office.
	14, 16,	Concerned about impacts to parking spaces at my business. The proposed plan will take 3 of the 9 available spaces. This will put me out of business.	Individual businesses will be evaluated on a case by case basis. The right of way acquisition phase of this project is programmed to begin in 2014. Your comment has been forwarded to our right-of-way office.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Environment	1, 88	The proposed widening of SR 9 would reduce the buffer zone and would increase traffic noise.	Noise abatement measures, including the use of vegetative and structural barriers, were evaluated and found not to be reasonable and feasible. The access breaks would render a vegetative or structural barrier ineffective in producing noise reductions.
	6, 15, 29,	Please continue to have meetings and inform the public about the project.	The project is being developed in compliance with NEPA. In accordance with NEPA requirements, public involvement will continue as the project is developed. The public notification and comment efforts are done to gain additional information from the public about the concerns in the project area and to keep the public involved in the decision making process. Additional public meetings related to this project will be held.
	92	Too few people in the community know about this major proposal. Meeting notification was inadequate.	The public notification for this meeting included an advertisement in the local paper on two different occasions, signs posted along SR 9 for two weeks in advance of the PIOH, and post cards with a meeting notification were sent to over 500 individuals living along SR 9 within the project area. Additional project information can be obtained by going to the GDOT website. To access the information, begin at the GDOT home page www.dot.ga.gov and select Calendar of Events from the Information Center dropdown menu.
	95	Would like to have more time between the meeting and the deadline for written comments. 30 days would be sufficient.	This information is appreciated. Although the comment period is generally 10 business days after the PIOH, all comments formally received by GDOT will be considered in the final decision that is made for this project.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Environment (continued)	13, 19, 4, 5, 13, 77, 79, 85, - all letters.	I support the widening through downtown Alpharetta. This project is needed.	Thank you for your input regarding the PIOH for the proposed project. Your interest in this meeting and your comments are appreciated. Your comments will be made a part of the official record of the project. The attendees of the open house and those persons sending in comments afterwards raised the following questions and concerns. The GDOT has prepared one response to all comments so that everyone can be aware of the concerns raised and the responses given. Please find the comments, concerns, and questions listed below along with their response.

Subsequent to the PIOH, on March 8, 2010, the City of Alpharetta conducted a forum to discuss the proposed project. According to city records, a total 222 people were in attendance and 65 people left comments. A total of 15 comments indicated support for the project as currently proposed, 44 comments indicated opposition to the project, 1 comment was neutral, and 5 comments indicated support for the project as "maybe".

In additon, a petition was submitted with 195 signatures with the following statements:

"The Georgia Department of Tranposrtation Has a Plan For Highway 9 in Alpharetta That Will Adversely Affect Your Business and Property.

- Plan to install a median that will limit left truns and require right turn in and right turn out for most buisnesses.
- Plan to widen the highway increasing the speed of traffic through the city.
- Plan will make the highway look like Windward parkway passing through downtown.
- Plan will destroy the proposed vission of a quaint pedestrain friendly downtown Alpharetta."

Lastly, a second petition was submitted with 125 signatures with the following statements:

"The Georgia Department of Transportation is proposing road widening which includes a raised median which would prevent making left hand turns into and out of Willis Chiropractic Center and all business from Upper Hembree Road to Windward Parkway, as part of GDOT Projects STP00-0114-01(085) and STP00-0114-01(084). I DO NOT SUPPORT RAISED MEDIANS in this project and request that GDOT employ the use of a turn lane, like the one currently available to drivers on North Main Street from Mayfield Road to Canton Street."

Attached is a complete transcript of the comments received during the comment period and a copy of the public information open house handout for review. **Your input on the proposed responses is required by** April 16, 2010. Please direct your comments via email to Edwards-Pitman Environmental, Inc. (sthomas@edwards-pitman.com) and copy Amber Phillips (aphillips@dot.ga.gov), of this office.

If you have any questions about the comments, please either email or call Amber Phillips at (404) 631-1117.

GB/AP/slt-epei

Attachments

DISTRIBUTION:
Director of Preconstruction
Peter Emmanuel, w/attachments
District 7 (Attn: Bryant Poole, P.E.), w/attachments
Angela T. Alexander, w/attachments
Keith Golden, P.E., w/attachments
Howard (Phil) Copeland (Attn: Troy Byers), w/attachments

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. Nos. 721790 & 721780 OFFICE: Environmental Services

DATE: February 22, 2010

GB/M

FROM Glenn Bowman, P.E., State Environmental Administrator

TO Distribution Below

SUBJECT PUBLIC INFORMATION OPEN HOUSE SYNOPSIS

PROJECT Nos. & COUNTY: STP00-0114-01(085) & STP00-0114-01(084), Fulton

PROJECT DESCRIPTION: The proposed project consists of the widening and reconstruction of SR 9, reconfiguration of side roads, pedestrian improvements and signal upgrades. The work is divided into two projects, PI 721790 and 721780. The first project, PI 721790, begins at Upper Hembree Road and continues to Academy Street; PI 721780 stretches from Academy Street to Windward Parkway. The proposed project intends to provide a continuous roadway section/footprint throughout the entire project corridor. This includes four 11-foot travel lanes (two in each direction), a 17-foot raised grass/landscaped median, a four-foot bicycle lane in each direction, 11.5-foot shoulders with curb and gutter, a two-foot landscape strip, and five-foot sidewalks. Fifteen median breaks are proposed at key intersections. The total project length is approximately 3.64 miles.

DATE: February 16, 2010

NUMBER IN ATTENDANCE: 73

FOR: 7

CONDITIONAL: 4

UNCOMMITTED: 1

AGAINST: 7

OFFICIALS IN ATTENDANCE: Arthur Letchas, Mayor of Alpharetta; Chris Lagerbloom, City of Milton Public Safety Director

ADDITIONAL COMMENTS: Written comments received at the PIOH indicated the following concerns:

- noise impacts related to future traffic and widening of the roadway,
- that the median will reduce property values and restrict access to businesses and neighborhoods,

- that emergency equipment will only be able to access parcels from one direction,
- that bicycle lanes should continue to be part of the project,
- the medians should be constructed such that left turns at the median breaks can be safely made,
- that the project needs to be completed sooner,
- that a landscape design plan is in line with City of Alpharetta standards,
- that SR 9 does not need to be a state route,
- that money would be better spent elsewhere,
- that the median width should be reduced so that no business parking spaces are taken,
- and that the existing turn lanes should be lengthened and the roadway be resurfaced.

PREPARED BY: Susan Thomas, Edwards-Pitman for Amber Phillips, GDOT

TELEPHONE No.: Susan Thomas, (770)333-9484; Amber Phillips (404)631-1117

cc: Gerald M. Ross, P.E.
Ben Buchan, P.E.
Bryant Poole
Peter Emmanuel
Bobby Hilliard, P.E.
Mac Cranford
Mark McKinnon

Georgia Department of Transportation
600 West Peachtree Street, NW, Atlanta GA 30308
T 404.631.1158 F 404.631.1588 www.dot.ga.gov

DRAFT MEETING MINUTES

Subject:	**STP00-0000-00(084), P.I. No. 721780** SR 9/North Main Street from Academy Street to Windward Parkway Fulton County, GA **STP00-0000-00(085), P.I. No. 721790** SR 9/South Main Street from Upper Hembree to Academy Street Fulton County, GA
Meeting Date:	March 16, 2010 (3:30 pm – 5:15 pm)
Transcription Date:	March 17, 2010
Location:	Coffee Pot Restaurant – 9 South Main Street, Alpharetta, GA 30009

Attendees:	**Organization & Title:**
Scott Lee	*District Design Engineer*
Stacey Anderson	*Business Owner @ Queens of Hearts Antique & Interiors*
Clark B. Savage	*Clayton CameraCraft Photography*
Larry Adams	*Not Available*
Mr. Trotter	*State Environmental Administrator*
Dr. Raymond Hoyum	*President of DATA*
Richard J. Debban	*Architect @ RJD Architect, LLC*
Peter Emmanuel	*Project Manager*

Purpose: **Discuss City of Alpharetta SR 9 Streetscape Project**

Items Discussed

Peter Emmanuel and Scott Lee met with seven members of the Downtown Alpharetta Trade Association (DATA). The following are key discussion of the meeting:

- DATA requested for an explanation of the need and purpose of the projects. Peter Emmanuel explained how the Department proposed projects, and explained the need and purpose of the SR 9 projects. Scott Lee added how the Department used various resources to study a corridor and identify a need.
- DATA asked how did Highway 9 became a State Route and the justification behind it. Peter Emmanuel stated that a developer built a two way road called Main Street, which was donated to the City of Alpharetta to maintain. As the year passed by, the two way road received a left and right turn lane, passing lane, and eventually turn into two lanes in each direction. As traffic signals are added to the intersection, the City could no longer afford to handle the amount of traffic and maintenance required for the road, and requested for the Department assistance. For the State to maintain any roadway in the State of Georgia it must be designated as a State Route, hence, Main Street became SR 9 till this day.
- DATA asked how can the road be undesignated as a State Route. Scott Lee explains the process and what has to be done from a local level for the State to consider such action, as well as the implications, and consequences.
- DATA stressed a deep concern about lost of parking spaces for businesses as a result of the proposed improvements to SR 9. Peter Emmanuel said the proposed SR 9 projects are maximizing the existing State right of way of which most of the on-street parking is using, therefore, some of parking spaces belong to the State. Moreover, Peter said any additional lands needed are for easement of constructions, and maintenance of slopes.
- DATA asked if the proposed SR 9 projects complies or in-line with the City of Alpharetta LCI (Livable center Initiative) plan. Peter Emmanuel said yes, proper coordination has been made with the City to ensure the proposed projects meet the targeted downtown needs.

DRAFT MEETING MINUTES

- DATA asked if public input will be put into consideration as the project proceeds forward. Peter Emmanuel said part of the reason for this meeting is to obtain public input, especially for the businesses and residential property owners that are directly affected by the projects. Moreover, Peter Emmanuel stated that the proposed projects are not set in stone and subject to changes that will ensure the projects need and purpose are met, as well as the community overall satisfaction.
- DATA complains that the meeting location was not adequate, and that the Department should ensure that the business communities are targeted in the next meeting. Peter Emmanuel assured DATA that the next meeting will be coordinated with the city of Alpharetta and members of the DATA to obtain the best location to target the business community attendance.
- Overall, the DATA members expressed a willingness to work with the Department to make the projects Alpharetta and community friendly. Also, they are in favor of several workshops to take the projects through the community. In addition, they want to help spread the word out on the projects, help educate the community, help with the dialogue on the need & purpose of the projects, and help spread the news on future meetings
    - The available contact information of the DATA member are as follows:

DATA (Downtown Alpharetta Trade Association)	
Dr. Raymond Hoyum President of DATA Occupation: Proprietor Company: Monfort's 41 Church Street, Alpharetta, GA 30009 770-837-3004	Richard J. Debban Occupation: Architect Company: RJD Architect, LLC 231 Vaughan Drive Alpharetta, GA 30009 770-751-3393 678-393-9341 rjdarchitect@mindspring.com
Stacey Anderson Occupation: Business Owner Company: Queen of Hearts Antique & Interiors 700 N Main Street Alpharetta, GA 30004 678-297-7571 678-297-7574 Fax	Clark B. Savage Business: Clayton CameraCraft Photography 28 N main Street, Alpharetta, GA 30009 770-475-0022 csavagel@mindspring.com www.atlantaphotographer.com

- These meeting minutes reflect the notes and memory of Peter Emmanuel. If any additions, deletions, or corrections are necessary, please contact Peter Emmanuel at 404-631-1158 or pemmanuel@dot.ga.gov.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. Nos. 721790 & 721780 OFFICE: Environmental Services

DATE: May 19, 2010

FROM Glenn Bowman, P.E., State Environmental Administrator

TO Distribution Below

SUBJECT PUBLIC INFORMATION OPEN HOUSE SYNOPSIS

PROJECT Nos. & COUNTY: STP00-0114-01(085) & STP00-0114-01(084), Fulton

PROJECT DESCRIPTION:
The proposed project consists of the widening and reconstruction of SR 9, reconfiguration of side roads, pedestrian improvements and signal upgrades. The work is divided into two projects, PI 721790 and 721780. The first project, PI 721790, begins at Upper Hembree Road and continues to Academy Street; PI 721780 stretches from Academy Street to Windward Parkway. The proposed project intends to provide a continuous roadway section/footprint throughout the entire project corridor. This includes four 11-foot travel lanes (two in each direction), a 17-foot raised grass/landscaped median, a four-foot bicycle lane in each direction, 11.5-foot shoulders with curb and gutter, a two-foot landscape strip, and five-foot sidewalks. Fifteen median breaks are proposed at key intersections. The total project length is approximately 3.64 miles.

DATE:	May 18, 2010
NUMBER IN ATTENDANCE:	127
COMMENTS RECIEVED	41
FOR:	6
CONDITIONAL:	11
UNCOMMITTED:	1
AGAINST:	23
OFFICIALS IN ATTENDANCE:	Arthur Letchas, Mayor of Alpharetta; Adam Montgomery, City of Alpharetta; Rob Dell-Ross, City of Roswell; Franco DeMarco, City of Roswell; Steve Acenbrak, City of Roswell

ADDITIONAL COMMENTS:
Written comments indicated the following concerns:

- that the median will reduce property values and restrict access to businesses and neighborhoods,
- that emergency equipment will only be able to access parcels from one direction,
- the project is too expensive,
- the medians should be constructed such that left turns at the median breaks can be safely made,

- that the project needs to be completed sooner,
- complete Westside Parkway to relieve SR 9,
- that SR 9 does not need to be a state route,
- the project will destroy downtown Alpharetta,
- that the median width should be reduced so that no business parking spaces are taken,
- the residents and businesses will be adversely affected by a 2-year construction period,
- making traffic go north to make a u-turn to travel south will be dangerous and inconvenient, and
- put a traffic light at Vaughn Drive.

PREPARED BY: Susan Thomas, Edwards-Pitman for Amber Phillips, GDOT

TELEPHONE No.: Susan Thomas, (770)333-9484; Amber Phillips (404)631-1117

cc: Gerald M. Ross, P.E.
Ben Buchan, P.E.
Bryant Poole, P.E.
Peter Emmanuel
Bobby Hilliard, P.E.
Mac Cranford
Mark McKinnon

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: P. I. No. 721790- & 721780- **OFFICE:** Environmental Services
DATE: August 30, 2010

FROM: GB/AP Glenn Bowman, P.E., State Environmental Administrator

TO: Distribution Below

SUBJECT: Projects STP00-0114-01(085) & STP00-0114-01(084), Fulton County, Summary of Comments Received During the Public Comment Period – The proposed project consists of the widening and reconstruction of SR 9, reconfiguration of side roads, pedestrian and bicycle improvements, and signal upgrades.

COMMENT TOTALS:

A total of 127 people attended the public information open house held for the subject project on May 18, 2010. Displays, project handout materials, and comments forms were available at the meeting.

From those attending, 45 comment forms, 0 letters, and 3 verbal statements were received. One additional comment was received during the ten-day comment period following the public information open house, for a total of 49 comments. They are summarized as follows:

No. Opposed	No. In Support	Uncommitted	Conditional
26	6	3	14

MAJOR CONCERNS:

Written concerns expressed opposition to the raised median, lack of median break in front of the Manning Ridge and Winthrop Park subdivisions; concern that the proposed widening would adversely affect the character and business economy of downtown Alpharetta; and many suggested that the money would be better spent on completing Westside Parkway as an alternative to SR 9.

OFFICIALS:

Officials attending included the following:

Mayor Arthur Letchas, City of Alpharetta; Adam Montgomery, City of Alpharetta; Rob Dell-Ross, City of Roswell; Franco DeMarco, City of Roswell; Steve Acenbrak, City of Roswell

MEDIA:

None

DISPOSITION OF COMMENTS:

Pond and Company and Edwards-Pitman Environmental, Inc. will respond to all comments on behalf of the Department of Transportation. The GDOT offices below are asked to review the responses provided by the consultant for the comments in their section. The project manager will review all responses.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design	10, 17, 21, 32, 33, 45, 49	The proposed raised median will create a major inconvenience to the residents of the Mannings Ridge and Winthrop Park subdivisions, and other homeowners along SR 9. Most school activities and shopping are accessed by turning left out of subdivision. Access will be too limited and the necessary U-turn will create a safety problem. The proposed raised median will cut off access and create a major inconvenience to the residents.	Raised medians are recommended for roadways with current traffic volumes of greater than 18,000 vehicles per day and future traffic volumes of greater than 24,000 vehicles per day to reduce the potential for points of conflict. Average Annual Daily Traffic (AADT) volumes along SR 9/North Main Street and South Main Street are estimated to be 36,245 vehicles in the year 2012 and 44,230 vehicles in the year 2032, both of which exceed the minimum requirements for a raised median. A study conducted by Georgia Department of Transportation (GDOT) outlines the benefits of installing medians on arterial streets and highways such as SR 9. The benefits include significant accident and fatality reduction, lessening of congestion, more uniform traffic flow, pedestrian refuge, landscaping and community revitalization opportunities. In short, raised medians save lives and improve traffic flow. A brochure entitled "Benefits of Installing Medians" can be obtained by calling the GDOT Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a powerpoint slideshow, accessible at: http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx Lastly, this project is in the early preliminary engineering phase, which includes concept development and environmental documentation. As the project develops further, GDOT will continue to work with the residents and businesses to develop a context sensitive design that will allow the project need to be met while minimizing impacts to residential and commercial property owners.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	33	If a new entrance for Mannings Ridge Subdivision is created at Mayfield Road, I would support it.	While this suggestion, relocating Pine Grove Dr to connect with Mayfield Road would make for a simpler intersection, however, at least one costly displacement would be needed. A median opening is being evaluated at Pine Grove Dr. and may be allowed if certain conditions are met, as outlined in the Manuel of Uniform Traffic Control Devices (MUTD). The MUTD can be viewed on the GDOT website.
	47	Concern is the Pine Grove residential entrance just past Mayfield. Plans show that U-turns are allowed there at the Mayfield intersection, where it T's into the intersection. There is always a high volume of traffic sitting at that light. Is that the best design? Should there not be a median break right across from Pine Grove with turn lanes for them to go in and out instead of having the traffic go down the intersection adding more volume to the intersection.	A median opening is being evaluated at Pine Grove Dr. and may be allowed if certain conditions are met, as outlined in the Manuel of Uniform Traffic Control Devices (MUTD). The MUTD can be viewed on the GDOT website.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	3, 4	The proposed median and widening of SR 9 will adversely affect the downtown business by limiting access, increasing speeds, especially for pedestrians. This plan moves traffic but does not create a pedestrian friendly downtown. If medians are necessary, then add more curb cuts.	Studies show that the business community may benefit from the proposed raised median. A study by Iowa State University found that thoroughfares with completed medians tend to have higher retail sales than surrounding communities without medians, 90 – 100 percent of surveyed motorists held favorable attitudes towards medians, about 80 percent of businesses expressed no customer complaints on ease of access to businesses after project completion, and about 80 percent of business owners stated that level of sales were as high or higher with the installation of medians. This and other studies outlining the economic impacts resulting from median installations and business concerns can be found in the brochure entitled "Benefits of Installing Medians", which may be obtained by calling the GDOT Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a PowerPoint slideshow, accessible at: http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx A pedestrian friendly environment is another benefit of raised medians. Pedestrian usage will be encouraged because the raised median provides refuge from traffic and avoid two-way left-turn movements. In addition, the proposed raised median has the support of the City of Alpharetta, and was presented publicly in the City LCI study in 2003 and 2004. Lastly, this project is in the early preliminary engineering phase, which includes concept development and environmental documentation. As the project develop further, GDOT will continue to work with the residents and businesses to develop a context sensitive design that will allow the project needs to be met while minimizing impacts to residential and commercial property owners.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	1	The median will be too dangerous if traffic goes down the wrong way.	GDOT understands the potential for wrong-way drivers. Adequate signage and pavement markings will help deter wrong-way drivers.
	6	Concerned about flood in the creek on our property. Our house is only one lot from Highway 9.	This project includes stormwater improvements and would meet all regulations on stormwater discharge.
	7	Although this is a life safety issue, the project seems too expensive. Can the costs be lowered?	The project is still in the early preliminary engineering phase, which includes concept development and environmental documentation. The subsequent project phases are right-of-way and construction. Right-of-way acquisition is currently scheduled to begin in FY 2015. This project is programmed to begin construction in FY 2018. All practical solutions and cost cutting measures to reduce the project's cost will be evaluated and implemented throughout the project's life.
	8, 36, 37, 38	This project is a waste of money.	Funding has been authorized for the preliminary engineering phase of the project, which includes concept development and environmental documentation. The funds are used to study SR 9 existing operational and congestion problems, evidenced by the existing and future traffic volumes, as well as the high crash rates in the area, and develop solutions to reduce the crashes and improve the overall operation. This project will improve mobility in the City of Alpharetta.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	11, 16	The project will provide no improvements. SR 9 is fine as is. The project should be put to a vote by the citizens of Alpharetta.	The project would improve SR 9 by widening and reconstructing the existing non-uniform lanes to a continuous four lanes highway separated by median. Other improvements are as follow. Traffic congestion would be relieved by the addition of turn lanes. Existing signals at each intersection will be upgraded and synchronized. New signal will be added where warranted. The raised median will reduce crash frequency and severity. A pedestrian friendly environment will be encouraged with the addition of crosswalk (where practical) and refuge at the median will be provided. Other amenities such as bike lanes and sidewalks to help maintain the beauty and character of downtown Alpharetta are added to the project. Continuous traffic flow throughout the city of Alpharetta will be enhanced through the elimination of two-way left-turn movements. Context sensitive design will be developed to allow business and residential communities' needs to be met while preserving and enhancing the aesthetics of downtown Alpharetta. This is a GDOT sponsored project, and is not subject to citizens of Alpharetta vote. However, the citizens input are encouraged through the public informational meetings and incorporated into the project. The city of Alpharetta's planned LCI project, which is sponsored solely by the City, may be subject to citizens' vote.
	12	Please add median break on Pine Grove Road. During rush hour it is already hard to go left and without a break it would be even more difficult for people in the neighborhood.	A median opening is being evaluated at Pine Grove Dr. and may be allowed if certain conditions are met.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	14, 31	It seems to take forever to build 3.6 miles of road. This will keep Alpharetta torn up for three years or more.	The proposed construction is estimated to take 24 months. Construction may be done in phases. Traffic flow will be maintained during construction. Since the proposed project will be adding to the existing roadway, construction inconveniences may be reduced, and the contractor may finish the project sooner.
	15	This project not only displaces a large number of businesses but the project will effectively "displace" many more businesses along SR 9.	At this time, it is estimated that nine businesses would be displaced by the proposed project. However, efforts to minimize the required right-of-way and impacts to property owners will be minimized during the preliminary design phase as much as possible.
	29	I am not convinced that increasing the efficiency and as a result increasing volume will make things better in the long run. Very disappointed across the board with the solution that is proposed.	The proposed improvements will reduce the frequency and severity of crashes, while reducing average delays, and the operation of the road throughout the city of Alpharetta. GDOT is opened to any suggestion and solution that will offer greater benefits than currently proposed.
	37	Area between Academy and Windward mainly needs to be widened. That should be first priority.	The City of Alpharetta is pursuing improvements within the downtown corridor. Please contact City Engineer, Pete Sewczwicz at 678 297-6200.
	44	Would rather have sidewalks and no bike lanes. The bike lanes won't be used and families will use the sidewalks.	The projects are in the Fulton County Bike and Pedestrian Plan as a bicycle corridor. Bicycle facilities have been added to the corridor and include a proposed four-foot wide bike lane in each direction adjacent to the travel lanes. Sidewalks are proposed throughout the projects.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	7	Need more median cuts.	The spacing of median openings is based on GDOT requirements for deceleration/acceleration, sight distance, and turning volume storage. Additional median openings will be evaluated and added where practical.
	23	Left turn lane at median opening between Pine Grove and Canton needs to be lengthened at least twice as long for safety.	Lane tapers and storage lengths are based on traffic volumes, speed design and GDOT criteria. The proposed left turn lane length is the desirable. Further evaluation of the area will be conducted to determine if additional length, to the maximum, is needed.
	24	If there is no median break at Marietta Street, all of the businesses on the north side of Main Street between Old Milton and Marietta will have to close.	Based on traffic volumes and excessive accidents, a median is needed. For more information on the documented effects of a raised median on businesses, please see the brochure entitled "Benefits of Installing Medians". It can be obtained by calling the GDOT Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a PowerPoint slideshow, accessible at: http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx As the project progresses, median opening will be evaluated where practical. GDOT will work with businesses to develop a context sensitive design to meet their needs.
	20	Would like to see more attention to parking downtown. People won't stop to shop if they have no place to park. Not sure how the medians will look.	The City has evaluated the parking situation downtown and has evaluated options for a parking deck. Please contact City Engineer Pete Sewczwicz at 678 297-6200.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	27, 40	The medians should be removed in most places.	Based on traffic volumes and excessive accidents, a median is needed. For more information on the documented effects of a raised median on businesses, please see the brochure entitled "Benefits of Installing Medians". It can be obtained by calling the GDOT Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a powerpoint slideshow, accessible at: http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx As the project progresses, GDOT will work with residences and businesses to develop a context sensitive design to meet their needs, while at the same time, ensuring that the overall goal of the project is reach.
	30, 32	If there are functional bike lanes and sidewalks for the entire stretch, it will be an improvement.	Bike lanes and sidewalks are included on both sides of the road, along the entire corridor.
	35	Own a business that is successful because of the "hometown" feel. If we wanted a Windward Parkway feel, we would have chosen that location. This median will not help businesses. The median does not allow northbound traffic to turn into my business.	Based on traffic volumes and excessive accidents, a median is needed. The increasing delays and abundant crashes along this corridor are well documented. For more information on the documented effects of a raised median on businesses, please see the brochure entitled "Benefits of Installing Medians". It can be obtained by calling the GDOT Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a PowerPoint slideshow, accessible at: http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx
	39	Why would we want speed and more traffic?	Highway 9 is a State Route owned and maintained by the State. As a result, GDOT is task with moving traffic, reducing collisions, and improving travel times.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	39	All the residents north of City will go north and all the money will be taken away from the City Hall area.	The proposed project is aimed at helping all citizens of Alpharetta. The same improvement planned in the north is planned in the City Hall area. The City of Alpharetta's leadership is working with GDOT to ensure the proposed projects' amenities benefit all.
	40, 45	The median will prevent residents from traveling south without first traveling north. Emergency vehicles will have problem entering/exiting subdivisions and businesses.	The proposed raised median with channelized left turn lanes would reduce intersection crashes, improve intersection traffic flow, access, and signal timing. Median openings would be provided at all intersections. Passenger car U-turns will be allowed at all median openings. The median openings are located where practical and the spacing is based on GDOT requirements for deceleration/acceleration, sight distance, and turning volume storage. The raised median will not pose a problem for emergency vehicles to enter or exit properties along SR 9. Moreover, as the project progresses, GDOT will continued to work with residences and businesses to develop a context sensitive design to meet their needs, while at the same time, ensuring that the overall goal of the project is met.
	42	Need more information before being able to decide whether for or against.	Contact the Project Manager, Peter Emmanuel, at (404) 631-1158 for more information.
	2	Reduce speed to 30 mph	State routes with this level of traffic usually have a posted speed limit of 45 mph. In the downtown area, GDOT has factored in local conditions and has already reduced the posted speed limit to 35 mph.
	44	The map is a bit dated, so another draft will need to be done.	The map shown at the PIOH is an aerial photography map used for informational purposes at meetings such as the PIOH. Prior to the beginning of the next stage of engineering design survey enhancement of the area is developed to cover the latest development in the area.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Design (continued)	2	Add middle turn lanes or add raised median within 5-10% of how it currently exists on Windward Parkway	A raised, grassed median 17 feet wide is proposed. At median openings, turn lanes are provided.
	49	Speed is another safety issue. The increased speed and U-turn movements will make it unsafe for pedestrians.	This project proposes to improve traffic flow, and increase pedestrian protection. Continuous sidewalk with crosswalks, as well as dedicated bike lanes provides better conditions for pedestrians. The proposed median would be a refuge for pedestrian.
REVIEWING OFFICE	**COMMENT #**	**NATURE OF COMMENT**	**PROPOSED RESPONSE**
Traffic Operations	2, 19, 22, 25	Request a traffic signal SR 9 and Vaughn Drive or Canton Street to make safer access to the Orchards at Alpharetta. The wait is too long at Vaughn Drive and most motorists use Mayfield to travel north to Windward Parkway.	A comprehensive traffic study was performed on the entire corridor. Traffic volumes were measured and turning movements tallied. A signal was found not warranted at Canton Street or Vaughn Drive. As the project progresses, if increase traffic volumes is collected, the intersection would be evaluated for signal warrant.

Traffic Operations (con't.)	46	Approaching Haynes Bridge Road and SR 9 from the east on Academy Street, it is difficult to get to the lanes to go straight or turn left on SR 9 because so much traffic from Haynes Bridge onto Academy Street wants to turn right onto SR 9 and they back up to the Haynes Bridge/Academy Street intersection and prevent the west/southbound traffic getting to SR 9. If there were two lanes for turning north from Academy Street, the traffic would clear better when the Haynes Bridge/Academy Street light allows the west/southbound traffic to go.	The approved traffic study shows that dual right turn lanes onto SR 9 Northbound are not warranted at this time on Academy Street.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Right-of-Way	36	The project takes away a lot of property from local businesses that need space to operate without widening the roadway a lot.	The proposed project is maximizing the existing State right of way as much as possible. There are instances where local businesses' street parking and parking lot are inside the State existing right of way. However, as the project progresses, GDOT will work with local businesses on meeting their needs. In some instances, for property outside the existing State right of way, GDOT will negotiate and purchase property to construct the proposed improvements. Businesses that incur damages to structures or parking are entitled to compensation for their property.
	37	I would like to learn more about the details and how our business would be affected – mainly parking.	The GDOT Project Manager, Peter Emmanuel, is available to answer questions. His number is (404) 631-1158.
	48	They are asking for another 17 feet of right-of-way. Each time they came and claimed the ROW and did what they wanted to. They claimed the ROW again and did what they wanted to. So, this time we are not giving away any ROW. We must sell them one, but we are not going to give them anything. We have to give them an easement and we don't plan to do that, unless they want to pay for it.	The proposed project is maximizing the existing State right of way as much as possible. There are instances where local businesses' street parking and parking lot are inside the State existing right of way. However, as the project progresses, GDOT will negotiate and purchase property to construct the proposed improvements.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Planning	13, 15, 36, 38	The GDOT should finish Westside Parkway and designate it as the state route, rather than SR 9.	The need and purpose of the proposed project is to improve mobility in the City of Alpharetta and alleviate traffic congestion on the 3.67 miles stretch of SR 9. State Route 9 is currently the main State Route and Truck Route through northern Fulton County. If the State Route designation was moved to Westside Parkway, the City of Alpharetta could then limit truck traffic along the Alpharetta portion of SR 9; however, any crash reductions and operational improvements or traffic congestion improvements or maintenance of the road and signal would need to be constructed by the City, since this section of the roadway would no longer be a State Route. With the completion of Westside Parkway construction and the elimination of truck traffic along former SR 9 through Alpharetta, there would still be a need for crash reductions and operational improvements, as well as traffic congestion improvements along the project corridor. Westside Parkway, which is currently under construction, has not been developed to serve as the replacement for the current SR 9 roadway corridor and significant improvements to both Westside Parkway and adjoining side roads would likely be required if the State Route were relocated. Also, since Westside Parkway covers multiple jurisdictions, intergovernmental agreements would need to be in place to relocate the state route designations and to construct these necessary improvements to Westside Parkway and the roadways adjoining the existing SR 9. This option has been discussed with the City of Alpharetta. The cities of Alpharetta and Roswell, in coordination with Fulton County, will be responsible for advancing the proposal of relocating the State Route. If these jurisdictions request this relocation, GDOT will further evaluate the practicability and requirements of the proposed relocation.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Planning (continued)	13, 15, 36, 38 (continued)	The GDOT should finish Westside Parkway and designate it as the state route, rather than SR 9. (continued)	Currently, Westside Parkway is an unfinished private road developed and constructed by a developer who is in bankruptcy. Moreover, the City of Alpharetta does not own any part of Westside Parkway. The City is in talks with various developers who might be interested in buying Westside Parkway and associated land to finish the leftover works. The City of Alpharetta's leadership has shown no interest in taking on the unfinished Westside Parkway private project as their own.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Environment	4, 9, 26, 27, 29, 38, 43	The proposed median will destroy the character and aesthetics of downtown Alpharetta.	The purpose of the proposed median through downtown Alpharetta is to reduce crash frequency and severity, to lessen congestion, and provide more uniform traffic flow. The proposed raised median will allow opportunities for landscaping. A pedestrian friendly environment will be encouraged because the raised median will provide refuge for pedestrians crossing SR 9. In addition, the proposed project includes other amenities such as bike lanes and sidewalks, which will help maintain the character and aesthetics of downtown Alpharetta. The project is also being developed in compliance with the National Environmental Policy Act (NEPA). In accordance with NEPA requirements, the social environment (including community impacts) and natural environment are being considered during the project development process. The project is being designed to minimize impacts to the communities along SR 9. GDOT will continue to work with the community to develop a context sensitive design that will allow the project need to be met while preserving and perhaps enhancing the character and aesthetics of downtown Alpharetta. In addition, the proposed raised median has the support of the City of Alpharetta's leadership, and was presented publicly in the City LCI study in 2003 and 2004.

REVIEWING OFFICE	COMMENT #	NATURE OF COMMENT	PROPOSED RESPONSE
Environment (continued)	5, 18, 34, 41	I support the widening through downtown Alpharetta. This project is needed. The sooner the better.	Thank you for your input regarding the PIOH for the proposed project. Your interest in this meeting and your comments are appreciated. Your comments will be made a part of the official record of the project. The attendees of the open house and those persons sending in comments afterwards raised the following questions and concerns. The GDOT has prepared one response to all comments so that everyone can be aware of the concerns raised and the responses given. Please find the comments, concerns, and questions listed below along with their response.
	39, 40	The noise will be raised. No studies have been done now. How much will noise increase?	A Noise Impact Assessment (NIA) was prepared for this project. A total of 377 noise sensitive receivers were modeled in the NIA. Based on modeled results, existing (2008) noise levels within the corridor range from 48.8 dBA to 72.6 dBA. Predicted future noise levels for the no-build condition ranged from 49.8 dBA to 73.7 dBA. Predicted future noise levels for the build condition ranged from 50.5 dBA (Receiver 290) to 74.1 dBA. Construction of the proposed project would result in traffic related noise impacts to a total of 40 receivers within the study area. Noise abatement measures were evaluated, including construction of noise barriers, land use and zoning options, traffic management, and alternative alignments. None of these measures were found to be reasonable and feasible.

Attached is a complete transcript of the comments received during the comment period and a copy of the public information open house handout for review. **Your input on the proposed responses is required by** September 10, 2010. Please direct your comments via email to Edwards-Pitman Environmental, Inc. (sthomas@edwards-pitman.com) and copy Amber Phillips (aphillips@dot.ga.gov), of this office.

If you have any questions about the comments, please either email or call Amber Phillips at (404) 631-1117.

GB/AP/slt-epei

Attachments

DISTRIBUTION:
Ben Buchan, w/attachments
Russell McMurry, w/attachments
Peter Emmanuel, w/attachments
District 7 (Attn: Bryant Poole, P.E.), w/attachments
Angela T. Alexander, w/attachments
Kathy Zahul, P.E., w/attachments
Howard (Phil) Copeland (Attn: Troy Byers), w/attachments

Vance C. Smith, Jr., P.E., Commissioner

DEPARTMENT OF TRANSPORTATION

One Georgia Center, 600 West Peachtree Street, NW
Atlanta, Georgia 30308
Telephone: (404) 631-1000

October 29, 2010

Richard Debban
233 Canton Street
Alpharetta, GA 30009

Re: Projects STP00-0114-01(085) & STP00-0114-01(084), Fulton County - P.I. Nos. 721790 & 721780 – SR 9/South Main Street/Cumming Highway Widening from Upper Hembree Road to Windward Parkway

Dear Richard Debban,

Thank you for your comments concerning the proposed projects referenced above. We appreciate all of the input that was received as a result of the May 18, 2010 Public Information Open House (PIOH), and every comment will be made part of the official record of the project. Please accept our sincere apologies for the delay in sending this response.

A total of 127 people attended the PIOH held for both projects. From those attending, 45 comment forms, 0 letters, and 3 verbal statements were received. One additional comment was received during the ten-day comment period following the PIOH, for a total of 49 comments. Of the comments received, 6 were in support of the project, 26 were opposed to the project, 3 were uncommitted, and 14 expressed conditional support for the project.

Those persons sending in comments raised the following questions and concerns. The Georgia Department of Transportation (GDOT) has prepared this one response letter that addresses all comments received so that everyone can be aware of the concerns raised and the responses given. Please find the comments summarized below (*in italics*) followed by our response.

- *The proposed raised median will create a major inconvenience to the residents of the Mannings Ridge and Winthrop Park subdivisions, and other homeowners along SR 9. Most school activities and shopping are accessed by turning left out of the subdivisions. Access will be too limited and the necessary U-turn will create a safety problem. The proposed raised median will cut off access and create a major inconvenience to the residents.*

Raised medians are recommended for roadways with current traffic volumes of greater than 18,000 vehicles per day and future traffic volumes of greater than 24,000 vehicles per day to reduce the crash and injury rates. Average Annual Daily Traffic (AADT) volumes along SR 9/North Main Street and South Main Street are estimated to be 36,245 vehicles in the year 2012 and 44,230 vehicles in the year 2032.

A study conducted by GDOT outlines the benefits of installing medians on arterial streets and highways such as SR 9. The benefits include significant reductions in crash and injury rates, lessening of congestion, more uniform traffic flow, improved pedestrian safety, and additional landscaping opportunities. In short, we believe raised medians save lives and improve traffic flow. A brochure entitled "Benefits of Installing Medians" can be obtained by calling the GDOT Project Manager, Peter Emmanuel, at (404) 631-1158. The information is also available in a PowerPoint slideshow, accessible at: http://www.dot.state.ga.us/INFORMATIONCENTER/PROGRAMS/safety/Pages/MedianInstallation.aspx

Lastly, this project is in the early preliminary engineering phase, which includes concept development and environmental documentation. As the project develops further, GDOT will continue to work with the residents and business owners to develop a context sensitive design that meets the stated need and purpose of the proposed project.

- *If a new entrance for Mannings Ridge Subdivision is created at Mayfield Road, I would support it. Concern is the Pine Grove residential entrance just past Mayfield. Plans show that U-turns are allowed there at the Mayfield*

intersection, where it T's into the intersection. There is always a high volume of traffic sitting at that light. Is that the best design? Should there not be a median break right across from Pine Grove with turn lanes for them to go in and out instead of having the traffic go down the intersection adding more volume to the intersection. During rush hour it is already hard to go left and without a break it would be even more difficult for people in the neighborhood.

This suggestion, relocating Pine Grove Drive to connect with Mayfield Road, would make for a simpler intersection; however, at least one costly displacement would be needed. A median opening is being evaluated at Pine Grove Drive and may be allowed if certain engineering and safety criteria are met.

- *The proposed median and widening of SR 9 will adversely affect the downtown business by limiting access, increasing speeds, especially for pedestrians. This plan moves traffic but does not create a pedestrian friendly downtown. If medians are necessary, then add more curb cuts. If there is no median break at Marietta Street, all of the businesses on the north side of Main Street between Old Milton and Marietta will have to close. The medians should be removed in most places. The median does not allow northbound traffic to turn into my business.*

We acknowledge that some changes to travel behavior are likely due to the installation of raised medians. However, it is important to note that studies have also shown that some businesses actually benefit from the proposed raised median. A study by Iowa State University found that thoroughfares with completed medians tend to have higher retail sales than surrounding communities without medians, more than 90 percent of surveyed motorists held favorable attitudes towards medians, about 80 percent of businesses expressed no customer complaints on ease of access to businesses after project completion, and about 80 percent of business owners stated that level of sales were as high or higher with the installation of medians. This and other studies outlining the economic impacts resulting from median installations and business concerns can be found in the brochure entitled "Benefits of Installing Medians" as noted above.

The raised median provides a pedestrian refuge area from traffic and is substantially safer for pedestrians when compared to no median and traditional two-way left-turn lane designs. The concept of raised medians has the support of the City of Alpharetta. Medians along SR 9 were originally introduced in the City's 2003 Downtown Development Plan. The Concept garnered further support in the Downtown Circulation Study in 2008 and is a key element in improving pedestrian safety in the downtown corridor. Specific design of the medians and location of median breaks associated with the Circulation Study have not been finalized.

- *The median will be too dangerous if traffic goes down the wrong way.*

Although the potential for wrong-way drivers may be somewhat greater, we believe on balance that the benefits of a raised median along SR 9 would outweigh the disadvantages. Appropriate signage and pavement markings will also help deter wrong-way drivers.

- *Concerned about flood in the creek on our property. Our house is only one lot from Highway 9.*

This project includes stormwater improvements and the design would meet all state and federal regulations on stormwater discharge.

- *Although this is a life safety issue, the project seems too expensive. Can the costs be lowered?*

The project is still in the early preliminary engineering phase, and all practical solutions and cost cutting measures will be evaluated and implemented throughout the project's life.

- *This project is a waste of money.*

Funding has been authorized for the preliminary engineering phase of the project, which includes concept development and environmental documentation. The funds are being used to study SR 9 existing operational and congestion problems, evidenced by the existing and future traffic volumes, as well as the high crash rates in the area, and to develop solutions to

reduce the crash rates and improve the overall traffic operations. This project will improve mobility in the City of Alpharetta.

- *The project will provide no improvements. SR 9 is fine as is. The project should be put to a vote by the citizens of Alpharetta.*

The project would improve SR 9 by widening and reconstructing the existing non-uniform lanes to a continuous four-lane roadway separated by a raised median. Many benefits of the proposed improvements are anticipated. Traffic congestion would be relieved by the addition of turn lanes. Existing signals at each intersection would be upgraded and synchronized, and new signals would be added where warranted. The raised median would reduce crash frequency and severity. The pedestrian environment would be enhanced with the addition of crosswalks (where practical) and a median refuge area. Other amenities, such as bike lanes and sidewalks to help maintain the beauty and character of downtown Alpharetta, would be added to the project. Improved traffic flow is expected through the elimination of two-way left-turn movements. Context sensitive design would be developed to allow business and residential communities' needs to be met while preserving and enhancing the aesthetics of downtown Alpharetta.

This is a typical transportation project that is governed by numerous rules and regulations, but it is not subject to a direct "vote" by citizens. However, citizen input is encouraged through the public informational meetings and suggestions are incorporated into the project whenever possible. The City of Alpharetta's planned Livable Centers Initiative (LCI) project, which is sponsored solely by the city, may be subject to citizens' comment.

- *It seems to take forever to build 3.6 miles of road. This will keep Alpharetta torn up for three years or more.*

The proposed construction is estimated to take 24 months. Construction may be done in phases. Traffic flow will be maintained during construction. Since the proposed project will be adding to the existing roadway, construction inconveniences may be reduced, and the contractor may finish the project sooner.

- *This project not only displaces a large number of businesses but the project will effectively "displace" many more businesses along SR 9.*

At this time, it is estimated that nine businesses would be displaced by the proposed project. However, efforts to reduce the required right-of-way and impacts to property owners as much as possible will be studied during the preliminary design phase.

- *I am not convinced that increasing the efficiency and as a result increasing volume will make things better in the long run. Very disappointed across the board with the solution that is proposed.*

The proposed improvements are expected to reduce the frequency and severity of crashes while reducing average delays and improving the operations of the road throughout the City of Alpharetta. Georgia DOT is open to any suggestion and solution that will offer greater benefits than currently proposed.

- *Area between Academy and Windward mainly needs to be widened. That should be first priority.*

The City of Alpharetta is pursuing improvements within the downtown corridor. Please contact the City Public Works Director Pete Sewczwicz at (678) 297-6200 for additional information.

- *Would rather have sidewalks and no bike lanes. The bike lanes won't be used and families will use the sidewalks.*

The projects are included in the Fulton County Bike and Pedestrian Plan as a bicycle corridor, which is why the bike lanes are proposed with this project. A four-foot wide bike lane is proposed in each direction adjacent to the travel lanes. Sidewalks are also proposed throughout the projects.

- *Need more median cuts.*

The spacing of median openings is based on GDOT requirements for deceleration/acceleration, sight distance, and turning volume storage. Additional median openings will be evaluated and added where practical.

- *Left turn lane at median opening between Pine Grove and Canton needs to be lengthened at least twice as long for safety.*

Lane tapers and storage lengths are based on traffic volumes, speed design, and other engineering criteria. The proposed left-turn lane length is the desirable length. Further evaluation of the area will be conducted to determine if additional storage length is needed.

- *Would like to see more attention to parking downtown. People won't stop to shop if they have no place to park. Not sure how the medians will look.*

The City has evaluated the parking situation downtown and has evaluated options for a parking deck. Please contact the City Public Works Director Pete Sewczwicz at (678) 297-6200 for additional information.

- *If there are functional bike lanes and sidewalks for the entire stretch, it will be an improvement.*

Bike lanes and sidewalks are included on both sides of the road, along the entire corridor.

- *Why would we want speed and more traffic?*

Although the project is expected to improve traffic flow and reduce travel times, the enforcement of speed limits is ultimately up to law enforcement officials. The vast majority of traffic growth expected in the future is due to general population growth in the area and not due to the proposed roadway improvements.

- *All the residents north of city will go north and all the money will be taken away from the City Hall area.*

The proposed project is aimed at helping all citizens of Alpharetta. The same improvement planned in the north is planned in the City Hall area. The City of Alpharetta's leadership is working with GDOT to ensure the proposed projects' amenities benefit all.

- *The median will prevent residents from traveling south without first traveling north. Emergency vehicles will have problem entering/exiting subdivisions and businesses.*

The proposed raised median with channelized left-turn lanes would reduce intersection crashes, improve intersection traffic flow, access, and signal timing. Median openings would be provided at all intersections. Passenger car U-turns will be allowed at all median openings. The median openings are located where practical and the spacing is based on GDOT requirements for deceleration/acceleration, sight distance, and turning volume storage. The raised median would be mountable and would not pose a problem for emergency vehicles to enter or exit properties along SR 9. Moreover, as the project progresses, GDOT will continue to work with residents and businesses to develop a context sensitive design to meet their needs, while at the same time, ensuring that the overall goal of the project is met.

- *Need more information before being able to decide whether for or against.*

Contact the Project Manager, Peter Emmanuel, at (404) 631-1158 for more information.

- *Reduce speed to 30 mph*

Speed limits are set by local government officials. This comment will be forwarded to the responsible authorities in this area.

- *The map is a bit dated, so another draft will need to be done.*

The aerial map shown at the PIOH was used for informational purposes. Prior to the beginning of the next stage of engineering, design survey enhancement of the area will be performed to cover the latest development in the area.

- *Add middle turn lanes or add raised median within 5-10% of how it currently exists on Windward Parkway*

A raised, grassed median 17 feet wide is proposed. Turn lanes are provided at median openings.

- *Request a traffic signal SR 9 and Vaughn Drive or Canton Street to make safer access to the Orchards at Alpharetta. The wait is too long at Vaughn Drive and most motorists use Mayfield to travel north to Windward Parkway.*

A comprehensive traffic study was performed on the entire corridor. Traffic volumes were measured and turning movements tallied. A signal was found not warranted at Canton Street or Vaughn Drive based on the current traffic volumes. As the project progresses, if increased traffic volumes are collected, the intersection would be evaluated for a signal installation.

- *Approaching Haynes Bridge Road and SR 9 from the east on Academy Street, it is difficult to get to the lanes to go straight or turn left on SR 9 because so much traffic from Haynes Bridge onto Academy Street wants to turn right onto SR 9 and they back up to the Haynes Bridge/Academy Street intersection and prevent the west/southbound traffic getting to SR 9. If there were two lanes for turning north from Academy Street, the traffic would clear better when the Haynes Bridge/Academy Street light allows the west/southbound traffic to go.*

The approved traffic study shows that dual right-turn lanes onto SR 9 northbound are not warranted, at this time, on Academy Street.

- *The project takes away a lot of property from local businesses that need space to operate without widening the roadway a lot.*

The proposed project is maximizing the existing state right-of-way as much as possible. There are instances where local businesses' street parking and parking lot are inside the state existing right-of-way. However, as the project progresses, GDOT will work with local businesses on meeting their needs. In some instances, for property outside the existing state right-of-way, GDOT will negotiate and purchase property to construct the proposed improvements. Businesses that incur damages to structures or parking are entitled to compensation as required by law.

- *I would like to learn more about the details and how our business would be affected – mainly parking.*

The GDOT Project Manager, Peter Emmanuel, is available to answer questions. His number is (404) 631-1158.

- *They are asking for another 17 feet of right-of-way. Each time they came and claimed the ROW and did what they wanted to. They claimed the ROW again and did what they wanted to. So, this time we are not giving away any ROW. We must sell them one, but we are not going to give them anything. We have to give them an easement and we don't plan to do that, unless they want to pay for it.*

The proposed project is maximizing the existing state right-of-way as much as possible. There are instances where local businesses' street parking and parking lots are inside the state existing right-of-way. However, as the project progresses, GDOT will negotiate and purchase property to construct the proposed improvements.

- *The GDOT should finish Westside Parkway and designate it as the state route, rather than SR 9.*

This option has been discussed with the City of Alpharetta. The cities of Alpharetta, Milton, and Roswell, in coordination with Fulton County, will be responsible for advancing the proposal of relocating the State Route. If these jurisdictions request this relocation, GDOT will further evaluate the practicability and requirements of the proposed relocation.

- *The proposed median will destroy the character and aesthetics of downtown Alpharetta.*

The project is being designed to minimize impacts to the communities along SR 9. GDOT will continue to work with the community to develop a context sensitive design that will allow the project needs to be met while preserving and perhaps enhancing the character and aesthetics of downtown Alpharetta.

- *I support the widening through downtown Alpharetta. This project is needed. The sooner the better.*

This comment and all comments are appreciated and will be made a part of the official record of the project.

- *The noise will be raised. No studies have been done now. How much will noise increase?*

A Noise Impact Assessment (NIA) was prepared for this project. A total of 377 noise sensitive receivers were modeled in the NIA. Based on modeled results, construction of the proposed project would result in traffic related noise impacts to a total of 40 receivers within the study area. Noise abatement measures were evaluated, including construction of noise barriers, land use and zoning options, traffic management, and alternative alignments. None of these measures were found to be reasonable and feasible to implement in accordance with GDOT's noise abatement policy.

Thank you again for your comments. All comments will be made a part of the official record of the project. Should you have any further questions concerning this project, please call the Department's project manager Peter Emmanuel at (404) 631-1158 or Amber Phillips of the Office of Environmental Services at (404) 631-1117.

Sincerely,

Glenn Bowman /mm

Glenn Bowman, P.E.
State Environmental Administrator

GB/ALP

cc: Peter Emmanuel - Georgia DOT Project Manager
cc: Pete Sewczwicz - City of Alpharetta Public Works Director

Alpharetta
GEORGIA • USA

MAYOR
Arthur Letchas

COUNCIL
D.C. Aiken
Douglas J. DeRito
Mike Kennedy
Cheryl Oakes
Chris Owens

CITY ADMINISTRATOR
Robert J. Regus

CITY HALL
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678.297.6015

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CITY OF EXCELLENCE

August 10, 2010

Mr. Bobby Hilliard, P.E.
Office of Program Delivery
Georgia Department of Transportation
One Georgia Center
600 West Peachtree Street, NW
Atlanta, Georgia 30308

RE: ***STP00-0114-01(085) & STP00-0114-01(084)**, P.I. Nos. 721790 & 721780, Proposed Improvements to SR 9/South Main Street in the City of Alpharetta, Fulton County*

Dear Mr. Hilliard:

The City of Alpharetta would like to thank you and your team for your efforts in developing the concept design of improvements along Main Street (SR 9) within the City. As you are aware, the proposed project has stirred many passions. In general, we are excited about the opportunities the project could bring to the City and would like to see the project move forward into detailed final design. However, we do have several concerns over the project. The City's goals for the Main Street projects are as follows:

- Provide increased safety and mobility for all modes of transportation including pedestrians, bicyclists, transit, freight, and passenger vehicles;
- Limiting the impacts of the improvements on property owners and businesses; and,
- Maintaining the character of Main Street and the City of Alpharetta.

Specifically within the Downtown Area, the City is concerned the current concept does not compliment existing land uses and the community's established future vision. This area, between Old Milton Parkway (SR 120) and Vaughn Drive, will require special considerations to develop solutions that meet the goals of the project while being sensitive to the needs of the adjacent land uses and the community. Through this portion of the project, the City would request that City Staff take a key project management roll during the final design process. This role would consist of preparing site specific roadway sections along this corridor, working closely with the business and property owners to ensure minimal impact to properties takes place, and working with the design team to assist in the design of the Downtown Area.

I am confident if we work together on providing sensitive solutions within our Downtown Area the project will be a success for all parties involved.

Sincerely,

Arthur G. Letchas
Mayor

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AUG 13 2010
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Vance C. Smith, Jr., Commissioner

GEORGIA DEPARTMENT OF TRANSPORTATION

One Georgia Center, 600 West Peachtree Street, NW
Atlanta, Georgia 30308
Telephone: (404) 631-1000

August 18, 2010

The Honorable Arthur Letchas, Mayor
City of Alpharetta
Two South Main Street
Alpharetta, Georgia 30009

Subject: ***STP00-0114-01(085) & STP00-0114-01(084)**, P.I. Nos. 721790- & 721780-, Proposed Improvements to SR 9/South Main Street in the City of Alpharetta, Fulton County*

Dear Mayor Letchas:

This letter is in response to your August 10, 2010 correspondence regarding the above subject projects. The Department appreciates your City support of the efforts displayed in developing the concept design of improvements along SR 9/Main Street.

Also, the Department understands the three primary concerns dealing with the impacts of the projects to the City's residence, businesses, and community as a whole. Due to limited funding, these projects may not meet all the City's expectation and established future visions. However, as the project progresses, the Department will work and coordinate with the City Staff to minimize the impact of the project to the communities, and develop context sensitive solution/design that would greatly enhance the beauty and character of the Downtown Area, especially between SR 120/Old Milton Parkway and Vaughn Drive.

The Department looks forward to further coordination with the City in addressing the transportation needs of the area and advancing the SR 9/Main Street improvements projects. If you have any questions, please contact Peter Emmanuel, Project Manager at (404) 631-1158.

Sincerely,

Bobby Hilliard

Bobby K. Hilliard, P.E.
State Program Delivery Engineer

BKH: pbe

Cc: Mr. Brandon Beach, Board Member, 6th Congressional District
Mr. Todd Long, P.E., P.T.O.E, Director of Planning
Mr. Gerald Ross, P.E., Deputy Commissioner/Chief Engineer
Mr. Bryant Poole, P.E., District 7 Engineer
Mr. Glenn Bowman, P.E., State Environmental Administrator
Mrs. Genetha Rice-Singleton, State Program Control Administrator
Mr. Robert (Bob) Rogers, Assistant State Transportation Financial Management Administrator

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP00-0114-01(084) & STP00-0114-01(085), Fulton County
P.I. No. 721780 & 721790
Safety, Operational Improvements, and Widening of SR 9 from
Upper Hembree Road to Windward Parkway

OFFICE District 7

DATE September 30, 2009

FROM Rachel S. Brown, District 7 Engineer (acting) RSB

TO Bobby K. Hilliard, P.E., State Program Delivery Engineer

SUBJECT **Review of Concept Report**

District 7 has received and reviewed the subject concept report. The project Need and Purpose Statement clearly shows that SR 9 is failing to handle the traffic demands and that operations are expected to continue to deteriorate in the future. The proposed improvements still show a failing level of service in the design year. What are the build vs. no-build delay times? Assuming that the build delay times are significantly better, then the project is still worthwhile as proposed. Has a non-standard intersection design been considered? A continuous flow intersection may be a viable option at some intersections.

Project is correctly noted as being located in a non-attainment area. Does the Atlanta Regional Commission have the project properly modeled in their air quality conformity model?

The subject project is expected to improve the existing facilities and is recommended for approval by District 7. If you have any questions, please contact Mike Lobdell of my staff at (770) 986-1257.

BP:MAL

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: **P.I. No. 721780 & 721790** **OFFICE:** Environment/Location

DATE: October 14, 2009

FROM: Glenn Bowman, P.E., State Environmental/Location Engineer

TO: Genetha Rice-Singleton, Assistant Director of Preconstruction

SUBJECT: **PROJECT CONCEPT REPORT**
PEMAS011401084 & PEMAS011401085 / Fulton County
SR 9/North Main St. from Academy St. to Windward Pkwy.
SR 9/South Main St. from Upper Hembree Rd. to Academy St.

The above subject Concept Report has been reviewed and appears satisfactory subject to the following comments:

1. There are at least six (6) historic resources and one archaeological site previously determined to have National Register eligibility located adjacent to the project corridor (see page 13 in Concept Report). If significant impacts to historic (4)f resources cannot be avoided, then the proposed environmental schedule must be revised significantly.

2. Please list who is responsible for the environmental work in the Project Responsibilities section. It appears the southern terminus was chosen since it is the dividing line between Roswell and Alpharetta? A logical termini justification report will need to be created and submitted to FHWA for review (it will need to justify our Northern terminus too.) This should happen soon (preferably before the concept report is approved). If ROW is required from any eligible historic resource, it is likely that we'll have an adverse effect and we'll have to complete a Full Section 4F review/evaluation. This would require an intensive alternatives analysis and require review for legal sufficiency likely causing additional impacts to the scope/schedule/budget.

If you have any questions, please contact me at (404) 631-1101.

GB/lc

Attachment

cc: Ron Wishon
Angela Whitworth
Angela Alexander
Jamie Simpson
Bobby Hilliard
Paul Liles

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Attachment 10:

Concept Layout

TYPICAL SECTION

N

CONCEPT PLAN – MAY 2010
FULTON COUNTY
WIDENING AND RECONSTRUCTION
S.R 9 /S. MAIN ST. @ UPPER HEMBREE RD
TO S.R. 9 /N. MAIN ST. @ WINDWARD PKWY
PROJECT No.: STP–114–1(84) & (85)
PEMAS011401084 & PEMAS011401085
P.I. No.: 721780 & 721790

LEGEND

- EXISTING R /W – PROPERTY LINE
- CUT /FILL LIMITS
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENT
- PROPOSED GRAVITY WALL
- PROPOSED RAISED MEDIAN
- PROPOSED SIDEWALK
- DRIVEWAY APRON
- PROPOSED GUARDRAIL
- ENVIRONMENTALLY SENSITIVE AREA
- DISPLACEMENT
- PROPOSED TRAFFIC SIGNAL
- OBLITERATE EXISTING PAVEMENT

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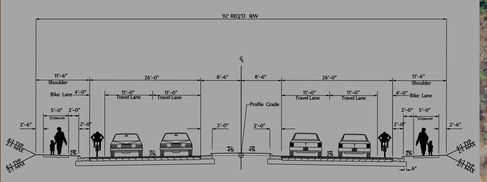
TYPICAL SECTION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11'-4" Shoulder
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8'-4"
8'-4"
26'-0"
11'-4" Shoulder
Bike Lane 4'-0"
11'-0" Travel Lane
11'-0" Travel Lane
Profile Grade
11'-0" Travel Lane
11'-0" Travel Lane
4'-0" Bike Lane
2'-0" 8'-0" Sidewalk
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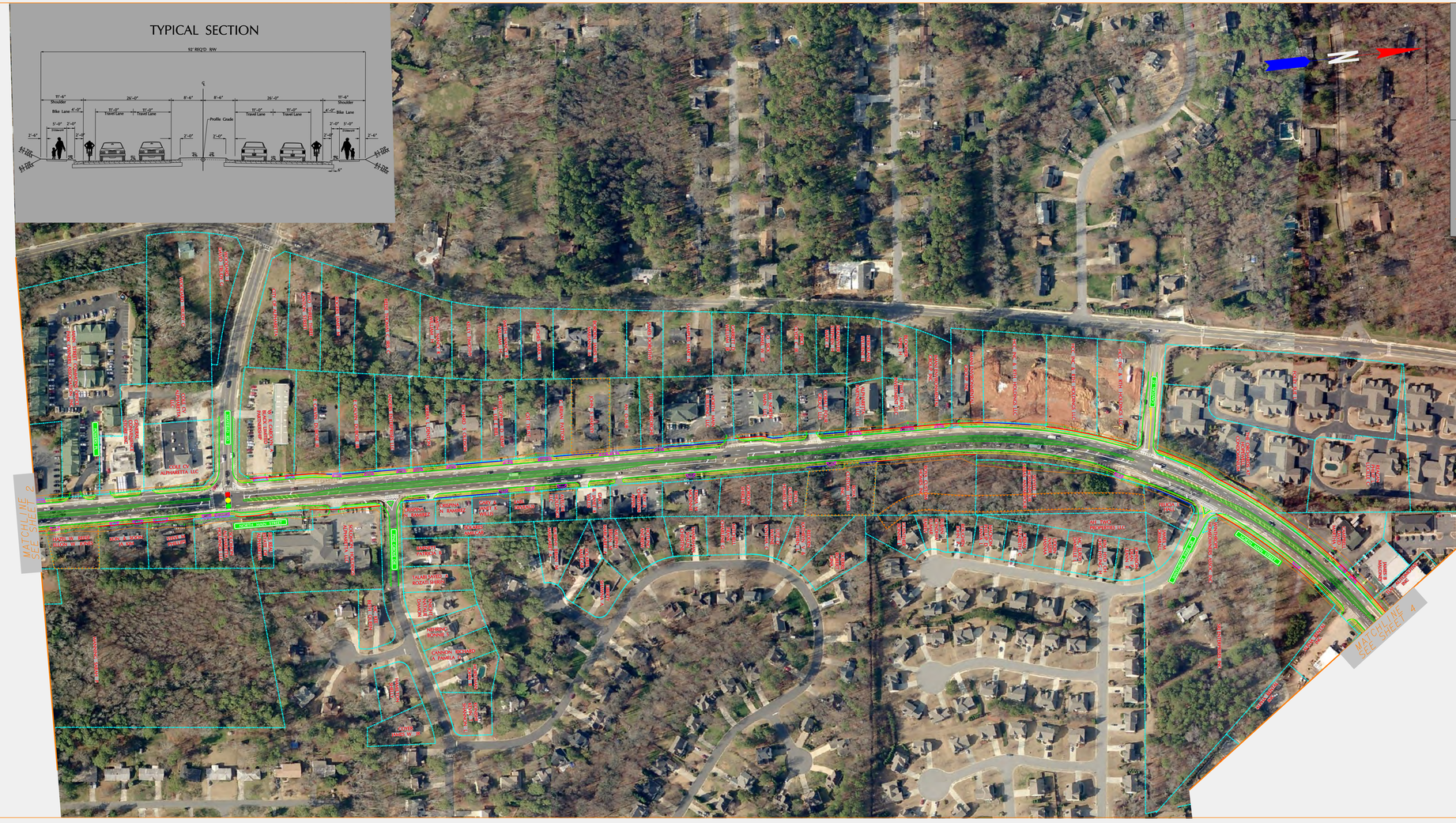
CONCEPT PLAN – MAY 2010
FULTON COUNTY
WIDENING AND RECONSTRUCTION
S.R 9 /S. MAIN ST. @ UPPER HEMBREE RD
TO S.R. 9 /N. MAIN ST. @ WINDWARD PKWY

PROJECT No.: STP–114–1(84) & (85)
PEMAS011401084 & PEMAS011401085
P.I. No.: 721780 & 721790



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- EXISTING R /W – PROPERTY LINE
- CUT /FILL LIMITS
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CONCEPT PLAN – MAY 2010
FULTON COUNTY
WIDENING AND RECONSTRUCTION
S.R 9 /S. MAIN ST. @ UPPER HEMBREE RD
TO S.R. 9 /N. MAIN ST. @ WINDWARD PKWY

PROJECT No.: STP-114-1(84) & (85)
PEMAS011401084 & PEMAS011401085
P.I. No.: 721780 & 721790

LEGEND

- EXISTING R /W – PROPERTY LINE
- CUT /FILL LIMITS
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Attachment 11a:

PI 0008357 Planning Preliminary NP Statement

This Preliminary Need and Purpose Statement identifies the problem along the subject corridor and the beginning and end points of the problem. This information is being provided for use in developing the need and purpose document, project concept and logical termini.

Preliminary Need and Purpose Statement
SR 9/Atlanta Hwy from SR 371/Post Rd to SR 141/Peachtree Pkwy
CSSTP-0008-00(357), Forsyth County
P. I. No.: 0008357

Preliminary Need & Purpose

Existing Route Conditions:

SR 9 within the project limits from SR 371/Post Road to SR 141/Peachtree Parkway is two lanes (one lane in each direction) along the four mile section and is classified as an Urban Minor Arterial with a posted speed limit of 45 MPH.

Connectivity, Access and Mobility:

The SR 9 corridor (as defined in the 'logical termini' section) from Academy Street in Fulton County to SR 306 in Forsyth County, of which this project is included, connects the cities of Atlanta, Roswell, Alpharetta, Cumming, Dawsonville and Dahlonega. Additionally, this corridor functions as a parallel and alternate route to SR 400. Currently, SR 9 is not designated on the National Highway System and is not designated as limited access and there are no formal agreements for access control. SR 9 is designated as a truck route from Fulton County to Dawson County in the Forsyth County Major Transportation Plan. Regarding bicycle and pedestrian facilities within the project limits (not the entire SR 9 corridor), the Forsyth County Bicycle Transportation and Pedestrian Walkways 2025 Plan proposes bicycle friendly shoulders.

Existing and Projected Traffic Conditions:

Existing traffic within the project limits (from SR 371 to SR 141) is approximately 11,870 Vehicles Per Day (VPD). This VPD produced a current Level of Service (LOS) of 'C'. For the build year (2015), the traffic is projected to be 12,979 VPD with a LOS of 'D' and for the design year (2035), the traffic is projected to be 17,455 VPD, with a LOS of 'D'. See Table 1 for details.

TABLE 1 - Traffic Analysis within the project limits of PI 0008357 (from SR 371 to SR 141 in Forsyth County)

Analysis Year:	AADT	LOS
Existing (2008)	11,870	C
Build Year (2015)	12,979	D
Design Year (2035)	17,455	D

Existing traffic for the SR 9 corridor (from Academy Street to SR 306) is approximately 17,213 Vehicles Per Day (VPD). This VPD produced a current Level of Service (LOS) of 'D'. For the build year (2015), the traffic is projected to be 18,821 VPD with a LOS of 'D' and for the design year (2035), the traffic is projected to be 25,312 VPD, with a LOS of 'F'. See Table 2 for details.

TABLE 2 - Traffic Analysis of the SR 9 Corridor (from Academy Street to SR 306 in Fulton and Forsyth Counties)

Analysis Year:	AADT	LOS
Existing (2008)	17,213	D
Build Year (2015)	18,821	D
Design Year (2035)	25,312	F

This Preliminary Need and Purpose Statement identifies the problem along the subject corridor and the beginning and end points of the problem. This information is being provided for use in developing the need and purpose document, project concept and logical termini.

Existing traffic south of Academy Street, the southernmost logical terminus is approximately 28,450 Vehicles Per Day (VPD). This VPD produced a current Level of Service (LOS) of 'E'. For the build year (2015), the traffic is projected to be 30,200 VPD with a LOS of 'F' and for the design year (2035), the traffic is projected to be 30,200 VPD, with a LOS of 'F'. See Table 3 for details.

TABLE 3 - Traffic Analysis south of the SR 9 Corridor (south of Academy Street in Fulton County)

Analysis Year:	AADT	LOS
Existing (2008)	28,450	E
Build Year (2015)	30,200	F
Design Year (2035)	34,535	F

Existing traffic north of SR 306, the northernmost logical terminus point is approximately 8,910 Vehicles Per Day (VPD). This VPD produced a current Level of Service (LOS) of 'C'. For the build year (2015), the traffic is projected to be 9,742 VPD with a LOS of 'C', and for the design year (2035), the traffic is projected to be 13,102 VPD, with a LOS of 'D'. See Table 4 for details.

TABLE 4 - Traffic Analysis north of the SR 9 Corridor (north of SR 306 in Forsyth County)

Analysis Year:	AADT	LOS
Existing (2008)	8910	C
Build Year (2015)	9742	C
Design Year (2035)	13,102	D

Logical Termini:

In order to establish logical termini for the SR 9 corridor of which this project is included, the Office of Planning looked at SR 9 from I-75 in Fulton County to north of SR 306 in Forsyth County. SR 9, from Academy Street to SR 306, is two lanes and experiences a level of service (LOS) of 'F'. SR 9 from I-75 to Academy Street in Fulton County is primarily four lanes and also experiences a design year LOS of 'F'. Within the section between I-75 and Academy Street, there are several constraints that limit the solutions for addressing the existing and future congestion. Such constraints include the City of Alpharetta Downtown Circulation Study which recommends re-routing SR 9 to the east of the city from its' current alignment to SR 120 along Old Milton Pkwy and proceeding south on Westside Parkway; the City of Roswell Transportation Master Plan that states their goals are to remove the reversible lane sections and alleviate the bottleneck near the Chattahoochee River where SR 9 narrows down to two lanes. While those goals lend themselves to capacity improvements, the widening of SR 9 will prove difficult as minimizing the impact on the adjacent Chattahoochee National Park, maintaining the attractiveness of the corridor and allowing for left turn lanes are also goals are potentially prohibitive in the acquisition of ROW; the Sandy Springs Comprehensive Plan Community Agenda (2007) and Transportation Master Plan (2008) recommends operational improvements for efficient use of the existing SR 9/Roswell Rd infrastructure such as responsive traffic signal systems, incident management and monitoring and improvements to the SR 9/Roswell Rd and I-285 interchange, but does not reference capacity improvements due to the emphasis on improving the existing infrastructure. Additionally, GDOT project ID No. 721790 (SR 9/S Main Street from Upper Hembree Rd to Academy Street), while being programmed as a widening project for SR 9, it is being re-scoped for operational improvements due to cost and potential infeasibility of widening the current four lane segment in the City of Alpharetta. This infeasibility is due to existing developments within the project limits where businesses are concentrated along and are in close proximity to the roadway. Such land use patterns can result in issues with regard to the cost of ROW, stakeholder support and economic consequences of potential displacements. With these constraints, the logical termini for capacity additions to SR 9 are as follows:

Preliminary Need & Purpose

This Preliminary Need and Purpose Statement identifies the problem along the subject corridor and the beginning and end points of the problem. This information is being provided for use in developing the need and purpose document, project concept and logical termini.

The southern terminus for the SR 9 project is Academy Street where SR 9 becomes a four lane roadway through downtown Alpharetta. Conditions of the corridor north of this terminus (Academy Street) may allow for capacity improvements that will provide for a continuous four lane facility to the north. Additionally, due to the re-scoping of project ID No. 721790 (SR 9/S Main Street from Upper Hembree Rd to Academy Street) to provide operational improvements instead of capacity and the differences in existing conditions, local initiatives, right of way (ROW) and geometric constraint, the corridor has fundamentally different characteristics that limit the types of improvements available. The types of improvements that are found to be suitable south of Academy Street may not offer the most efficient solution for the corridor north of Academy Street.

The northern terminus is at SR 306 (mile post 14.75), approximately one mile north of the Cumming city limits. This terminus point is logical as traffic volumes north of SR 306 decrease by 37% from 14,170 VPD to 8,910 VPD. The SR 9 corridor focused on in this need and purpose statement experiences a LOS 'D' in the build year and a LOS 'F' in the design year on average as AADT varies throughout the corridor. While the section of SR 9 north of SR 306 is classified as LOS 'D' in the design year, the section is only classified as a LOS 'C' in the build year 2015. While the design year LOS of 'D' is undesirable, it is in contrast to an unacceptable LOS 'F' that is experienced on SR 9 south of SR 306.

<u>Project Linkage:</u>

Currently, there is one project under construction in proximity to the SR 9 (PI 0008357 – SR 9 from SR 371/Post Rd to SR 141/Peachtree Pkwy) project. Project ID No. 121980 (SR 141 from 0.6 MI North of Fulton County line to SR 9 - GRTA) which connects to this project at the northernmost/eastern terminus of the project limits at SR 141, extends south to the Fulton County line. Once construction is complete, SR 141 will be a four lane roadway.

Planned Projects within the SR 9 corridor based on logical termini are as follows:

- Project ID No. 721780 (SR 9/N Main Street from Academy Street to Windward Pkwy) is within the SR 9 corridor, south of the project limits. This project will widen SR 9 to a four lane roadway.
- Project ID No. 0007838 (SR 9/Cumming Hwy from Windward Pkwy to Forsyth Co. line) is within the SR 9 corridor, south of the project limits. This project will widen SR 9 to a four lane roadway.
- Project ID No. 0006727 (SR 9/Roswell Rd from Abernathy Rd to Forsyth Co. Line) is located within and south of the SR 9 project corridor. This is a safety project that will upgrade SR 9 with ITS improvements.
- Project ID No. 0007843 (SR 9/Atlanta Hwy from Fulton Co. line to CR 458/McFarland Road) is within the SR 9 corridor, south of the project limits. This project will widen SR 9 to a four lane roadway.
- Project ID No. 0007844 (SR 9/Atlanta Hwy from CR 458/McFarland Rd to SR 371/Post Rd), which will connect to PI 0008357 at SR 371/Post Road, the southernmost/western terminus of the project limits. This project will widen SR 9 to a four lane roadway south of SR 371/Post Road.
- Project ID No. 0008357 (SR 9 from north of SR 371/Post Rd to SR 141/Peachtree Pkwy) is the subject project for this need and purpose statement. This project will widen SR 9 to a four lane roadway.
- Project ID No. 121690 (SR 9 from north of SR 141 to north of SR 20) will connect to PI 0008357 at the northernmost/eastern terminus of the project limits at SR 141. This project will widen SR 9 to a four lane roadway north of SR 141.
- Project ID No. 141890 (SR 9 from SR 20 to SR 306 relocation) is within the SR 9 corridor, north of the project limits. This project will widen SR 9 to a four lane roadway from SR 20 to the relocation of SR 306.

Preliminary Need & Purpose

This Preliminary Need and Purpose Statement identifies the problem along the subject corridor and the beginning and end points of the problem. This information is being provided for use in developing the need and purpose document, project concept and logical termini.

Planned projects that are adjacent to the SR 9 (PI 0008357) project limits are as follows:

- Project ID No. 721790 (SR 9/S Main Street from Upper Hembree Rd to Academy Street) is directly south and adjacent to the SR 9 corridor. While PI 721790 is located on SR 9, it is not considered as part of the SR 9 corridor being analyzed for logical termini purposes. This project will provide operational improvements to SR 9 along the current four lane roadway.
- Project ID No. 0006917 (Union Hill Rd/Mullinax Rd from CR 458/McFarland Rd to SR 9) connects to this project at the southernmost/western terminus of the project limits at SR 371/Post Rd and extends south to McFarland Road. This project will widen Union Hill/Mullinax Rd to a four lane roadway.
- Project ID No. 0006915 (SR 371 from SR 9/Atlanta Hwy to CR 5/Kelly Mill Road) connects to this project at the southernmost/western terminus of the project limits at SR 371/Post Rd and extends north to Kelly Mill Road. This project will widen SR 371 to a four lane roadway.
- Project ID No. 0007999 (SR 141/Bethelview Road @ SR 9/Atlanta Hwy) is located at the northernmost/eastern terminus of the project limits at the intersection of SR 141 and SR 9. This project will improve this intersection to accommodate for the SR 141 project that is currently under construction to the south (Project ID No. 121980).
- Project ID No. 141880 (CR 455/Bethelview Road from SR 9 to CR 8/Castleberry Road) connects to the northernmost/eastern terminus of the project limits at the intersection of SR 141 and SR 9 and extends north to Castleberry Road. This project will widen Bethelview Road to a four lane roadway.
- Project ID No. 0009316 (CR 455/Bethelview Road from CR 8/Castleberry Road to SR 20) will widen Bethelview Road to a four lane roadway from CR 8/Castleberry Road to SR 20. PI 0009316 connects to the SR 9 corridor via project ID no. 141880 (Bethelview Rd widening from SR 9 to CR 8/Castleberry Rd) at the northernmost/eastern terminus of the project limits at the intersection of SR 141 and SR 9 and extending north to complete the Bethelview Road corridor widening from SR 9 to SR 20.

<u>Accident Data:</u>

An analysis of accidents within the project limits (see Table 5 for more details) revealed that the accident and injury rates exceeded the statewide average in all three analysis years (2004, 2005 and 2006). However, the fatality rate was lower than the statewide average for each year. Of the accident types, approximately 50% of all accidents are rear end collisions, 32% are angle collisions and 8% are not collisions with another vehicle. Typical conditions for rear end collisions in this corridor occurred when the first vehicle stopped at an intersection along SR 9 and the second vehicle, moving in the same direction, failed to stop. Other occurrences of rear end collisions were for vehicles stopped at cross streets along SR 9 in preparation to turn right onto SR 9 and a second vehicle was following too closely and failed to stop. Typical conditions for angle collisions had occurred when one vehicle was turning left into a commercial or residential property and the second vehicle was moving straight from the opposite direction.

Table 5 – Accident Analysis

Year	2004		2005		2006	
Comparison	**SR 9**	**Statewide**	**SR 9**	**Statewide**	**SR 9**	**Statewide**
Accidents	105		128		164	
Accident Rate	661	509	762	554	932	548
Injuries	33		40		57	
Injury Rate	208	127	238	140	324	137
Fatalities	0		0		0	
Fatality Rate	0.00	1.44	0.00	1.54	0.00	1.43

Preliminary Need & Purpose

This Preliminary Need and Purpose Statement identifies the problem along the subject corridor and the beginning and end points of the problem. This information is being provided for use in developing the need and purpose document, project concept and logical termini.

Need and Purpose:

The need for improvements to SR 9 from SR 371 to SR 141 is to enhance capacity along the SR 9 corridor from Academy Street in Fulton County to SR 306 in Forsyth County, which currently operates at an undesirable Level of Service. Additionally, there is a need to enhance safety along the project limits as both accident and injury rates exceed the statewide average. The purpose of the improvements would be to mitigate current and future congestion along SR 9, which provides connectivity between North Georgia and the Atlanta Metropolitan Area and provides a parallel and alternate route to SR 400.

Preliminary Need & Purpose

Attachment 11b:

Alpharetta LCI Study

Emmanuel, Peter

From: Graves, Eric [egraves@alpharetta.ga.us]
Sent: Monday, November 29, 2010 2:40 PM
To: Emmanuel, Peter
Subject: RE: SR 9/Main Street - LCI Project - Public Information Meeting

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

Peter:

It looks as if the City will first meet again with the DATA organization in December and likely have a Public Open House in January. We will absolutely send you an invite. As the project is being funded with local monies there is not an ARC project number. The project is listed in the appendix of the TIP (under MARTA Offset Projects), however.

We expect construction to begin near Fall of 2011 with likely 9 month duration.

Thanks,

Eric

Eric Graves, P.E.
City of Alpharetta
Senior Engineer-Traffic
1790 Hembree Road
Alpharetta, Georgia 30009

678.297.6200 x 1218
678.297.6201 - FAX

From: Emmanuel, Peter [mailto:pemmanuel@dot.ga.gov]
Sent: Monday, November 29, 2010 1:35 PM
To: Graves, Eric
Subject: SR 9/Main Street - LCI Project - Public Information Meeting
Importance: High

Good Afternoon Eric – per our conversation at the GEA Summit, you made mentioned that Alpharetta will be pursuing a public informational meeting/forum (sometimes in December 2010) on your City proposed LCI project for SR 9 improvements between SR 120/Old Milton Parkway and Vaughn Drive. I have the following questions that I need your assistance so I could better inform GDOT leadership on the progress of your City's effort, and provide GDOT leadership recommendation on whether or not to accelerate the twin projects' PI# 721780- and 721790- schedule:

- Has a date for the informational meeting being finalized? If so, what is the date? Could you send me or forward me an invite.
- Also, what is the project identification number for the LCI project?
- How will the LCI project be funded?
- What is the City duration for the proposed begin and completion date?

Your expeditious assistance and cooperation is appreciated. Thanks.

Peter B. Emmanuel
Project Manager, 404-631-1158
GDOT's Office of Program Delivery

city of
ALPHARETTA

downtown circulation study

Executive Summary

Prepared By:

URS

With

Urban Collage, Inc.

Sprinkle Consulting, Inc.

May 2008

Introduction

The Downtown Circulation Study is the first opportunity to implement elements of the 2003 *Downtown Master Plan* by identifying strategies and projects to improve pedestrian and bicycle connections, mitigate traffic volumes and speeds, develop stronger transit presence, review and suggest parking strategies, and provide expanded development and redevelopment opportunities throughout the downtown area.

The area defined for this study is roughly bordered by Mayfield Road to the north, Haynes Bridge Road to the east, SR 120/Old Milton Parkway to the south, and the old Milton High School property to the west. The area is bisected by SR 9/Main Street. A consultant team led by URS Corporation, in conjunction with Sprinkle Consulting and Urban Collage, was retained to assist in conducting the study.

Public Meetings and Input

Opportunities for public outreach and input were conducted at key decision points in the study. A project kick-off meeting was conducted on December 12, 2007. The draft Final report was presented at a Public Information Meeting held on March 19, 2008.

Recommendations

The Downtown Circulation Study recommendations are presented below sorted by transportation mode. The recommendations address objectives developed by the Team for each mode. All costs shown are estimated using the Atlanta Regional Commission's Project Costing Tool and include engineering, utility relocation, right-of-way acquisition, and construction except where noted.

Roadways

Objective: Move predominant north-south movement off of Main Street.

Objective: Redesign Main Street to improve safety and connectivity while maintaining mobility and creating a sense of identity for the downtown area

Recommendation: Assign SR 9 designation to other existing facilities

From the intersection of South Main Street and Old Milton Parkway, follow SR 120 eastbound to Westside Parkway, turn north to Windward Parkway intersection, and either follow Windward Parkway west back to the existing SR 9 alignment or continue north on Deerfield Parkway to the existing SR 9 alignment. In addition at Main Street and Old Milton Parkway, the addition of dual right turn lanes onto eastbound Old Milton Parkway would facilitate better through-traffic flow.

Recommendation: Adjust Lane Widths

Reduce lane widths to reduce pedestrian crossing distances, reallocate space for a median, and/or add on-street parking or bicycle lanes.

Recommendation: Add a raised median to Main Street

Add 20-foot landscaped median from SR 120/Old Milton Parkway to Mayfield Road.

Recommendation: Additional streetscape treatments such as pole banners, signing, other design elements on road signs

Capitalizing on the historic nature of downtown, additional pole banners, wayfinding road signs for motorists, distinctive road name signs placed on the mast arms at signalized intersections, signing for parking facilities, and pedestrian-level wayfinding signage.

For Additional Discussion:

- *Haynes Bridge Road Extension*

  Upgrade Devore Road to four lanes with a median (including some new alignment) from South Main Street to Haynes Bridge Road. Construct a new roadway starting at Academy Street/Haynes Bridge Road crossing Cumming Street continuing north and west to the intersection of Mayfield and Main Streets.

- *"Cut the Corners" -- Haynes Bridge Road Realignment*

  Upgrade Devore Road to four lanes with a median (including some new alignment) from South Main Street to Haynes Bridge Road . Via a pair of smooth curves, Haynes Bridge Road would bear left following the existing Academy Street roadbed before baring right back to northbound Main Street. Add a roundabout to allow smooth transition to and from Milton and Main Streets without the use of a traffic signal.

- *Put Main Street in a "diet"*

  Main Street from Devore Road to Mayfield Road would be given a "road diet" – that is, reduction of travel lanes from four to two.

- *North Fulton Traffic Management Plan*

  Additional study may also be needed to address traffic moving from northwest Fulton and eastern Cherokee County via Mayfield, Mid-Broadwell, and Rucker Roads.

Transit

Objective: Augment and expand transit options in the Study Area

Recommendation: Expand MARTA service

- Realignment of MARTA Route 140
- Increase frequency of service, create or relocate bus stops, and/or explore new route(s)

Recommendation: Add/Improve Amenities at Transit Stops

- Construct bus shelters (following City ordinances)
- Add pavers to highlight the transit stop
- Upgrade signing to identify specific routes that serve the stop
- Special pavement markings highlighting the transit stop to motorists

For Additional Discussion:

- *Shuttle/Circulator*

The Team explored the possibility of implementing a shuttle or circulator system in the City that would connect various major destinations such as the downtown area, North Point Mall and surrounding commercial properties, and the Windward Parkway area. However, the Team chose to not include a formal recommendation for two main reasons: cost and land use.

Other Projects of Note:

- *Bus Rapid Transit (BRT) along SR 120*

This project remains in the conceptual phase. There could be future opportunities for connection to and interaction with this service as well as providing development and redevelopment opportunities around the stations once the project moves into design.

- *MARTA Rail Expansion to Windward*

While this proposed transit service does not directly connect the Study Area to the surrounding area, there could be an opportunity in the future for connection via a MARTA bus route or connector shuttle. This would be especially advantageous for the reverse commuter and those wishing to visit the downtown Alpharetta area without the use of a car.

Pedestrian Conditions

Objective: Create a safe and enjoyable pedestrian experience throughout the Study Area

Recommendation: Improve and augment pedestrian facilities throughout the City

- Add sidewalks to the following locations:
  - Marietta Street from Wilshire Glen to Roswell Street (north side only).
  - Marietta Street from Roswell Street to Main Street (both sides).
  - Old Canton Street from Canton Street to Milton Avenue (west side only).
  - Church Street from Canton Street to North Main Street (north side only).
  - Milton Avenue from Cemetery to Canton Street – (south side only).
- Upgrade all sidewalks, crosswalks, curb ramps, and driveways to comply with the Americans with Disabilities Act (ADA)
- Adopt pedestrian-friendly policies at intersections
  - Provide for clearly visible conflicts, conflicts at low speeds, and at right angles
  - Use small radii
  - Provide positive guidance for vehicles and pedestrians
  - Channelize intersections
  - Minimize pedestrian crossing distances

Recommendation: Construct new midblock crossings at:

- Aligned with the walkway connected to the municipal parking lots (adjacent to the Smokejack Restaurant).
- At the unsignalized intersection of South Main and Marietta Streets (to serve the bus stop in front of Hardee's).

- Milton Avenue between Roswell and Main Streets.

Recommendation: Upgrade/Enhance existing midblock crossings at:

- Old Milton Parkway at Burnett Way.
- Old Milton Parkway at Wills Drive.
- Old Milton Parkway at Marietta Street.

Recommendation: Pedestrian Programs

- Enforce motorists yielding to pedestrians at crosswalks
- Provide special attention at continuous turn locations (a.k.a. KEEP MOVING lanes)
- Implement educational programs for children, such as Safe Routes to School, teach safe behaviors

Bicycling Conditions

Objective: Increase connectivity of bicycle transportation in and around the Study Area

Recommendation: On-Street Facilities and Treatments

- Provide traffic calming measures such as curb extensions, bulb-outs, and speed tables
- Designate bike lanes on roadways where sufficient space is available
- Construct new paved shoulders on roadways without curb-and-gutter
- Use shared lane symbol (sometimes referred to as the "bike-and-chevron," or "corporal bike" marking) (pending FHWA approval)
- Deploy detection devices that are linked to flashers affixed to warning signs that will flash only when bicycles are detected in the specific zone

Recommendation: Off-Street Facilities/Shared Use Pathways

- Create Pathways on Existing Wide Sidewalks along the following roadways:
    - Old Milton Parkway from Wills Road to South Main Street.
    - Roswell Street from Old Roswell Street to Old Milton Parkway.
    - Milton Avenue from West End of Campus to Canton Street.
    - Haynes Bridge Road from SR 400 to Academy Street.
    - Canton Street from Old Canton Street to Mayfield Road.

- Create New Pathways via:
    - Heritage Lane Path from Heritage Lane to Lynne Circle.
    - Marietta Street/Milton Avenue Connection.
    - School Campus (north/west perimeter) from Milton Avenue to Upshaw Drive.
    - School Campus (northeast perimeter) from School Drive to Upshaw Drive.

- Improve Bicycle Parking downtown at the following locations:
    - Along Milton Avenue, Main Street and other retail locations; single-element bike racks, three to four per block.
    - At public buildings and larger commercial buildings; multiple element bike racks, one per 20 vehicle parking spaces (minimum of five).
    - At municipal parking lots buildings; bicycle lockers – one per 20 vehicle parking spaces (minimum of five).

Recommendation: Signage tailored for bicyclists

Install a system of clear and uniform signs that indicate the direction and distance to important destinations via either on- or off-street facilities

Recommendation: Bicycling Programs

Develop educational campaigns about good bicycling habits and the rules of the road to address riding at night without lights, violating traffic signals, and riding against traffic on the roadway.

Recommendation: Improve Connectivity to Nearby Destinations

- Improve Bicycle Access to Wills Park via:
    - Old Milton Parkway from Wills Drive to South Main Street (pathway, both sides.
    - Roswell Street from Old Roswell Street to Old Milton Parkway (pathway, both sides).
    - Devore Road from South Main Street to Haynes Bridge Road (paved shoulders).

- Improve Bicycle Access to Big Creek Greenway via:
    - Academy Street from Haynes Bridge Road to Westside Parkway (lane allocation and shoulder widening).
    - Webb Bridge Road from Westside Parkway to Big Creek Greenway (shared roadway symbol)
    - Webb Bridge Road bridge over SR 400 (activated warnings).

- Improve Bicycle Access to North Point Mall via:
    - Haynes Bridge Road from SR 400 to Old Milton Parkway (improved pathway, east side.
    - Westside Parkway from Encore Parkway to Maxwell Road (improved pathway, south side).
    - Haynes Bridge Road from SR 400 to Old Milton Parkway.
    - South Main Street from Old Milton Parkway to Maxwell Road (bicycle lanes or shared lane symbol).
    - Encore Parkway from SR 400 to Westside Parkway (activated warning signs and shared lane emblems).
    - Maxwell Road from Westside Parkway to South Main Street (paved shoulders and sidewalks, both sides).
    - Roswell Street from South Main Street to Old Milton Parkway (paved shoulders, both sides).

Parking

Objective: Improve, expand, and better facilitate parking in and around the downtown area

Recommendation: Parking by Street/Corridor

Milton Avenue

- Move exclusive parking along Milton Avenue west of Roswell Street out to street and open to general use; add a defined sidewalk with streetscaped elements

Old Roswell Street/Roswell Street

- Enforce or meter Old Roswell Street lot in one- or two-hour increments

Recommendation: Parking Structure

- Build a multi-story parking structure on the existing Roswell Street lot
- Enhance driveway/entrance to attract downtown visitors to the structure's location.

Recommendation: Improve Visibility of Signage

- Erect signs directing drivers to "Public Parking" on Main Street, Milton Avenue, Canton/Roswell Streets, and Old Roswell/Old Canton Streets.

For Additional Discussion

- Partner with the two churches adjacent to the downtown area to lease parking Monday to Saturday.
- Purchase new properties (such as the large residential track close to the Old Roswell/Roswell Street intersection) for potential parking lot/structure locations.
- Consider a new Comprehensive Parking Strategy Study that is implementable and has broad political and business support.

Land Use

Objective: Downtown development/redevelopment opportunities and strategies

- Focus new, "infill" development/redevelopment that is consistent with the City's downtown incentive zoning district in the Historic Business District
- Continue support for higher-density residential development in the historic downtown core to promote less automobile use.
- Encourage mixed-use development/redevelopment opportunities within the Central Business District along Haynes Bridge Road, SR 120/Old Milton Parkway, Marietta Street, and Milton Avenue.
- Enhance connectivity, the pedestrian/walking environment, bicycle connectivity, and the vitality of the downtown district by accommodating denser development patterns and architectural character consistent with the Downtown Incentive Zoning District outside of the historic downtown core.

city of
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downtown circulation study

Final Recommendations Report

Prepared By:

URS

With

Urban Collage, Inc.

Sprinkle Consulting, Inc.

May 2008

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1.0 Introduction

1.1 Background

Since 2000, the Atlanta Regional Commission (ARC) has conducted the Livable Centers Initiative (LCI) program. The LCI program was developed to aid communities across metropolitan Atlanta create livable places through the application of land use, zoning, and urban design combined with multimodal transportation improvement strategies. The intent of an LCI plan is to reduce single occupancy vehicle (SOV) trips within LCI areas and ultimately reduce air pollutants emitted by vehicles. An important element of the LCI program has been developing an understanding of places within the community and market context, knowing what's there, what's desired, and what's feasible. In addition, the LCI study process is based on a planning approach underscored by broad community participation, input, and support.

In 2003, the City of Alpharetta developed the *Downtown Master Plan* as a separate initiative. At the time, the City developed the Plan to meet or exceed the goals and objectives of the LCI program. A year later, the City petitioned ARC to grandfather the *Downtown Master Plan* into the LCI program. ARC agreed and the City's downtown area became a formal part of the LCI program making it eligible for future study and implementation funding.

The City of Alpharetta received a supplemental LCI grant in 2007 to study circulation in and around the downtown area. This study is envisioned to be the first opportunity to implement elements of the *Downtown Master Plan* by identifying strategies and projects to improve pedestrian and bicycle connections, mitigate traffic volumes and speeds, develop stronger transit presence, review and suggest parking strategies, and provide expanded development and redevelopment opportunities throughout the downtown area.

1.2 Study Area

The area defined for this study is roughly bordered by Mayfield Road to the north, Haynes Bridge Road to the east, SR 120/Old Milton Parkway to the south, and the old Milton High School property to the west. The area is bisected by SR 9 (known locally as Main Street), a major north-south arterial roadway connecting Atlanta to the northern suburbs. SR 9 also serves as a parallel facility to SR 400 (and US 19), a limited access freeway

connecting Atlanta to Dahlonega.

A consultant team led by URS Corporation in conjunction with Sprinkle Consulting, and Urban Collage was retained to assist in conducting the study. Opportunities for public outreach and input were conducted with a project kick-off meeting December 12, 2007. The Final Plan was presented at a Public Information Meeting held on March 19, 2008.

1.3 Study Area Transportation System

This section of the report presents a brief overview of the *Existing Conditions Report* developed in February 2008 that inventoried and documented transportation and land use found in the downtown Alpharetta study area. It is from that report that the baseline was established for understanding the transportation characteristics as well as land use and urban design. Below is a brief summary of the area's current transportation system.

1.3.1 Functional Classification

Three Urban Minor Arterials, SR 9/Main Street, SR 120/Old Milton Parkway, and Haynes Bridge Road contain a posted speed limit of 35 mph except for the segment of SR 120/Old Milton Parkway east of Main Street which is posted at 45 mph. All other roadway facilities are classified as Collector or Local and have a speed limit no higher than 35 mph.

1.3.2 Regional Strategic Transportation System (RSTS)

Both SR 9/Main Street and SR 120/Old Milton Parkway (within the Study Area) have been identified through this system and are eligible for federal funding to mitigate congestion.

1.3.3 Traffic Control

Signalized intersections: 9

1.3.4 Cross Section

- SR 9/Main Street: Two lanes in each direction with no center turn lane or median; turn lanes available at intersections with SR 120/Old Milton Parkway and Academy Street/Milton Avenue. At the Mayfield Road intersection, one northbound lane becomes a dedicated left turn lane.
- Haynes Bridge Road: Two lanes in each direction with median. South of SR 120/Old Milton Parkway, road becomes six lanes.

- SR 120/Old Milton Parkway: west of SR 9/Main Street – two lanes in both directions with median; east of SR 9/Main Street – three lanes in both directions with median.
- Academy Street: west of Haynes Bridge Road – two lanes in both directions with no center turn lane; east of Haynes Bridge Road – one lane in both directions.
- Milton Avenue: one lane in each direction.
- Roswell Street/Canton Street: one lane in each direction.
- Mayfield Road: one lane in each direction.

Table 1 displays the average traffic volume on certain key roadway segments within the Study Area as well as that segment's level-of-service. Table 2 shows the crash data compiled from the Georgia Department of Transportation's CARE database.

Table 1
Annual Average Daily Traffic and Level of Service

Segment	AADT	LOS
SR 9/Main Street from SR 120/Old Milton Parkway to Academy Street	26,090	D
SR 9/Main Street from Mayfield Road to Winthorpe Park Drive	22,840	D
Haynes Bridge Road from SR 120/Old Milton Parkway to Academy Street	17,200	D
SR 120/Old Milton Parkway from Main Street to Haynes Bridge Road	50,460	E

Source: GDOT

Table 2
Crash Experience

Route Name[1]	From/To	Length (miles)	Average Daily Traffic	Crash Rate (Crashes per 100 MVM)[2]
SR 9	SR 120/Old Milton Parkway to Milton Avenue	0.31	26,090	927
SR 9	Milton Avenue to Cumming Street	0.18	27,330	851
SR 120	Haynes Bridge Road to Park Street	0.27	16,270	355
SR 9	Roswell Street to SR 120/Old Milton Parkway	0.40	8,260	291
Haynes Bridge Road	SR 120/Old Milton Parkway to Academy Street	0.24	33,810	279

Source: GDOT CARE Database, 2004 -2006 and available 2007 data (July-January)
[1] Locations are approximate
[2] MVM = Average crash rate in million vehicle miles

1.3.5 Transit

Route 140 – North Point/Mansell Road Park/Ride
Travels along SR 400 from the MARTA North Springs rail station (N11) to the Mansell Park and Ride lot located at the southwest quadrant of the SR 400/Mansell Road interchange. Using North Point Parkway and Old Milton Parkway, this route loops around downtown before returning to SR 400.

Route 185-Alpharetta/Holcomb Bridge Road
Follows SR 400 to SR 140/Holcomb Bridge Road then turns north along SR 9/120-Alpharetta Highway (Main Street within the Alpharetta city limits) continuing east across SR 400 along Windward Parkway to North Point Parkway.

Route 143 – Windward Park/Ride
While not directly serving the Study Area, this route intersects with Route 185 in the Windward Parkway area north and east of downtown.

1.3.6 Bicycle/Pedestrian

- No formal bicycle facilities
- Pedestrian facilities/sidewalks exist on nearly all roadways within Study Area
- Crosswalks and pedestrian signals are present at all signalized intersections
- A variety of streetscape amenities exist along Main Street, Milton Avenue, Canton Street, Roswell Street, Old Milton Parkway, Marietta Street, and Haynes Bridge Road

1.3.7 Existing Land Use

- The "downtown" of Alpharetta is centered at the crossroads of SR 9/Main Street and Milton Avenue/Academy Street
- SR 9/Main Street is bordered almost exclusively by retail and civic/institutional properties
- Milton Avenue includes the old Milton High School site, a cemetery and the study area's only light industrial use
- Canton Street area (north of Milton Avenue) is largely residential including a variety of older single family homes and several proposed and new residential townhome developments
- Roswell Street (south of Milton Avenue) includes a number of older homes and buildings that have been converted to small office space
- Marietta Street includes some older residences and Victoria Square, a new attached townhome development

1.3.8 Parking

- On-street parking along both sides of Milton Avenue, just east of its intersection with Roswell Street/Canton Street
- On Old Roswell Street, just south of Milton Avenue
- On South Main Street adjacent to City Hall at the intersection of Main Street and Academy Street
- On Roswell Street, located across from the intersection of Roswell Street and Old Roswell Street
- Private parking is also provided in association with a number of the retail and commercial establishments, office, institutional, and residential facilities within the study area (such as the Publix grocery store)

2.0 Recommendations

2.1 Introduction

Like many cities across the state of Georgia, Alpharetta has several state routes and major roadways that converge in or close to the downtown area. As Alpharetta and the surrounding area grew over the last two decades, these roadways were widened to accommodate ever growing traffic volume. Now, as Alpharetta begins the process of reclaiming and redeveloping its downtown area, these major roadways have become impediments. Speeding traffic, unsafe pedestrian conditions, and lack of land use connectivity have segmented the downtown area. One example is the lack of convenient pedestrian crossings along Main Street. Pedestrians frequently stand in the middle of the road to wait for traffic to clear before continuing across the street. There is no center turn lane or median for the pedestrian to take refuge in so therefore, he puts himself and others at risk.

As part of the Downtown Alpharetta Circulation Study, the Team reviewed common and innovative ways to improve circulation in and around the downtown area by mitigating the impact roadways have, augmentation of additional transit service to provide options to the automobile, improving bicycle connections from downtown to other city amenities such as the Big Creek Greenway, and improving safety for those wishing to simply walk. All of these enhancements coupled with land use suggestions mentioned later in this section will ensure all modes of transportation are weaved seamlessly throughout downtown Alpharetta making the area a desirable place to live, shop, and visit. As each mode of transportation is addressed, specific objectives will be highlighted and addressed by the recommendations.

2.2 Roadways

Objectives:

- *Move predominant north-south movement off of Main Street*
- *Redesign Main Street to improve safety and connectivity while maintaining mobility*

In order to begin the process of stitching downtown Alpharetta back together and improving overall traffic flow in and around the downtown area, the need to move significant amounts of traffic volume off of Main Street is imperative. The following section represents a compilation of improvements along Main Street to improve safety for pedestrians and bicyclists and mitigate the impact Main Street currently has in the downtown area. Following the section, Table 3 shows estimated costs for each recommendation.

Recommendation: Assign SR 9 designation to other existing facilities

This recommendation would reassign the SR 9 designation using existing roadways in order to allow Main Street to be returned to City control. From the intersection of

South Main Street and Old Milton Parkway, SR 9 would follow SR 120 eastbound to the intersection with Westside Parkway approximately ¾ mile east of downtown. SR 9 would then turn north on Westside Parkway (currently under construction) to the Westside Parkway/Windward Parkway intersection. At this point, SR 9 could either follow Windward Parkway west back to the existing SR 9 alignment or continue north on Deerfield Parkway to the existing SR 9 alignment. In addition to making signing changes, a minor intersection modification at Main Street and Old Milton Parkway to add dual right turn lanes from northbound Main Street to eastbound Old Milton Parkway would facilitate better through traffic flow.

Because reassignment of a state route is being recommended, GDOT would need to be involved early and often to ensure the regional through movement can be maintained.

Recommendation: Adjust Lane Widths

It may be acceptable to reduce lane widths to reduce pedestrian crossing distances, reallocate space for medians, and/or add on-street parking or bicycle lanes. According to the American Association of State Highway and Transportation Officials (AASHTO) *Green Book* for rural and urban arterials, lane widths may vary from 10 to 12 feet. The *Green Book* states 12-foot lanes should be used where practical on higher speed, free-flowing, principal arterials. However, under interrupted-flow (i.e. roads with signals) operating conditions at low speeds (45 miles per hour or less[1]), narrower lane widths are normally quite adequate and have some advantages.

Despite the guidance in the AASHTO *Green Book*, two primary arguments are used against the concept of reducing lane widths: narrow lanes reduce capacity; and, narrow lanes increase crashes. In 2007, Kittleson and Associates performed a literature search to evaluate findings of research on impacts to urban street capacity resulting from narrowing lane widths. The findings of this literature search are presented below:

> *All of the relevant research is in general agreement as to the impact of narrowing lane width on saturation flow for through lanes on signalized intersection approaches. The measured saturation flow rates are similar for lane widths between 10 feet and 12 feet. For lane widths below 10 feet, there is a measurable decrease in saturation flow rate. Thus, so long as all other geometric and traffic signalization conditions remain constant, there is no measurable decrease in urban street capacity when through lane widths are narrowed from 12 feet to 10 feet.*[2]

[1] AASHTO. *Geometric Design of Highways and Streets*, pg. 473, AASHTO, Washington, D.C., 2004.
[2] John Zegeer, in a memo to Sprinkle Consulting Engineers, March 22, 2007.

With regard to safety, much research has been performed evaluating the crash impacts of narrowing lanes. Most recently, the Midwest Research Center[3] reported:

> *A safety evaluation of lane widths for arterial roadway segments found no indication, except in limited cases, that the use of narrower lanes increases crash frequencies. The lane width effects in the analyses conducted were generally either not statistically significant or indicated that narrower lanes were associated with lower rather than higher crash frequencies. There were limited exceptions to this general finding.*

The report went on to say:

> *The research found three situations in which the observed lane width effect was inconsistent—increasing crash frequency with decreasing lane width in one state and the opposite effect in another state. These three situations are:*
>
> - *lane widths of 3.0 m (10 ft) or less on four-lane undivided arterials*
> - *lane widths of 2.7 m (9 ft) or less on four-lane divided arterials*
> - *lane width of 3.0 m (10 ft) or less on approaches to four-leg STOP-controlled arterial intersections*
>
> *Because of the inconsistent findings mentioned above, it should not be inferred that the use of narrower lane must be avoided in these situations. Rather, it is recommended that narrower lane widths be used cautiously in these situations unless local experience indicates otherwise.*

This goal addresses two issues that combined will add to the aesthetic beauty of the downtown area while providing the sense of place as well as improving the overall circulation in and around the downtown area.

Recommendation: Addition of a raised median along Main Street

The installation of a raised median along Main Street from (at least) SR 120/Old Milton Parkway to Mayfield Road would provide multiple benefits. First and foremost, medians tend to slow traffic down as the perception of drivers assumes the roadway is not as wide. Further, medians can provide refuge for crossing pedestrians if necessary. Medians can also provide aesthetic value to the downtown area with the addition of street trees and foliage, lighting and the like (Figure 1). The one drawback is the potential need for additional right-of-way along the corridor. Also, on-street parking may be lost to accommodate the same amount of lane counts as Main Street approaches Academy Street. Criteria recognized by GDOT suggest Main Street could be a positive candidate for a raised median. Currently, Main Street is classified

[3] Ingred B. Potts, Harwood, D., Richard, K., *Relationship of Lane Width to Safety for Urban and Suburban Arterials,* Transportation Research Board, 2007 Annual Meeting.

as an arterial with traffic volume above 18,000 vehicles per day, has high turning volumes, has a large number of driveways, and has the need to provide more pedestrian crossings especially in the area between Marietta and Academy Streets. Additional benefits of a raised median include reducing vehicular head-on crashes, improved left-turn movements, and better opportunities for addressing access management in the downtown area.

Figure 1
Example of a raised median with landscaping in an urban area

Business and property owners tend to be the loudest opponents to the installation of medians; however, it should be pointed out that numerous surveys across the United States have shown little or no impact to patronage of stores where a median was installed and that in some cases, property values actually increased after the installation of a median. According to an Iowa State University Study in 1997 related to the installation of a raised median, four in five businesses saw increased sales and nearly 90% of the motorists using the corridor had a favorable rating for the median. Furthermore, in a 1999 Texas study, specialty retail, fast-food establishments, and sit-down restaurants all experienced increases in customers per day, overall sales, and property values after median installation. If the City chooses to pursue a median along the Main Street corridor, it is imperative to engage business and property owners early and often to ensure information is factual and accurate.

Figure 2
Wayfinding Sign in Grapevine, TX

Recommendation: Additional streetscape treatments such as pole banners, signing, other design elements on road signs

When the Team interviewed key Alpharetta staff, it was mentioned that Alpharetta suffers from a lack of the appearance of a "downtown". With the construction of the new City Hall as part of the City Center development, this perception will be mitigated slightly; however, additional measures may be required to tell the motorists (or bicyclist, transit rider, etc) that "you have arrived at downtown Alpharetta!"

In addition to the streetscape treatments already constructed by the City, other enhancements can be made to further define the character of the downtown area.

Capitalizing on the historic nature of downtown, the addition of pole banners, wayfinding road signs for motorists (Figure 2), and distinctive road name signs placed on the mast arms at signalized intersections (Figure 3) would be beneficial. Additional opportunities to capitalize on the downtown's historic nature include signing for parking facilities as well as pedestrian wayfinding signage. Finally, Alpharetta could highlight its city limits by erecting more prominent banner or plaque signs introducing travelers to the City and displaying its historic past. The pole banners displayed throughout downtown are a source of pride to the City of Alpharetta and they could easily be incorporated into any recommendations coming from this report. Additionally, the continuation of more traditional street furniture and lighting in the Georgian Revival design style should be encouraged

Figure 3
Street Sign in Grapevine, TX

Table 3
Recommendations for SR 9/Main Street

Segment	From/To	Type of Improvement	Cost
Reassign SR 9 Markers along existing streets	Old Milton Parkway/South Main Street to Windward Parkway/ North Main Street	Signage	$40,000
Create dual-right turn lanes from NB Main Street to EB SR 120	South Main Street at Old Milton Parkway	Striping/ Signing	TBD (part of maintenance?)
Adjustment of Lane Widths	Old Milton Parkway to Mayfield Road	Striping	Variable (part of maintenance?)
Add raised median with landscaping	Old Milton Parkway to Mayfield Road	Median	$270,000 (excluding ROW)
Additional streetscape treatments such as pole banners, signing, other design elements on road signs	Throughout downtown	Streetscape Elements	Variable

Source: Atlanta Regional Commission's Project Costing Tool
NOTE: The figures above are estimates.

Select Link Analysis

During development and review of the roadway recommendations, the Team ran a sketch analysis using estimated traffic flows from the Atlanta Regional Commission (ARC) travel demand model. This analysis was conducted using a select link process in the ARC model to estimate the AM and PM peak period origins and destinations of traffic passing through Main Street, just north of Old Milton Parkway.. It is important to note this analysis was conducted using the ARC model, a planning model which cannot directly incorporate the affects of signal timing and other traffic operational

controls on traffic patterns. As such, these results are intended to provide a general idea of traffic flows in and around the Study Area.

The results indicate that in both the AM- and PM-peak periods, roughly 30 percent of the traffic passing through Main Street from the south is heading to or coming from SR 400 via the Haynes Bridge Road interchange. It is on the north approaches to downtown Alpharetta that the influence of Westside Parkway's opening is most visibly felt in year 2010, with virtually no traffic coming from or going to the area northeast of downtown along Windward Parkway. As a result, despite only moderate increases in actual traffic volume, there appears to be a much larger amount of traffic coming from/going to the areas north and northwest of Downtown Alpharetta. The end result is that the model is predicting substantial decreases in traffic volume along Main Street in downtown Alpharetta once Westside Parkway is opened.

These projected changes in traffic distributions and volume have the potential to positively affect the livability of the downtown Alpharetta area, and further detailed traffic study is recommended after Westside Parkway is open.

For Additional Discussion:

Haynes Bridge Road Extension

This long-discussed option would require new or upgraded facilities to move pass-through traffic to Haynes Bridge Road. The construction of a new roadway starting at Academy Street and Haynes Bridge Road continuing to the intersection of Mayfield and Main Streets would be required to remove the "dog leg" movement currently occurring along-Academy Street-between Haynes Bridge Road and Main Street. This new roadway segment would be approximately ½ mile in length and be a four lane facility with a median and sidewalks on both sides.

The Team reviewed this option and chose to not include it as a formal recommendation primarily due to its cost which could approach $16,000,000. Additionally, the impact to surrounding businesses and neighborhoods (most notably the Baptist and Methodist church properties) would be great and would require significant mitigation.

"Cut the Corners" – Haynes Bridge Road Realignment

This fairly new idea would "cut the corners" between Haynes Bridge Road and Main Street via a pair of smooth curves. Academy Street, Manning Street and Main Street would all require realignment to better intersect the "new" Haynes Bridge Road.

The Team reviewed this option and chose to not include it as a formal recommendation again primarily due to its cost estimated at $14,000,000. Additionally, there would be a need to displace at least one and possibly two existing businesses.

Put Main Street on a "diet"

One benefit, of moving through traffic onto Haynes Bridge Road is the ability to create a true "Main Street" by emphasizing pedestrian and bicycling rather than vehicle travel. The segment of Main Street from Old Milton Parkway to Mayfield Road would be given a "road diet" – that is, reduction of travel lanes from four to two. The additional roadway footprint could be used to add parallel or angled parking, widened sidewalks, bicycle lanes, or a large median with appropriate trees and/or plantings. However, absent the removal of significant traffic volume off of Main Street, the idea of removing lanes would not be feasible.

North Fulton Traffic Management Plan

Additional study may also be needed to address traffic moving from northwest Fulton and eastern Cherokee County via Mayfield, Mid-Broadwell, and Rucker Roads. In concert with neighboring jurisdictions, notably the City of Milton, a more comprehensive study of traffic patterns throughout this quadrant of the region would be advantageous.

2.3 Transit

Objective: Augment and expand transit options in the Study Area

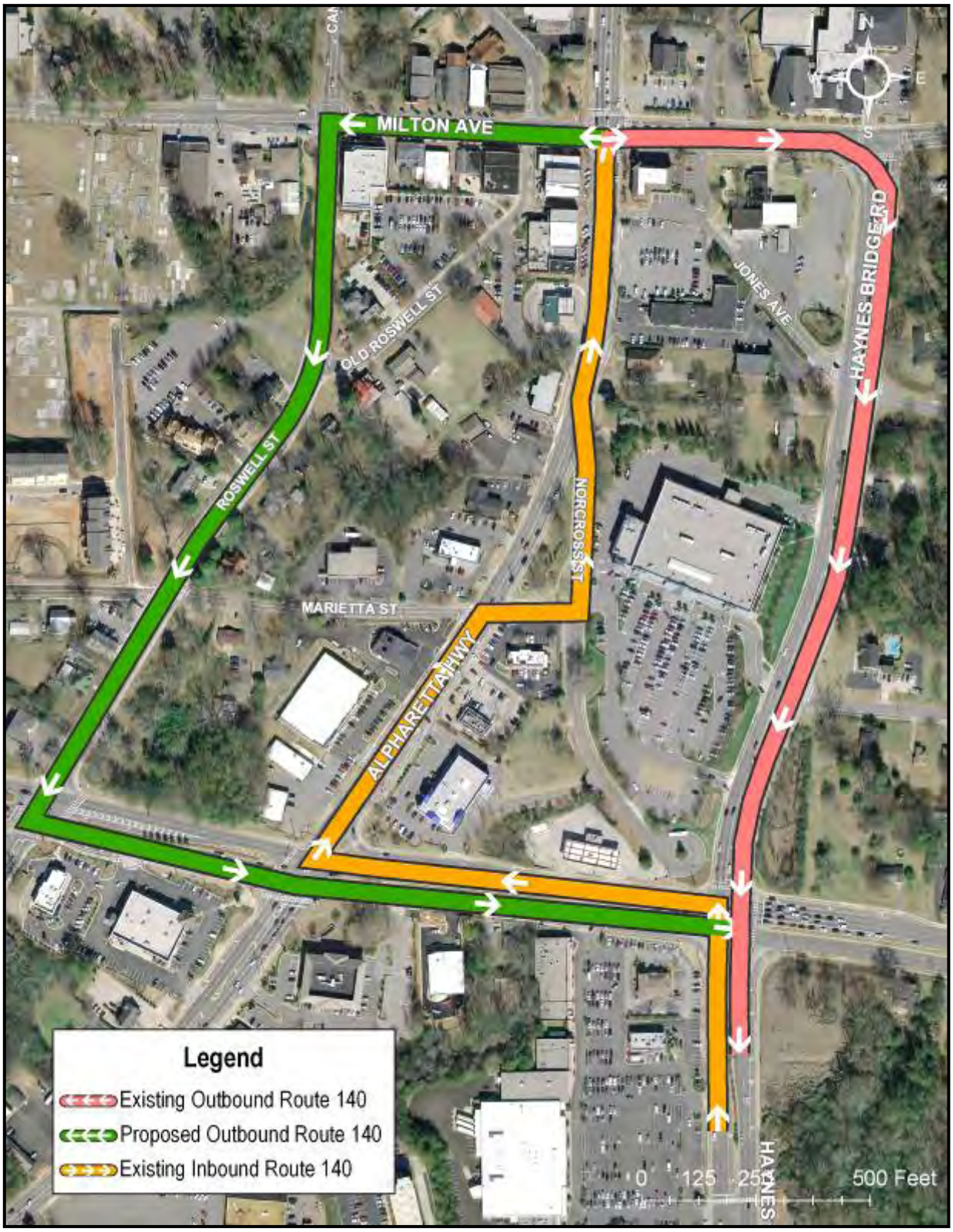
Recommendation: Expanded MARTA service

MARTA recently began a System Optimization Study to explore the routing and service of the bus and rail elements. This may be an opportunity for the City to explore expansion of the two MARTA routes currently serving the downtown area. As the Business District continues to grow west of Main Street, the need for enhanced transit service becomes more and more important.

To improve transit service within the downtown area, the Team is recommending the realignment of MARTA Route 140 (Figure 4). Currently, the route loops around the eastern part of downtown via South Main and Academy Streets and Haynes Bridge Road continuing to the North Point Mall area. The Team proposes the route be modified as follows. After making the northbound turn onto South Main Street, the route would continue north to Milton Avenue where it would turn west. The route would travel two blocks to Roswell Street where it would turn south then turn east on SR 120/Old Milton Parkway and returning south on Haynes Bridge Road. The loop to the Alternative School would be maintained on days when school is in session and the loop onto Norcross Street would also be maintained. Addition of this leg of the route would open direct transit service to residential properties developing along the western side of downtown along Roswell and Canton Streets. Additionally, it is expected no significant physical roadway improvements (widened lanes, increased turning radii, etc.) would be required to accommodate the standard MARTA transit vehicle; however, some signal retiming may be needed to address the transit vehicle's turning movements.

Other potential enhancements of transit service in downtown include increasing the frequency of service, creation or relocation of bus stops, and/or the exploration of new route(s) in and around the downtown area.

Figure 4
Proposed Change in MARTA Route 140



Recommendation: Add/Improve Amenities at Transit Stops

Following design guidelines already in place with the streetscapes in the downtown area, there is an opportunity to improve transit stops to better weave their impact into the adjacent area. The primary addition would be a bus shelter that would offer cover from weather and benches for patrons while waiting for the transit vehicle. These stops could be accented with brick or other similar materials to ensure they visually blend with the surrounding community. Additionally, pavers could be used in the sidewalk to highlight the transit stop. Signing could be upgraded to identify specific routes that serve the stop as well as phone numbers to reach customer service representatives. Finally, special pavement markings could highlight the transit stop to motorists.

Figure 5
Standard bus shelter with associated amenities without advertising

It is important to note the City currently prohibits ad-supported bus shelters through its sign ordinance. However, this would not deter the construction of bus shelters completely. Figure 5 shows an example of a standard bus shelter without any form of advertising. Improved bus stops with shelters, pavers and adjacent sidewalk improvements typically cost about $10,000 per stop. Currently, there are 14 bus stops throughout the downtown area covering Main Street, Haynes Bridge Road, and Old Milton Parkway, including two within the Alternative School site. Additionally, in order to bring a unique element to each stop, a special theme could be implemented that highlights important points about downtown such as historical facts or whimsical items such as “fun facts” or the like.

For Additional Discussion:

Shuttle/Circulator

The Team explored the possibility of implementing a shuttle or circulator system in the City that would connect various major destinations such as the business district in the downtown area, the North Point Mall and surrounding commercial properties, and the Windward Parkway area. However, the Team chose to not include a formal recommendation for two main reasons:

- Cost – the cost of a simple circulator/shuttle system would be quite extensive. In this region, there is a lack of dedicated funding reserved for transit

systems. In fact, several activity centers such as the Cumberland/Galleria area have performed feasibility studies to implement shuttle service and have found the financial burden too great to overcome. A potential opportunity exists to partner with the North Fulton Community Improvement District (CID) to implement a circulator system in Alpharetta; however, if that does not come to fruition, the City would be forced to fund 100% of the capital and operations costs.

- Land Use – the areas the circulator would connect (other than downtown) do not support effective transit routing. Most businesses in and around the North Point Mall and Windward Parkway areas have extensive parking lots that front the roadway. A transit rider would be forced to walk the length of this parking with no pedestrian protection in place. Additionally, the majority of shopping center owners do not wish to have transit vehicles of any type utilizing their service roadways. If a center owner did allow transit vehicles to provide curbside service, more vehicles would be required in order to maintain efficient and timely service pushing the operations costs even higher.

One important note: the recently completed *North Point LCI Study* recommended the redevelopment of large expansive surface parking lots in the North Point area to increase densities and better support transit service. If this type of redevelopment takes place, there may be future opportunities to explore improved transit connectivity.

Other Projects of Note:

Bus Rapid Transit (BRT) along SR 120

The Transit Planning Board's (TPB's) *Concept 3* calls for Arterial BRT along SR 120 between Marietta and Lawrenceville including the stretch through the Study Area. Although this project remains in the conceptual phase, there could be future opportunities for connection to and interaction with this service as well as provide development and redevelopment opportunities around the stations once the project moves into design.

MARTA Rail Expansion to Windward

Concept 3 also calls for the MARTA North Heavy Rail line to be extended along SR 400 between North Springs (N11) and the Windward Parkway area. While this proposed transit service does not directly connect the Study Area to the surrounding area, there could be an opportunity in the future for connection via a MARTA bus route or connector shuttle. This would be especially advantageous for the reverse commuter and those wishing to visit the downtown Alpharetta area without the use of a car.

2.4 Pedestrian Conditions

Objective: Create a safe and enjoyable pedestrian experience throughout the Study Area

Recommendation: Improve and augment pedestrian facilities throughout the City

As was noted in the *Existing Conditions* report, sidewalk coverage within the study area is generally good. There are occasional gaps, such as streets with sidewalks on one side only, but only one segment — Marietta Street between Roswell and Main Streets — suffered from having no sidewalks at all. These gaps do not seriously hinder mobility within the downtown area. It is recommended a requirement be put in place that would require sidewalks to be constructed as part of any redevelopment of property fronting these segments (see Table 4), but until such time, closing these gaps is less critical to overall mobility in the Study Area.

Table 4
Potential Sidewalk Projects

Road(side)	Facility Type	From	To
Marietta Street (N)	Sidewalk	Wilshire Glen	Roswell Street
Marietta Street (N&S)	Sidewalks	Roswell Street	Main Street
Old Canton Street (W)	Sidewalk	Canton Street	Milton Avenue
Church Street (N)	Sidewalk	Canton Street	North Main Street
Milton Avenue (S)	Sidewalk/Driveway Consolidation	Cemetery	Canton Street

Americans with Disabilities Act (ADA) Issues

The *Existing Conditions* report noted instances of sidewalk and curb ramp facilities that were not in compliance with ADA standards. It was noted that at some driveway crossings, sidewalks did not stay within the maximum 2 percent cross slope required for an accessible route. It is important that the City be proactive about correcting such issues. Maintaining a proper accessible route in such situations can be challenging, especially when sidewalks are built immediately at the back of the curb. An accessible route can be maintained by the use of parallel ramps that drop the sidewalk to the grade of the street and begin the incline of the driveway at the back of the sidewalk.

Another approach is to divert the accessible route to where the driveway has leveled off; this may require the acquisitions of additional right-of-way. The standards for curb ramps now also include the provision of standard detectable warning strips to alert visually impaired pedestrians that they are entering a vehicular way. It is

recommended that the City review its ADA Transition Plan to ensure that it includes sidewalk and curb ramp improvements.[4]

It is also important that any streetscape improvements associated with redevelopment be careful to maintain the necessary clearances for accessible routes. ADA regulations require that accessible routes be at least 36 inches wide, with a 60-inch passing zone at least every 200 feet. Going beyond this minimum requirement, a good practice is to utilize the "Sidewalk Zone System," developed by the City of Portland, Oregon, which recommends preferred widths for different functional areas of sidewalk corridors in high volume, urbanized areas.

Figure 6
Pedestrian Zone along Milton Avenue looking west

The Zone System recommends a minimum of 60 inches for the pedestrian zone – that area intended primarily for pedestrian movement. The pedestrian zone is separated from building facades by the frontage zone, which should be at least 30 inches wide, to allow a shy distance from buildings and a clearance for outward swinging doors. The frontage zone should be wider if sidewalk cafes or other extensions of businesses into the sidewalk are going to be encouraged. Between the pedestrian zone and the street is the planter/furniture zone. This zone is a good place for street tree plantings, bus shelters, benches, or seating not associated with a certain business, utility poles, fire hydrants, and bicycle racks. The planter/furniture zone provides a place for such permanent fixtures that may otherwise obstruct the movement of people through the pedestrian zone. It also serves as a buffer between pedestrians and traffic. The zone system recommends a minimum width of two feet for the planter/furniture zone; four feet if trees are planted. It is important to preserve sight triangles at intersections and driveways, especially if a sidewalk area is also designed to accommodate bicycles. Any streetscape enhancement designs considered in the downtown area should carefully allocate the width of each of these sidewalk zones. However, when space is constrained, it is most important to respect the functional needs of the pedestrian zone and the legal requirements of the ADA.

Figure 6 shows a situation on Milton Avenue where the accessible way is maintained but planters and utility poles constrict the pedestrian zone. To use an existing example, the North Point Activity Center recommends sidewalks with a

[4] Self evaluations and transition plans are required by Title II of the Americans with Disabilities Act, to rectify barriers to all programs, services, facilities, policies, practices, and procedures provided by government entities. In 2002 the 9th Circuit Court of Appeals, ruling in the case Barden v. Sacramento, declared that public sidewalks qualify as a program, service, of facility, and are therefore subject to inclusion in the self evaluations and transition plans mandated by Title II of the ADA.

planter/furniture zone that is generally 5-10 feet (depending upon the adjacent roadway and GDOT standards for horizontal setback of trees and lights) and a 10-12 foot clear sidewalk zone. The downtown area should duplicate similar dimensions where applicable. Recommended ADA improvement projects appear in Table 5.

Table 5
ADA Improvement Projects

Location	Project Type
Citywide	Update ADA Transition Plan
Citywide	Provide Accessible Routes across driveway cuts
Citywide	Upgrade curb ramps to current standards

Intersections

The AASHTO *Green Book*[5] provides extensive guidance for the design of intersections. Through this guidance, the *Green Book* provides principles for intersections. While the *Green Book* is not written primarily as a pedestrian design document, the City of Alpharetta can become more pedestrian- and bicycle- (and motorist-) friendly, through the appropriate and consistent application of these principles. These principles are discussed in the following sections. They apply to any intersection, but they should be especially relevant to dealing with the crossing conditions found at the intersections of Haynes Bridge Road and SR 120/Old Milton Parkway, Haynes Bridge Road and Academy Street, and Academy Street/Milton Avenue and Main Street.

Provide for clearly visible conflicts
Conflict areas between motor vehicles, bicycles, and pedestrians should be clearly visible to all users. Landscaping should be designed to ensure clear sight lines. Pedestrian staging areas should not be shielded from motorists by large poles, signal controller boxes, or other visual screens. With special regard to channelization islands, pedestrian crossings to and from the islands should be placed on the approach side of the island. This will help ensure that pedestrians will be located where drivers are looking – adjacent to the roadway directly in front of the motorists.

Provide for conflicts to occur at low speeds
Speed is a major factor in both the likelihood and the severity of crashes. When crashes involve pedestrians, the probability of fatality rises dramatically with the speed of the vehicle, more than doubling when speeds are increased from 20 to 30 miles per hour.[6] Where pedestrian crossings occur, three things must be accomplished to ensure the safety of the crossing:

[5] American Association of State Highway and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, AASHTO, Washington, D.C., 2004.
[6] American Association of State Highway and Transportation Officials, *Guide for the Planning, Design, and Operations of Pedestrian Facilities*, AASHTO, Washington, D.C., July, 2004.

- It must be clear that a conflict area exists;
- Both motorists and pedestrians must be made aware of their responsibilities to yield; and,
- There must be adequate time for motorists and pedestrians to react appropriately.

All three of these objectives can be more readily accomplished by reducing travel speeds.

Use small radii
Closely related to the previous principle is the use of small radii. Intersections need to be designed to accommodate the appropriate users. Arterial-to-arterial intersections should be designed to accommodate larger trucks, semis and buses. Arterial-to-collector intersections may not need to be designed for these larger vehicles; service vehicles such as delivery trucks are probably more appropriate design users. Local roadway intersections should be designed to easily accommodate passenger cars turning from the right lane to the right lane. Local roadway intersections must be able to accommodate the occasional moving van or emergency vehicle; however, these vehicles may use the entire intersection area to turn.

According to the *Green Book*, curb radii into minor side streets in urban areas usually range from 5 to 30 feet. It goes on to note that on most streets, curb radii of 10 to 15 feet are reasonable. For streets with heavy turning volumes, 15 to 25 feet may be necessary to ensure efficient traffic operations. It should be noted that AASHTO recognizes when on-street parking is present; the effective turn radius includes the width of the parking lane and the curb radius dimension.

Provide for conflicts at right angles
Skewed intersections often result in difficulty for left-turning vehicles. Free-flow turns resulting in merging and weaving areas downstream of the intersection can increase traffic congestion if they do not have an adequate length, The *Highway Capacity Manual* tables do not provide for any weaving distances less than 500 feet; for these short sections, gap acceptance (yield control) slip lanes frequently provide better capacity and safety for motorists.

Figure 7
Preferred Placement of Crosswalk on Approach Side of Channelization Island

Right turn slip lanes, when designed with the preferred geometry

presented in the AASHTO Pedestrian Guide and the National Highway Institute's Pedestrian Facility Design course, also provide significant advantages for pedestrians. By placing the crosswalk crossing of the right-turning movement on the approach end of the slip lane, the pedestrian is in a better position to be seen by approaching right-turning motorists (Figure 7).

Additionally, placing the crosswalk at this location usually results in its placement about 20 feet in advance of the point at which right-turning motorists must yield to cross street traffic. The combination of the geometry and crosswalk placement makes for a crossing much like a modern, urban compact roundabout[7] which has been found to improve safety for pedestrians over right turn on red operations. A recent study has also found that right turn channelization islands are seen as beneficial by pedestrians at intersections with higher right turn volumes.[8]

The City of Alpharetta makes use of curb extensions where there is on-street parking (Figure 8). This practice not only reduces pedestrian crossing distances, it provides space for plantings and for ADA compliant curb ramps. Additionally, it defines the motorist's turning radius and reduces turning speeds. This practice of using curb extensions should be continued and expanded to new locations as appropriate.

Provide positive guidance for vehicles and pedestrians

Large intersections can result in confusion for drivers and pedestrians. Guide striping, signage, signalization, channelization, and geometry should all serve to direct the users along well defined paths.

Figure 8
Example of Curb Extension along South Main Street

Accessible pedestrian signals with audible signals also provide positive guidance by queuing all users when to begin crossing.[9] This guidance can be further enhanced by the use of a pilot light which illuminates upon activation of the push button (much like that of an elevator push button). Two FHWA-sponsored studies have recently found that these pilot lights reduce violations of the DON'T WALK signal by pedestrians.

Signals which count down the remaining seconds of flashing DON'T

[7] Federal Highway Administration, *Roundabouts: An Informational Guide,* FHWA, Washington, D.C., 2000.
[8] Petritsch, et al, *Pedestrian Level-of-Service Model for Urban Arterial Facilities with Sidewalks*, Transportation Research Record 1982, Transportation Research Board, Washington, D.C., 2006.
[9] Federal Highway Administration, *Manual on Uniform Traffic Control Devices,* Section 4E.06 Accessible Pedestrian Signals, FHWA, Washington, D.C., 2003.

WALK phase are another useful tool to provide positive guidance. While currently optional, the *Notice of Proposed Amendments* for the next revision of the *MUTCD* requires countdown timers for all signals whose pedestrian clearance phase is greater than three seconds.

Channelize intersections
Closely related to the previous principles, channelization – median and median extensions, curb extensions, and right turn slip lanes – can help clarify motorist and pedestrian movements and highlight conflict areas.

Minimize pedestrian crossing distances
Through channelization and lane width reductions, pedestrian crossing distances can be minimized. Reduced pedestrian crossing distances result in reduced clearance interval requirements at signalized intersections; this can decrease delays for all users.

Eliminate conflicts where possible
In some cases it may be possible to permanently eliminate conflicts by prohibiting turns at an intersection. More likely, however, is the potential for restricting turns only at certain times. Through the use of pedestrian activated electronic NO RIGHT TURN ON RED blank-out signs turns can be prohibited only when pedestrians are crossing the conflicting roadway (Figure 9). This real time traffic control greatly increases intersection efficiency over continuous restrictions and makes intersections more pedestrian friendly.

A similar treatment can be used for left turning vehicles. Instead of prohibiting the left turn, however, these blank out signs typically have a legend such as YIELD TO PEDS that is displayed when the pedestrian signal is activated for the conflicting crosswalk.

Figure 9
Example of " No Turn On Red" Blank-Out Sign

Recommendation: Construct new midblock crossings

The citizens of Alpharetta have access to a reasonably complete sidewalk network. These sidewalks provide both recreational and transportation opportunities for Alpharetta's workers, students, and families to walk along roadways. Additionally, Alpharetta's numerous signalized intersections provide roadway crossing opportunities. There are some locations where it may be desirable to provide for mid-block crossings of the roadway network (or crossings at unsignalized intersections, which can be treated in very similar ways). Midblock crossings must be safe and

convenient, however, if they are to be useful of the sidewalk and pathway network. The Team identified desirable locations for midblock crossings along South Main Street:

- Aligned with the walkway connected to the municipal parking lots (adjacent to the Smokejack Restaurant)
- At the unsignalized intersection of South Main and Marietta Streets (to serve the bus stop in front of Hardee's).

Additional crossings may be considered for Milton Avenue between Roswell and Main Streets, and the crossings of SR 120/Old Milton Parkway adjacent to Wills Park would benefit from the enhanced crossing treatments described below.

Appropriate traffic control devices for both sidewalk users and traffic on the roadway are critical if the safety and mobility of all users is to be maintained. Simply marking a crosswalk, however, will not ensure a safe crossing, especially of multilane roadways.[10] While no traffic control can prevent crashes if drivers and path users are not paying attention, a consistent approach to signing, marking, signalizing, and grade separating these crossing locations is important to condition the expectations of all users, and thereby improve safety for all parties as well. Consequently, while this report gives a specific example of what traffic control devices may be appropriate at a particular midblock crossing, the City should develop a methodology for consistently evaluating and signing and striping midblock crossings throughout Alpharetta.

Traffic Control Devices

One significant barrier to creating safe crossings at midblock locations is the lack of guidance on which treatments should be used in particular circumstances. Currently, the *Manual on Uniform Traffic Control Devices (MUTCD)*[11] provides several options for midblock pathway crossings, including: crossing advance and crossing signs, in-pavement flashing lights, and signalized crossings. The *MUTCD* also provides specific guidance in the form of signal warrants for application to midblock locations.

Static signs, such as the Pedestrian Crossing Advance sign and the Pedestrian Crossing with the supplemental downward arrow have not been found to significantly increase motorist yielding over study base conditions. However, two new traffic control devices are available for application at midblock crossings and have been shown to dramatically increase motorist yielding rates. These two treatments are the pedestrian crossover treatment and the HAWK pedestrian beacon.

[10] Zegeer, Charles V., J. Richard Stewart, Herman F. Huang, Peter A. Lagerwey, John Feaganes, and B.J. Campbell. *Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations – Final Report and Recommended Guidelines*. Report No. FHWA-HRT-04-100. Federal Highway Administration, McLean, VA, February 2005.

[11] FHWA, Manual on Uniform Traffic Control Devices, 2003.

Pedestrian Crossover Treatment

The Pedestrian Crossover Treatment (or PXO, also known as "the Enhancer") includes a combination of striping and activated rectangular strobes attached to pedestrian crossing signage (Figure 10). The strobes, which are very bright, are activated by a pedestrian push button. A recorded voice informs pedestrians that they have activated the crossing and that they need to ensure motorists are yielding prior to crossing the street.

The strobe-supplemented flashers are placed in the median of divided roadways as well as the right side ensuring the motorist driving in the right lane does not obscure the left lane motorist's view of the activated crossing.

Figure 10
Pedestrian Crossover Treatment

Advance yield lines are used with this treatment as well. Solid lane striping extends from the yield line back to a predetermined distance in advance of the crosswalk. This solid lane line assists law enforcement in enforcing yield-to-pedestrian laws. A concept of how this treatment might be applied on South Main Street in Alpharetta is shown in Figure 11.

At the January 2008 meeting of the National Committee on Uniform Traffic Control Devices (NCUTCD), the Signals Committee discussed this treatment and it has been recommended for interim approval by FHWA; we believe this will occur prior to the 2009 update to the *MUTCD.* A study was recently released which compares the yielding rates obtained from various crosswalk treatments at midblock crossings[12]. Information summarizing those results is provided in Table 6.

Table 6
Compliance with Crosswalk Treatments

Treatment	Average Compliance
Crosswalk and Static Signs	1.55%
Dual Overhead Round Amber Flashers	15.50%
Side Mounted (continuous) Flashers	11.48%
Enhancer (PXO) Crosswalk	81.54%

[12] Fredrick, M., "Increasing Motorist Yielding Compliance at Pedestrian Crosswalks," *FLITE,* Florida Section of Institute for Transportation Engineers, vol. 48, no.2, January 2008.

Figure 11
Possible PXO Treatment on South Main Street

The HAWK Signal

The HAWK signal has been recommended for adoption into the next *MUTCD* by the NCUTCD. It is currently in the FHWA Notice of Proposed Amendment to the *MUTCD*. The HAWK signal is constituted of three signal heads – one yellow and two red. An installation is shown in Figure 12. The signal appearance and phasing is somewhat different to a normal "3-head", or red-yellow-green traffic signal that is typical at most intersections. Instead, the signal heads remain dark until activated. Once the button is pressed by someone wishing to cross, the signal flashes yellow then transitions to a steady yellow before changing to red for the pedestrian walk interval (when the WALK signal is lit). As the pedestrian clearance interval begins (when the DON'T WALK signal begins flashing), the red signal alternates flashing. Upon conclusion of the pedestrian cycle, the signal head goes dark once again. (For a video demonstration of a HAWK signal, visit http://www.dot.ci.tucson.az.us/traffic/tspedestrian.cfm.)

Figure 12
HAWK Signal Installation

In Alpharetta, the PXO treatment would likely be the more appropriate of these two activated pedestrian crossing treatments. However, both have been provided for consideration as they will likely be approved for use by FHWA next year.

Recommendation: Pedestrian Programs

In addition to designing and improving facilities for pedestrians, several programmatic approaches should be considered to improve pedestrian conditions in Alpharetta. First, enforcement of motorists yielding to pedestrians at crosswalks should be vigilant. The continuous turn locations identified in the existing conditions report should receive special attention, as should the location of any new mid-block crossing treatments. Educational programs for children, such as Safe Routes to School, can teach safe behaviors; of particular importance to teach at an early age is the practice of stopping at the curb and scanning for traffic before crossing the street.

2.5 Bicycling Conditions

Objective: Increase connectivity of bicycle transportation in and around the Study Area

Recommendation: On-Street Facilities and Treatments

Every roadway in downtown Alpharetta is already an on-street bicycle facility, as bicycles are vehicles according to Georgia Law, and none of the roads in the Study Area prohibit bicycles by categorical or specific exclusion. This is not the same as saying that they are accommodating to bicycles, however. High traffic volumes on some of the roadways through downtown and the narrow width of others can induce anxiety in cyclists, and only a select few will overcome their anxiety and assert their rights and privileges as vehicles on a public roadway.

Improvements can be made to roadways that make them more bicycle-friendly. These range from traffic calming measures (to reduce the speeds of motor vehicles of the roadway) to installation of bicycle facilities such as bicycle lanes or paved shoulders. Shared lane symbols and warning devices that remind motorists to be alert for cyclists can also be deployed in areas where the roadway cross section is constrained and geometric alterations are infeasible.

Traffic Calming

Traffic calming measures such as curb extensions, bulb-outs, and speed tables can be very effective in reducing the speeds of motor vehicles on roadways, which makes it less stressful for cyclists. Some of these methods have been described in the section on intersections above. It is important, however, that any traffic calming treatments be carefully designed so as not to impede movement by bicycles along those streets, and leave a clear passage aligned with the area where bicyclists are expected to ride.

Bicycle Lanes

Designated bike lanes should also be considered on roadways where sufficient space is available. The AASHTO *Bike Guide* recommends that designated bike lanes be at least four feet wide, or that the lane stripe be at least five feet from the face of curb in curb-and-gutter cross sections. Research has found that bicyclists experience less stress when provided with at least three feet of shoulder space;[13] accordingly, many communities have striped off shoulders wherever they can provide three feet or more, but have only designated those that meet the AASHTO recommendations (some communities have gone further and designated those roads with shoulders

[13] Landis, B., Vattikutti and Ottenberg,, "Real Time Human Perceptions: toward a Bicycle Level of Service," *Transportation Research Record 1578*, TRB, National Research Council, Washington D.C., 1997.

between three and four feet wide, but that is dependent upon the judgment of the local engineering staff).

Of course, finding room for bicycle lanes also depends on engineering judgment with regard to the minimum width of travel lanes on Alpharetta's roadways. As discussed in the Roadway section above, research indicates that lane widths can be reduced to less than 12 feet without impacting either capacity or safety. If Alpharetta pursues this strategy, a 28-foot wide two-lane, undivided road such as Mayfield Road could be reconfigured from having 14-foot lanes to having 11-foot lanes and three foot shoulders, or depending on the judgment of local engineers, 10-foot lanes and four foot bicycle lanes. If the City wishes to develop a comprehensive network of shoulders and bicycle lanes (which have relatively low construction costs compared to off-street facilities), the City would need to establish what minimum lane widths are reasonable in the judgment of its engineering staff. Once such decisions are made, a data collection effort could reveal opportunities for more on-street bicycle facilities.

Paved Shoulders

For roadway cross sections which do not include curb-and-gutter, but are not wide enough to accommodate re-striping for bicycle lanes, it may be possible to construct new paved shoulders. Ideally, new shoulders should allow for a full four-foot bicycle lane. The constraints of individual corridors (available right-of-way, roadside drainage, etc.), however, may dictate different widths for each corridor. The guidelines described for bicycle lane widths apply here as well: shoulders should be at least three feet wide and travel lanes may be reduced according to the judgment of the City's engineering department.

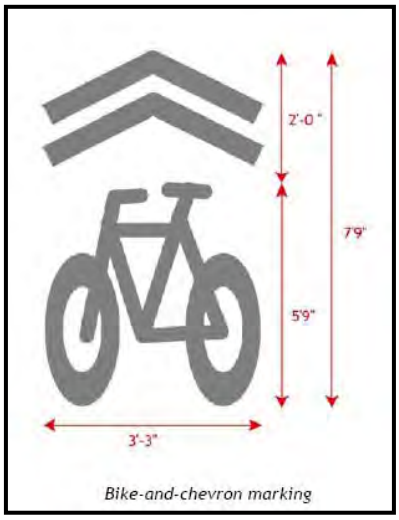


Figure 13
Bike-and-Chevron Symbol

Shared Lane Symbols

For situations where it has been determined to be infeasible to provide a facility (i.e., a bicycle lane or shoulder) for the preferential use of bicyclists, it may be worth considering the use of the shared lane symbol sometimes referred to as the "bike-and-chevron," or "corporal bike" marking (Figure 13) on the roadway surface. This treatment is currently experimental, but has been included in *Notice of Proposed Amendment* to the *MUTCD,* meaning that it is highly likely to become a standard treatment in the 2009 edition. The City may wish to use this symbol to encourage safe passing of bicyclists by motorists on roadways that are too narrow for bike lanes and construction of shoulders is infeasible. The shared lane symbol is intended to assist bicyclists with lateral positioning in lanes that are too narrow to safely accommodate motorists and

bicyclists travelling side by side and also to alert motorists of the position bicyclists are likely to occupy within the roadway. Research has indicated that this treatment is understandable to both motorists and cyclists alike[14], and that it can have an added benefit of reducing the occurrence of bicyclists riding on the sidewalk and against traffic.[15]

Activated Warnings

Another treatment to increase safety for bicyclists riding in the roadway is to deploy detection devices that are linked to flashers affixed to warning signs (such as SHARE THE ROAD, or WATCH FOR BIKES ON BRIDGE), that will flash only when bicycles are detected in the specific zone. As was discussed in the Midblock Crossing section above, real-time activated warnings have been found to gain higher response rates from motorists than both static warnings (signs alone) and continuously flashing warnings. These could be used on very constrained sections of an otherwise accommodating route. For example, certain roadways may have sufficient pavement width for bicycle lanes or new paved shoulders, but become significantly narrower on bridges over SR 400. In these cases, detectors placed in the bicycle lane or shoulder on approaches to the bridge could be activated to begin flashing when a bicyclist passes and be timed to turn off after the amount of time it would take a typical cyclist to cross the bridge. Studies have found inductive loop detectors to be very effective at detecting the presence of most bicycles, with the exception of those which are almost entirely (both wheels and the frame) made of carbon fiber. If the City experiences a high volume of carbon-fiber bicycles at such locations, other technologies such as video and microwave are also effective.

Recommendation: Off-Street Facilities/Shared Use Pathways

There are two strategies that can be recommended with regard to improving the network of off-street bicycling facilities and shared use pathways in downtown Alpharetta, and each takes advantage of existing opportunities. First, the City could improve the wide sidewalks identified in the *Existing Conditions* report to function as shared use paths. Second, the City could develop new pathway connections where land use allows. Each of these strategies is discussed in detail below.

Improve Wide Sidewalks into Pathways

The eight-foot sidewalks identified in the *Existing Conditions* report have the potential to serve as pathways — and provide substantial connectivity into downtown — if important improvements are made to bring them up to AASHTO Guidelines for shared use paths, as described in the *Guide for Development of Bicycle Facilities*. While each potential pathway segment will need to be examined closely, block-by-block, to

[14]San Francisco Department of Planning and Traffic & Alta Planning+Design, *San Francisco's Shared Lane Pavement Markings: Improving Bicycle Safety*, FINAL REPORT, February 2004.
[15]Florida Department of Transportation and UNC-HSRC, *Evaluation of the Shared Lane Arrow*, December, 1999.

determine which specific improvements will need to be made, there are some general improvements that can be named and should be considered for all of them. These improvements include:

- Providing curb ramps that are the same width as the pathway;
- Designing appropriate radii at curves and turns;
- Retrofitting to keep appropriate cross-slopes at driveway crossings;
- Installing appropriate signage and pavement markings to warn and direct pathway users;
- Maximizing visibility between path users and motorists; and,
- Widening the pathways wherever possible.

Each of these recommendations is discussed in detail below. It should also be noted that if improved to function as paths, these facilities will be of a type known as "sidepaths," meaning a shared use path located immediately adjacent to a roadway. The AASHTO *Guide* points out that on sidepaths, *"some operational problems are likely to occur,"* and continues to identify additional problems[16] These operational problems should be considered carefully at the outset of the design process and steps should be taken to minimize the risks associated with these problems. **It must be clear that the conversion of these sidewalks into functional pathways is not just a simple matter of designating them as pathways.**

Full Width Curb Ramps

It was noted during the existing conditions phase of this project that many of the eight-foot sidewalks in Alpharetta constrict into narrower ramps when they come to intersections with cross-streets (Figure 14). If these sidewalks are to be improved into being shared use pathways, these ramps will need to be reconstructed.

Figure 14
Sidewalk-to-Ramp width inconsistency along Haynes Bridge Road

The AASHTO *Bike Guide* states, *"Ramps for curbs at intersections should be at least the same width as the shared use path."* This is for a number of reasons. The most important is to allow safe passing of pathway users travelling in opposite directions. Sidewalk ramps are constructed to meet the requirements of the Americans with Disabilities Act (ADA), which intends to accommodate the passage of one wheelchair at a time, and so can sometimes be as narrow as 36". Shared use pathways are subject to ADA

[16] AASHTO, *Guide for the Development of Bicycle Facilities,* 1999, p. 33.

requirements as well, but need to allow for the continuous two way travel of numerous types of vehicles and devices. Ramps that narrow to less than full-width of a pathway force opposing trail users into the same space and become bottlenecks.

Designing appropriate radii at curves

Most of the existing eight-foot sidewalks in Alpharetta are parallel to the adjacent roadways and run fairly straight within the length of a given block. However, if they are to be considered shared use pathways it will be important to examine each segment carefully with a design speed in mind and to reconstruct any curves in the pathway alignment that are too tight for that design speed. The AASHTO *Bike Guide* recommends that, "in general, a minimum design speed of 20 mph should be used" on shared use pathways, which translates into a minimum radius of 100 foot on curves. Design engineers may choose slower design speeds and correspondingly smaller radii when constrained conditions warrant. If smaller radii are used on a pathway, warning signs and pavement markings should be deployed as indicated by the AASHTO *Bike Guide* and the *Manual on Uniform Traffic Control Devices*.

As was noted above, most of the existing eight-foot sidewalks are relatively straight, but some have short jogs or offsets in their alignments and many bend sharply as they approach curb ramps at intersections. If pathway traffic is to continue through the intersection or if the a path alignment turns to continue parallel to the intersecting roadway, curves on these approaches will need to be carefully designed with radii appropriate to the design speed.

Cross-slopes at driveway crossings

During site visits conducted for the *Existing Conditions* report, it was noted that cross slopes of the eight-foot sidewalks (all sidewalks, actually) were often interrupted at driveway crossings. As was discussed in the pedestrian facilities section, the Americans with Disabilities Act requires that pedestrian facilities (which includes shared-use pathways) maintain an accessible route of at least 36 inches for their entire length. As improvements are made to these pathways, accessible routes will need to be provided at all driveway crossings. While the ADA requirements are for a 36-inch accessible route, it is highly recommended that the cross slope be set to 2 percent for the full width of the pathway and that the grade of the driveway be adjusted accordingly. This will prevent trail users — two way traffic of people on foot, in wheelchairs, on bikes and in-line skates — from having to negotiate for position at driveway crossings. This will have the added visual/psychological effect of highlighting the pathway as a public transportation facility with operational needs to which private driveways should defer.

Signage and Marking

If the existing eight-foot sidewalks are to be upgraded into functional shared-use pathways, it is important that users of those pathways be guided by signage and

pavement markings in accordance with the AASHTO *Bike Guide* and the *MUTCD.* While, the *MUTCD* does allow for some local flexibility in the design of wayfinding and informational signage, it is important to remember that pathways are transportation facilities and that trail users are also (or will one day become) users of the roadway system. Standard signage, especially regulatory and warning signage, should be used to assure that pathway users understand what is being communicated to them.

Maximize visibility

One of the most significant risk factors associated with sidepaths is the potential for conflict between path users and motor vehicles turning across the path at driveways or intersections. Turning motorists, especially those making left turns, are pre-occupied with finding gaps in oncoming traffic and may not be looking for pathway users coming from their right.

Widening

If the City wishes to improve the existing wide sidewalks so that they function as shared-use pathways, it is important to consider widening them wherever feasible. The AASHTO *Guide for the Development of Bicycle Facilities* recommends a width of ten feet for shared use paths in most cases. The *Guide* does allow for eight-foot paths in circumstances where both bicycle and pedestrian traffic are expected to be low even on peak days; such conditions are not consistent with the desired outcome of improving conditions for biking and walking in Alpharetta. The *Guide* also recommends an additional 2-3 feet of shoulder on each side of a path, which increases the overall footprint of the paths in the right of way. With proper signage and marking, occasional narrowing of the path in constrained areas is acceptable, but every effort should be made to avoid such cases.

Recommended sidepath or shared-path projects along several corridors in the Study Area are shown in Table 7 and have been mapped in Figure 16 later in this section.

Table 7
Potential Pathways on Existing Wide Sidewalks

Road(side)	Facility Type	From	To
Old Milton Parkway (N&S)	Improved Pathway	Wills Road	South Main Street
Roswell Street (E)	Improved Pathway	Old Roswell Street	Old Milton Parkway
Milton Avenue (N)	Improved Pathway	West end of School Campus	Canton Street
Haynes Bridge Road	Improved Pathway	SR 400	Academy Street
Canton Street	Improved Pathway	Old Canton Street	Mayfield Road

Develop New Pathway Connections where Land Use Allows

The Team looked for opportunities for pathway connections into and through the study area by reviewing aerial photos and parcel maps for undeveloped parcels and rights-of-way that could accommodate short pathway connections for non-motorized use only. The most promising results were found on the west side of downtown and have the potential to dramatically reduce the length of some trips between residences and important destinations, thereby increasing the utility of walking and biking. All of the pathways discussed below are mapped in Figure 19 at the end of this section.

Lynne Circle to Heritage Lane Connection

Lynne Circle is a residential street just north of Milton Avenue and just west of the old Milton High School campus. As its name describes, it is a circle that comes off of Lee Drive with no other outlet. Heritage Lane is a short street that comes off of Mayfield Circle in the neighborhood behind Alpharetta Elementary School. Parcel maps show that the platted right-of-way for Heritage Lane connects to Lynne Circle, but this connection has not been built. A pathway connection through this apparent right-of-way could greatly increase mobility among these neighborhoods, and shorten trips into the downtown area. For, example, a trip from the intersection of Mayfield Circle and Heritage Lane to the fountain at Main Street and Milton Avenue could be reduced by approximately ¼ mile (1.2 miles to 0.9), which is a small but significant figure for a walking trip or a bicycle ride by a parent with small children. More dramatically, this short pathway connection could reduce a trip from that same origin (Mayfield Circle and Heritage Lane) to the pool at Wills Park by over a mile (1.8 miles to 0.7). This connection would also close a gap on a two-mile circular route that originates out of downtown and provide more direct walking and biking access to Alpharetta Elementary School and the Alpharetta Public Library for residents of neighborhoods south of Milton Avenue.

Marietta Street to Upshaw Drive Connection

Another, longer, north-south link could also be developed — either through easement or acquisition — in cooperation with the school board and the owners of three parcels between Marietta Street and Milton Avenue. The parcel that fronts Marietta Street (parcel ID 22 48241270061) is undeveloped, yet large enough (1.4 acres) that it may have potential for a future residence. The parcel that fronts Milton Street (parcel ID 22 48241270063) is undeveloped, both small and narrow (0.3 acres), and likely very difficult to develop. The parcel that lies between them (Parcel ID 22 48241270120) is the site of a drainage pond for the Victoria Square townhomes. An easement wide enough for a pathway may be able to be carved from these three parcels, linking Marietta Street and Milton Avenue. A pathway through this corridor would parallel a creek bed, so the ultimate feasibility of this option would depend upon environmental review in addition to the functional needs of the pathway and the success of easement acquisition. Also, it should be noted that the parcels

identified are used as examples for additional connections in the Study Area and do not imply this would be the ultimate alignment of a future path. Detailed design and engineering work would need to be performed to identify the specific parcels impacted by a path connection.

This pathway could continue on the north side of Milton Avenue by following the western and northern perimeters of the old Milton High School Property, to the truncated end of Upshaw Drive. Of course, such a connection would be subject to negotiation with the Fulton County Board of Education and may be constrained by the presence of fences on school property as well as the proximity of the larger baseball field to the northern property line. Even if an arrangement cannot be made with the Board of Education in the short term, the concept of such a connection to between Upshaw Drive and Milton Avenue bears mentioning for consideration as part of any discussion of future redevelopment of the old Milton High School campus. Such a connection would have many of the same benefits as the Heritage Lane connection described above: a shortened and looped walking route from neighborhoods off of Mayfield Road to downtown, increased bike and pedestrian access to Marietta Elementary School and the Alpharetta Public Library from neighborhoods south of Milton Avenue, and increased bike and pedestrian access to Wills Park from the northwest side of downtown.

It is also worth noting that aerials and Fulton County GIS show what appears to be an abandoned street or driveway along the northeast side of the old Milton High School campus. City staff identifies this corridor as the old Teasley Street. It appears to be entirely contained on private property, some of which is currently being redeveloped. It may be on its way to being plowed under, but we note it because it is the sort of corridor for non-motorized circulation that could be preserved with some foresight in the redevelopment process. The preservation of any other such roadway corridors anywhere else in Alpharetta could become negotiating “chips” in the development approval process. Recommended new pathways within the Study Area are highlighted in Table 8.

It is important to note the City is currently acquiring right-of-way for a path connection between Milton Avenue and Old Milton Parkway. The path is roughly 1,400 feet starting at the southwest corner of the old Milton High School property proceeding south, to the east of the Wilshire Glen subdivision, crossing Marietta Street and terminating on Old Milton Parkway about 500 feet east of the Old Milton Parkway/Marietta Street intersection.

Table 8
Potential New Pathways via New Connections

Road or Location	Facility Type	From	To
Heritage Lane Path	New Pathway*	Heritage Lane	Lynne Circle
Parcels between Marietta Street and Milton Avenue	New Pathway*	Marietta Street	Milton Avenue
School Campus (west and north perimeter)	New Pathway*	Milton Street	Upshaw Drive
School Campus (northeast perimeter)	Salvaged Road*	School Drive	Upshaw Drive

* The facilities identified in this action list will each need to be studied in detail for feasibility. They also serve similar connectivity needs, so it is unlikely that they would all be developed.

Bicycle Parking

If a goal of this study is to make downtown Alpharetta a place people want and are able to access by bicycle, it will be important to provide adequate secure bicycle parking for patrons and employees of downtown businesses. The Association of Pedestrian and Bicycle Professionals (APBP) published *Bicycle Parking Guidelines* in 2002, which discusses the pros and cons of various bicycle rack styles and offers guidance on the arrangement and location of bicycle racks. The guidelines recommend that bike rack elements (the hardware to which a single bike is secured) be able to easily secure both the frame and one of the wheels; rack styles that achieve this easily are known as the "inverted U" and the "post and loop." The guidelines also point out that efforts to increase the aesthetic character of bike racks can have negative impacts on their functionality. A design known as "the wave," for example, is very attractive, but when used as intended does not stably support both the frame and one wheel.

Bicycle parking should be conveniently located to the buildings it is intended to serve. In downtown Alpharetta, single-element bike racks should be placed in the planter/furniture zone (see sidewalk discussion above) of the sidewalks along Main Street and Milton Avenue, or any other locations that are expected to have street level retail after redevelopment. Larger shopping centers and public buildings should each have their own multiple-element racks in an appropriately sited area with easy access to a primary building entrance. The APBP guidelines include recommended dimensions for arranging multiple-element racks. The public parking lots west of Main Street would be a good location for bicycle lockers, (plastic shells or metal boxes that cover and secure bicycles that are parked for longer periods of time) protecting them from the elements and vandalism. Bicycle lockers could serve

bicycle commuters to downtown workplaces who will be parked for the duration of their shifts, preserving the racks closer to the businesses for customers or other short-term parkers.

The City can employ both requirements and incentives to increase the presence of bicycle parking. Cities around the country are establishing development standards for provision of bicycle parking in new developments. These standards are often based on a percentage of the motor vehicle parking required for certain types of developments.

For example, the City of Atlanta has a bicycle parking requirement for its Downtown Special Public Interest District, which requires one space for every 4,000 square feet of building space (with a two space minimum and certain exclusions); the downtown district also specifies that at least 20 percent of the bicycle parking should be in the furniture/planning zone of the sidewalk, with the balance in a sheltered location within 100 feet of a building entrance. In other Special Public Interest Districts, Atlanta requires that non-residential developments provide one bicycle parking space for every 20 required motor vehicle spaces and that multi-family residential developments include one bicycle space for every five dwelling units.[17] The city may also seek funding to assist existing businesses with providing bike parking.

If the downtown Alpharetta area is to be truly bicycle friendly, then bicycle parking must be integral to any redevelopment project within the Study Area. It was noted in the *Existing Conditions* report that there is little or no bike parking at some of the major public buildings in the Study Area, such as at City Hall and the Public Library. Correcting this should be a priority. The plans for the new City Hall should be reviewed to be sure that they include adequate bike parking. The library has a bicycle rack, but it is of a style that secures only the front wheel and it is far from the main entrance to the building. The addition of visible and secure bicycle parking at the public library will indicate that Alpharetta is a place where that tradition survives. Recommended bicycle parking improvements within the Study Area are highlighted in Table 9.

Table 9
Potential Bicycle Parking Improvements

Location	Recommended Parking Type	Quantity
Milton Avenue, Main Street, other areas with street level retail business	Single-element bike racks in the "furniture zone" of the sidewalk	3-4 per block
Public buildings, large commercial buildings	Multiple element bike racks	1 per 20 vehicle spaces, or 1 per 4,000 s.f. (min. 5)
Municipal Parking Lots	Bike Lockers	1 per 20 motor vehicle spaces (min. 5)

[17] City of Atlanta, Code of Ordinances, Part III, Land Development, Sec. 16 (zoning), chapter 18 (Special Public Interest Districts).

Recommendation: Signage tailored for bicyclists

A system of clear and uniform signs that indicate the direction and distance to important destinations via either on- or off-street facilities can be helpful to bicyclists and can reinforce the message that Alpharetta is an active, bicycle-friendly community. Custom wayfinding could be designed for the pathway system, and signage could also extend onto the on-street network using a simplified version of the traditional BIKE ROUTE (D1-11) signs and supplemental plaques identifying destinations and directions (Figure 15). Such signs could point the way into downtown, to City Hall, the library or to any of the nearby schools, as well as to the key destinations described below: Wills Park, North Point, and the Big Creek Greenway. Beyond wayfinding, informational kiosks at intersections or key points can also direct riders to amenities such as public restrooms, restaurants, water fountains, or local points of interest. These simple touches can improve a path user's experience of riding on Alpharetta's pathway system.

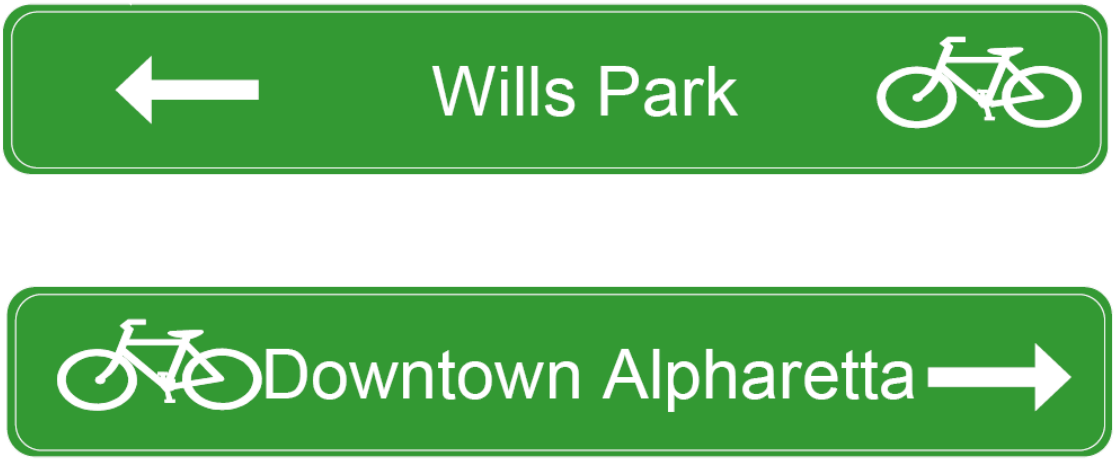


Figure 15
Example of Directional Bicycle Route Signage

Recommendation: Bicycling Programs

As an area such as downtown Alpharetta becomes more bicycle-friendly, it is assumed that bicycling will become more popular in that area. As bicycling becomes more popular, both good and bad bicyclist behavior becomes more obvious. Visibility of bad bicyclist behavior can undermine support for bicycling in the community as complaints are vocalized to elected officials and law enforcement personnel. Educational campaigns about good biking habits and the rules of the road can help a community stay ahead of such complaints and keep public attention focused on the benefits of improved biking and walking. Two bicycling related issues that are common in communities across the country are riding on the sidewalk and riding without lights at night.

Many people are more comfortable riding on the sidewalk as opposed to riding in the street with traffic. Sidewalk riding is legal, except where specifically prohibited, but it carries with it certain risks. The most obvious risk is of collision with pedestrians on the sidewalk. Pedestrians on sidewalks do not adhere to the same general "rules of the road" as vehicles in the roadway. For example, they do not tend to keep to the right or pass on the left; they flow around each other as conditions allow. This improvised decision making is a relatively low risk behavior, as pedestrians can stop and redirect quickly and do not move very fast. But bicycles require greater reaction time, stopping distance, and turning clearance; these factors contribute to the risk of collision with pedestrians in the less predictable sidewalk environment. It is important that bicyclists be reminded that it is their duty to yield to pedestrians when riding on the sidewalk.

Another risk associated with sidewalk riding involves the lower likelihood of motorists yielding to bicyclists on sidewalks at intersections or driveways. Turning motorists are focused on threats from other cars and generally think last of pedestrians or cyclists on the sidewalk. This is especially true for cyclists riding against traffic on the sidewalk; they emerge more quickly than pedestrians and from a direction the driver is not likely to be scanning. Motorists making right turns from side streets and driveways are looking for gaps in traffic coming from their left; they are not likely to scan for bicycles coming from their right, or may have looked that way at first but have waited for some time before a gap became available.

Riding at night without lights is another cyclist behavior that is very risky. Unlit bicycles cannot be seen within the stopping distance of cars travelling 40 miles per hour. Bicycles with reflectors only reflect directly back to the light source, and so offer no increased visibility to drivers on intersecting streets. Because riding without lights and sidewalk riding are such common behaviors, it is logical to assume that instances of both will increase as the overall level of cycling increase in Alpharetta. Educational campaigns about both can counter the rise of these behaviors.

Educational initiatives can be augmented with coordinated enforcement of actions that are in violation of Georgia or Alpharetta codes. Sporadic enforcement will not result in significant improvements to cyclist behavior and will likely result in resentment of law enforcement personnel. Those behaviors to be targeted should be determined at the outset of the law enforcement campaign. It is recommended the following behaviors be targeted:

- Riding at night without lights,
- Violating traffic signals,
- Riding against traffic on the roadway, and
- Violating traffic signals

These four behaviors were chosen for two reasons. First, they represent particularly hazardous behaviors which result in many crashes in communities around the

country. Secondly, and very importantly, the enforcement of these behaviors is easy to justify to the public. When coupled with (or preceded by) a large scale education campaign, the public will understand the importance of the campaign and consequently will accept the enforcement activity.

Recommendation: Improve Connectivity to Nearby Destinations

Wills Park

Wills Park is connected to downtown by wide sidewalks on either side of Old Milton Parkway and on the east side of Roswell Street. Improving these sidewalks to function as shared use pathways would establish a useful and direct bicycle connection, complete with a signalized crossing at Old Milton Parkway and Roswell Street. Development of any of the potential new pathway connections described above would also improve access to Wills Park from neighborhoods northwest of downtown. People coming to Wills Park from neighborhoods northeast of downtown would likely make a trip to Wills Park by passing through downtown, therefore other recommendations of this report would benefit their trips as well. Bicycle trips from residential areas southeast of downtown will be more difficult to improve as there does not appear to be sufficient right-of-way for a pathway in the block of Old Milton Parkway between South Main Street and Haynes Bridge Road. Construction of paved shoulders along Devore Road, however, could improve access to Wills Park from the southeast; it is presently a two-lane, open shouldered road within a sixty-foot wide right-of-way.

Pedestrian access to Wills Park from the north could be greatly assisted by improving the crossing treatments at the intersections of Old Milton Parkway with Marietta Street, Wills Drive and the sidewalk connection to Burnett Way. Presently these crossings are indicated by high visibility crosswalks, multiple, but static advance warning signs, and a continuously flashing single warning beacon in advance of the sequence of four crossings. These crossings are situated in such a way that they pass through cuts in the median, and thereby forgo any refuge offered by the median. As described in the midblock crossing section above, research has shown that yield rates for crosswalks with static warning are very low. The treatments described in the midblock crossing section, such as the PXO or the HAWK, could be appropriate for use at these unsignalized intersections as well. If adopted, these real-time warnings would replace the continuously flashing bacon in advance of these crossings. Recommended bicycle and pedestrian connections to Wills Park are shown in Tables 10 and 11, respectively.

Table 10
Potential Improvements for Bicycle Access to Wills Park

Road (side)	Facility Type	From	To
Old Milton Parkway (N&S)	Improved Pathway	Wills Drive	South Main Street
Roswell Street (E)	Improved Pathway	Old Roswell Street	Old Milton Parkway
Devore Road	Paved shoulders	South Main Street	Haynes Bridge Road

Table 11
Potential Improvements for Pedestrian Access to Wills Park

Crossing of	At	Treatment Type
Old Milton Parkway	Burnett Way	Real-time, activated
Old Milton Parkway	Wills Drive	Real-time, activated
Old Milton Parkway	Marietta Street	Real-time, activated

Big Creek Greenway (northern trail terminus)

The most direct connection to Big Creek Greenway from downtown Alpharetta is via Academy Street and Webb Bridge Road to the Greenway's northern terminus just past Alpharetta High School. An added benefit to any improvement along this route is that bicycle and pedestrian access to the high school would be improved at the same time, should any students be interested in walking or biking to school. Given the nature of the Greenway itself, it would be ideal to provide access from downtown on a similar facility: a shared use pathway that is designed for a full range of users and accessible to more than those who are comfortable riding with traffic on the roadway. Review of parcel maps, however, shows that there is not a consistent swath of undeveloped right-of-way that would lend itself easily to the development of a pathway alongside Webb Bridge Road. The cross section of the existing roadway is highly variable along this 2.5 mile corridor. As noted in the *Existing Conditions* report, there is a paved shoulder on one side of the road only in the section between downtown and SR 400. After that, the road is lined with curbs on both sides east to the trailhead. A detailed study of this corridor could reveal opportunities for reallocating the amount of pavement dedicated to shoulders, travel lanes, and turn lanes so that a more consistent and bi-directional set of paved shoulders could get people to and from the Greenway. If such a study reveals new opportunities for shoulders but those segments are discontinuous, shared lane symbols, activated SHARE THE ROAD signs, or a combination of the two could be installed at "choke points," where cyclists will be re-integrating with the motor vehicle traffic; similar treatments could be applied on the bridge over SR 400. Recommended bicycle connections to the Big Creek Greenway are shown in Table 12.

Table 12
Potential Improvements for Bicycle Access to Big Creek Greenway

Road(side)	Facility Type	From	To
Academy Street	Lane reallocation, shoulder widening	Haynes Bridge Road	Westside Parkway
Webb Bridge Road	Shared Road Symbol	Westside Parkway	Big Creek Greenway
Bridge over SR 400	Activated Warnings		

North Point Mall

There are two principal connections between downtown and the North Point Mall area: directly via Haynes Bridge Road or a combined route via Roswell or South Main Streets, then Maxwell Road (which passes through Roswell for ¼ mile), Westside Parkway, and Encore Parkway. The Haynes Bridge Road route could be improved for both bicycles and pedestrians by the improvement of the wide sidewalk on the east side of the road into a shared-use pathway. If this pathway is developed, it will have to be very carefully designed to minimize turning conflicts at intersections and driveway crossings, especially given the high traffic volumes associated with SR 400 and the many large office buildings in this area. Bicycle lanes along Haynes Bridge Road are also possible, depending on what minimum width the City decides it is willing to pursue; currently there are 3 lanes spread over 34+ feet of pavement. If bicycle lanes are developed, bicycle travel over the bridge could be accommodated by the use of activated warning signs.

The combined route could be improved by different steps along different segments. Cyclists already comfortable riding on the roadway may prefer it for its lower traffic volumes, but its narrow pavement will cause anxiety. Parcel maps indicate that Roswell Street carries only two lanes within a 40-foot wide right-of-way, which suggests that paved shoulders could be added to accommodate cyclists. Similarly, parcel maps show the right-of-way for Maxwell Road to be significantly wider than the existing two-lane pavement; the right-of-way is approximately 40 feet wide in the segment north of the north Roswell city limit. As Maxwell Road passes through a portion of Roswell and comes back into Alpharetta at Hembree Road, the right-of way is 60 feet. These segments could benefit from the addition of paved shoulders to accommodate bicyclists. If either of these roads is reconstructed as this part of the City develops, it would be wise for both cities to coordinate so that the new cross section accommodates bicyclists with bike lanes or an adjacent pathway (or possibly both).

Next, bicyclists could make use of the wide sidewalk along the south side of Westside Parkway if it were improved to function as a shared use pathway. Access to the North Point area could then be gained via the Encore Parkway overpass over SR 400, perhaps with the assistance of activated warnings over the bridge. Recommended bicycle connections to the North Point Mall area are shown in Table 13.

Table 13
Potential Improvements for Bicycle Access to North Point Mall

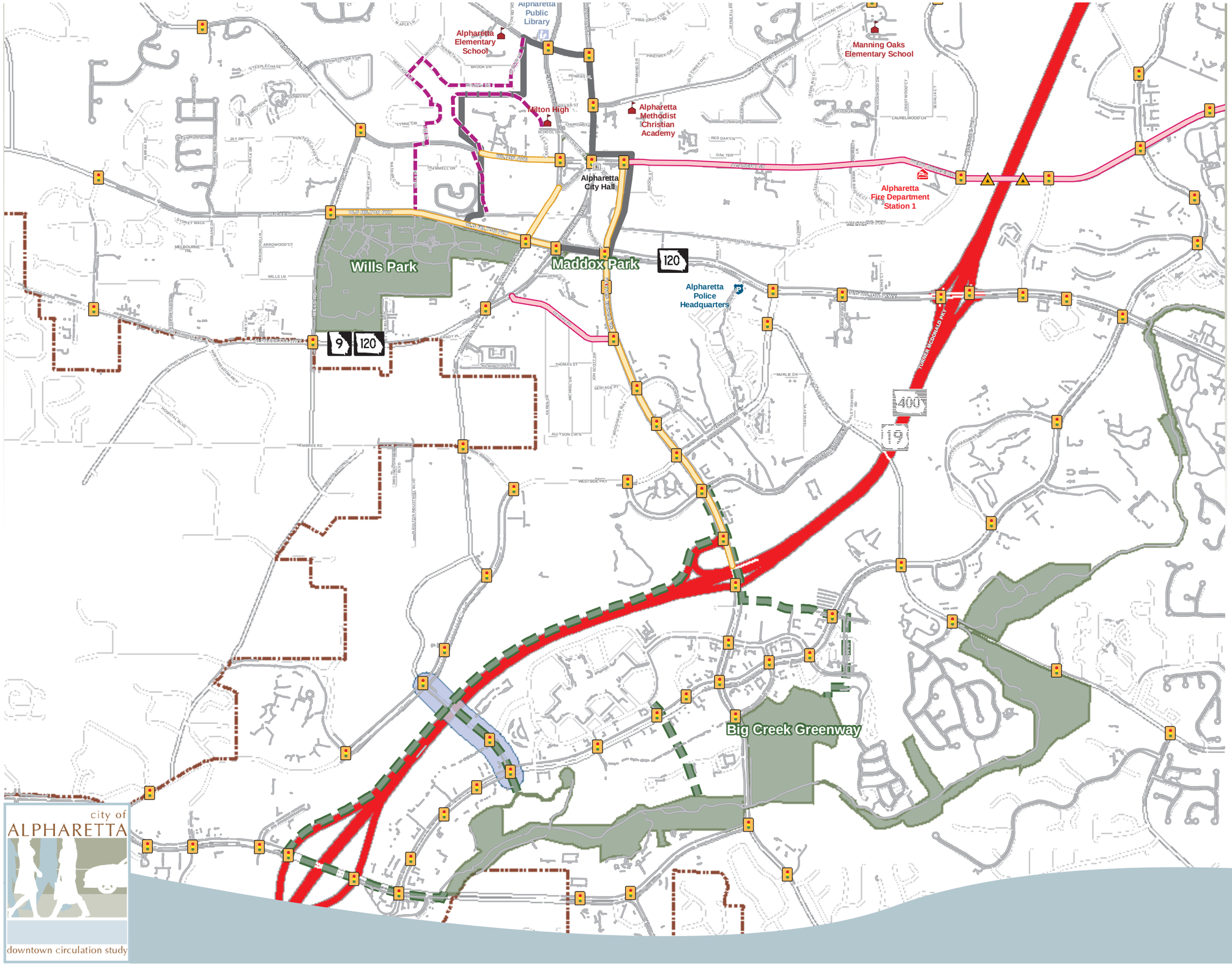
Road(side)	Facility Type	From	To
Haynes Bridge Road (E)	Improved Pathway	SR 400	Old Milton Parkway
Haynes Bridge Road (E&W)	Bike Lanes	SR 400	Old Milton Parkway
Encore Parkway	Activated Warning Signs, Shared Lane Emblems	SR 400	Westside Parkway
Westside Parkway (S)	Improved Pathway	Encore Parkway	Maxwell Road
Maxwell Road (E&W)	Paved Shoulders	Westside Parkway	South Main Street
Maxwell Road (E&W)	Sidewalks	Westside Parkway	South Main Street
Roswell Street (E&W)	Paved Shoulders	South Main Street	Old Milton Parkway
South Main Street	Bike Lanes or Shared Lane Symbol	Old Milton Parkway	Maxwell Road

Conclusion

The scope of this study was limited to assessing conditions within downtown Alpharetta and connections between downtown and a select few destinations. The study identified potential strategies for improving conditions for bicycling and walking in this defined area. Implementation of these recommended strategies will require corridor-specific engineering decisions to determine the exact facility appropriate for each roadway. Similar strategies could apply to roadways and pathway corridors elsewhere in the city as well.

Participants in the study's public meetings eagerly identified other potential locations for pathway connections and bicycle facilities. In light of this, the Team recommends that the City pursue a plan for the implementation of the facility recommendations contained in this study and also develop a comprehensive, city-wide plan for improvement of on-street bicycle facilities and shared use pathways. Such studies could determine which types of facilities are appropriate in different settings around Alpharetta and become the basis for a comprehensive non-motorized transportation system for the City.

FIGURE 16 PROPOSED BICYCLE - PEDESTRIAN IMPROVEMENTS OVERVIEW



LEGEND

- Traffic Signals
- Activated Warnings
- Pathways on Existing Sidewalks
- Bicycle Access
- Pathway Connections
- LCI Study Area
- Sidewalks
- Greenway Connections
- Parks
- Encore Pkwy Transportation Enhancements
- Freeway
- Major Roads
- Local Street
- Alpharetta City Limits

0 250 500 1,000 1,500 2,000 Feet

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2.6 Parking

Objective: Improve, expand, and better facilitate parking in and around the downtown area

In our vehicle-dominated society, the availability of parking can have a great impact on local economies. The amount of parking, its visibility, and accessibility plays a pivotal role in consumerism. In the City of Alpharetta, Main Street serves as the core of the commercial retail district in the downtown area. On the west side of Main Street and around the surrounding blocks of Milton Avenue, Roswell/Canton Streets and Old Roswell/Old Canton Streets, unique, individually-owned boutiques and restaurants characterize the area. The prosperity of its businesses is very important to the surrounding community. The accessibility of parking for these small businesses is integral to their success.

At both public meetings during development of this plan, the Team heard loud and clear that the downtown area has a perceived parking problem. Parking requirements as part of the zoning process, lack of parking turnover (long-term parking), and too much demand are creating problems for patrons wishing to shop at, dine in, or visit the downtown core. This in turn puts a strain on local businesses to the point where some have been forced to close. Generally speaking, the downtown area has a good supply of parking; however, it is questionable if the parking is conveniently located.

It should be noted that the City Center development on the east side of South Main Street south of Academy Street will include a revamped City Hall as well as expanded public parking in a multi-level deck. This project will encompass the area bordered by Academy Street to the north, the Publix grocery store to the south, South Main Street on the west and Haynes Bridge Road on the east. While still in design, the parking deck serving the City Center project will likely have access on the Haynes Bridge Road side of the property. Based on the Request for Qualifications (at the time of this writing), the deck will have 600-700 spaces. Coupled with many of the roadway treatments such as midblock crossings mentioned above, the new deck will inject much needed parking in the downtown area especially those businesses facing South Main Street. Since the majority of parking issues along South Main Street will likely be addressed with the construction of the deck at City Center, the balance of recommendations in this section of the report will focus on the area to the west of South Main Street.

Zoning Requirements for Parking

The *Downtown Incentive Zoning Regulations* established by the City of Alpharetta recognizes the strengths and constraints of the Historic Downtown Area. In order to establish a more pedestrian oriented environment the incentive regulations provide a means to reduce large parking lots that break up the downtown environment by

reducing the required ratio of parking spaces to square footage for certain establishments (Table 14). The ratios required under the Downtown Incentive Zoning Classification for commercial, civic and entertainment uses differ from those in the surrounding areas which are by their nature more automobile dependant.

The regulations go further by allowing developers, in certain cases, to pay a nominal fee to adjust the number of required on-site, off-street spaces. The fee collected with this option is paid into a "Historic Downtown Parking Fund". The goal of these incentives is to provide a shared parking network for all downtown businesses and reduce the potential for oversized, underutilized parking lots within the historic area. However, these policies put the City in a position to take on the burden of providing enough public parking for the district. Collectively, the parking provided in the Historic District may follow the spirit of the *Downtown Incentive Zoning Regulations* but without a centralized public parking facility, do not yet meet the parking demanded by downtown patrons.

Table 14
Parking Ratios in the Historic Downtown Area

Development Type	Parking Ratio (spaces to square footage)	Amount reduction allowed[1]
Residential Village – single family detached	2 spaces per lot	No change
Residential Village – single family attached	1.5 spaces per unit	No change
Retail/Residential Mixed Use	• General Retail[2] – 1 per 200 sf • Restaurant – 1 per 100 sf	• 50% for retail or restaurant portion • 0% for residential
Retail/Office Mixed Use	• General Retail[2] – 1 per 200 sf • Office – 1 per 250 sf • Restaurant – 1 per 100 sf	• 50% for retail, restaurant, or office portion • 0% for residential
Civic/Institutional Mixed Use	<Widely variable>	• 50% for retail, restaurant, or office portion • 0% for residential
Family Entertainment	<Widely variable>	• 25% for park or playground

1 - With a contribution to the Historic District Parking Fund
2 – Does not include medical facilities, banks, daycare facilities, and service or repair facilities.
Source: Downtown Incentives Zoning Regulations, page 16-17

As stated in the *Existing Conditions* report, the downtown area has an adequate supply of parking in total; however, there are opportunities to use it more efficiently and to provide public parking in more strategic locations (at the periphery of the walkable, historic district). Further, more parking could be provided in selected

locations where it is convenient to businesses but remains inconspicuously woven into the surrounding fabric of the downtown area.

Recommendation: Parking by Street/Corridor

As detailed in the *Existing Conditions* Report, there are numerous on- and off-street parking spaces, including three paved lots within the study area. Business owners at the first public meeting (held in January 2008) expressed a desire to keep these parking spaces as they offer quick-in, quick-out access to their establishments. For the sake of clarity, this section is divided into sections based on parking issues along specific streets or corridors.

Main Street

This report has several recommendations for improved pedestrian circulation and mitigated traffic impacts along Main Street; however, it is important to note that they all must work in harmony with any discussion of parking in the downtown area. Specifically on Main Street south of Milton Avenue, there is limited but heavily used diagonal parking in front of the storefronts south of Milton Avenue (Figure 17). Planning for this area either follows recommendations that move towards keeping this parking or modifying/eliminating it in favor of other projects.

Figure 17
On-street parking along South Main Street

One additional possibility is to convert the parking from diagonal to parallel parking. This would still allow some form of on-street parking while setting enough width to perform roadway modifications such as the addition of a median. Conversion of the parking spaces to parallel could present a significant safety issue due to stopped traffic waiting for a space to clear. However, the implementation of other recommendations mentioned in Section 2.2 would aid in slowing down traffic on Main Street as well as add to the continuity of the “downtown” feel.

Conversely, if parking along South Main Street is eliminated, it would likely be discouraging to business owners. However, the long term gain could outweigh the short-term loss. This option could benefit business owners by increasing walkability around their establishments. As South Main Street became more pedestrian friendly, consumers will feel more comfortable parking and walking around the downtown area. While parking is an amenity store owners greatly desire, it could be worth the sacrifice to make the overall downtown core more walkable. Additionally, the attitude

of customers would change from an automobile-driven shopping experience to a walking shopping experience. This shift of attitude *can* take place, and improving and increasing pedestrian amenities and safety including slowing down vehicle traffic can help facilitate this type of improvement.

Milton Avenue

On-street parking is present along both sides of Milton Avenue between Old Canton/Old Roswell Streets and Canton/Roswell Streets. There is also exclusive parking available for two businesses west of the Roswell/Canton Street intersection. Since this report is not calling for any significant upgrades or improvements to the Milton Avenue corridor, (other than the relocation of MARTA Route 140), the need to remove or reorient parking spaces does not exist. However, the exclusive parking in the western section of the corridor bares more review (Figure 18).

Figure 18
Exclusive Parking and Undefined Sidewalk along Milton Avenue Looking East

There could be an opportunity to address two issues by moving the parking out to the street and making it available for general use. First, additional general parking would be advantageous to those businesses in the immediate area of the Roswell/Canton Street and Milton Avenue intersection that would benefit from quicker turnover of spaces. Second, the prospect to provide a sidewalk and streetscape treatments along this segment of Milton Avenue (as discussed in Section 2.4) would be made available. Both of these options add to an overall positive experience in this part of downtown and could further stimulate development and redevelopment opportunities.

If the opportunity arises to redevelop the old Milton High School property some time in the future, there could be a positive impact to the parking issues especially in the western downtown areas as commercial areas continue to expand. Lastly, there is little or no signage alerting travelers along Main Street, Haynes Bridge Road, or other major roadways that parking exists along this corridor.

Old Roswell Street/Roswell Street

Along Old Roswell Street, there are two parking lots including a small area behind the SmokeJack Restaurant and a larger lot across the street. Combined these two lots

have nearly 110 spaces. This is the predominant area of parking for most downtown patrons.

On several site visits during plan development, the Team noted the majority of the spaces in the Old Roswell Street lot were being used by employees of the surrounding businesses. If the spaces in this lot were metered or enforced in one- or two-hour increments, the instances of long-term parking would likely reduce or disappear altogether. The turnover of cars every couple of hours ensures that there is ample parking available at all times for visitors wishing to shop or dine downtown. For employees that currently use the lot, there would have to be some allocation of parking in surrounding facilities to allow for employee parking. One notable suggestion could be the forthcoming City Center parking deck. Negotiation between downtown shop owners (or the City itself) and the City Center developer could allow for a designated amount of parking spaces for downtown employees. Another suggestion would be to dedicate spaces as part of the expanded parking at the Roswell Street lot discussed in the next section. This in turn would return the lot on Old Roswell Street to its intended purpose – a short-term parking lot for patrons of downtown businesses.

Figure 19
City-owned parking lot on Roswell Street

The city-owned lot at the intersection of Old Roswell and Roswell Street is another idea for expanding parking options in the downtown area. This lot has about 100 spaces but is underutilized showing an occupancy rate of about 15% on the average weekday compared to nearly 95% occupancy for the two lots further up on Old Roswell Street. The future use of the larger lot on Old Roswell Street is tied with the future use of the lot on Roswell Street. The Roswell Street lot is just a mere 250 feet away from the Old Roswell Street lot and is within one block of the shops around Main Street and Milton Avenue but remains extremely underutilized. In terms of signage, there is one city-issued sign and one temporary sign on Roswell Street directing drivers to the lot coupled with very small signs at the Roswell Street/Marietta Street intersection. No other signs were observed.

Recommendation: Parking Structure

The addition of a parking structure to downtown Alpharetta would begin to alleviate the parking strain that currently exists. As part of the draft Recommendations, the Team suggested the Roswell Street lot as the best location for a parking deck (Figure

19). However, at the Public Information Meeting held on March 19, 2008, the Team heard the construction of a deck on top of the current Old Roswell Street lot would better serve downtown businesses. While this study will not get into design elements of a deck, planning judgment suggests the Old Roswell Street lot would not be able to handle the construction of a multi-level deck mainly due to being hemmed in by existing buildings and roadways. On the surface, the Roswell Street lot seems to the better fit given the lack of constraints around the land.

The topography of the Roswell Street lot is lower than the street itself which lends itself to hiding a larger structure. Keeping in mind that the surrounding buildings are no more than three stories high, if the structure were between three and four stories, there is the opportunity to have one or more of the stories below grade – that is below street level. The above-ground stories could be modified aesthetically so as to reflect the surrounding built environment. The first above-ground story could include shops and/or restaurants accessible from both the deck and the street. This would make the parking structure look less institutional and minimize its impact to the surrounding area.

There are also many treatments for parking structures that mask or enhance its appearance such as adding windows or the construction of a brick façade. These treatments blend the structure with its surroundings. There are several examples of more artistic parking structures throughout the U.S. Some are even so unique that they become a focal point of the community. Instead of hiding, these designs emphasize the structure with modern lighting, decorative glass treatments, and other effects. Some examples of parking structure design can be seen in Figure 20. It is important to note, the cost of a multi-story deck could average $12,000-15,000 per space not including the land cost. If the Roswell Street lot is used, there could be a significant cost savings recognized. Finally, the driveway/entrance should be enhanced to invite and direct downtown visitors to use the structure.

With a large parking structure in place, the lot on Old Roswell Street could be converted into shops and restaurants which would not only expand the downtown retail district but more specifically pull the district farther west, towards the new parking structure. The main complaint of the existing lot on Roswell Street that the Team has received besides the fact that people are not aware of it, is that it is too far from the retail district. If the district were extended all the way to Roswell Street it would effectively make parking for the whole downtown area – just right across the street.

Figure 20
Example of parking decks from other municipalities

Santa Monica. CA

Palo Alto. CA

Davenport, IA

Recommendation: Improve Visibility of Signage

As observed by the Team with the underutilized lot on Roswell Street, parking availability is only half of the story. Visibility is also a key consideration. There can be a lot with hundreds of spaces available that would remain unused because no one knows it is there. Signage plays a crucial role in directing patrons to and advertising the availability of parking. Signage must grab the attention of the driver as they approach their destination. This means putting signs directing drivers to "Public Parking" on Main Street, Milton Avenue, Canton/Roswell Streets and Old Roswell/Old Canton Streets. If signs are visible from where people are planning to shop or dine, they will be more likely to use the provided parking rather than continue to drive around or simply leave the area. Signage must be visible at nearly all of the intersections as well as at midblock. A map showing strategic locations for new or upgraded parking signs is shown in Figure 21.

For Additional Discussion

Some other recommendations that should be added to the comprehensive analysis include:

- Is there an opportunity to partner with the two churches adjacent to the downtown area to lease parking Monday to Saturday? The lots for these downtown institutions remain virtually empty for several days of the week. Are there opportunities for sharing parking during off-peak times?

- While the scope of work for this project instructed the Team to look at city-owned property for parking opportunities, there may be additional properties for purchase such as the large residential track close to the Old Roswell/Roswell Street intersection. This property will likely be expensive to purchase but would provide additional land as part of a comprehensive parking implementation strategy.

It is recognized that the discussion of parking within the downtown area cannot be concluded without some sort of comprehensive parking analysis. Questions such as how many spaces would the deck need and how much it would cost, would need to be posed so as not to have the deck become obsolete upon opening. In other words, this study cannot be the end of the discussion.

Figure 21
Recommended Locations for New or Upgraded Public Parking Signage

2.7 Land Use

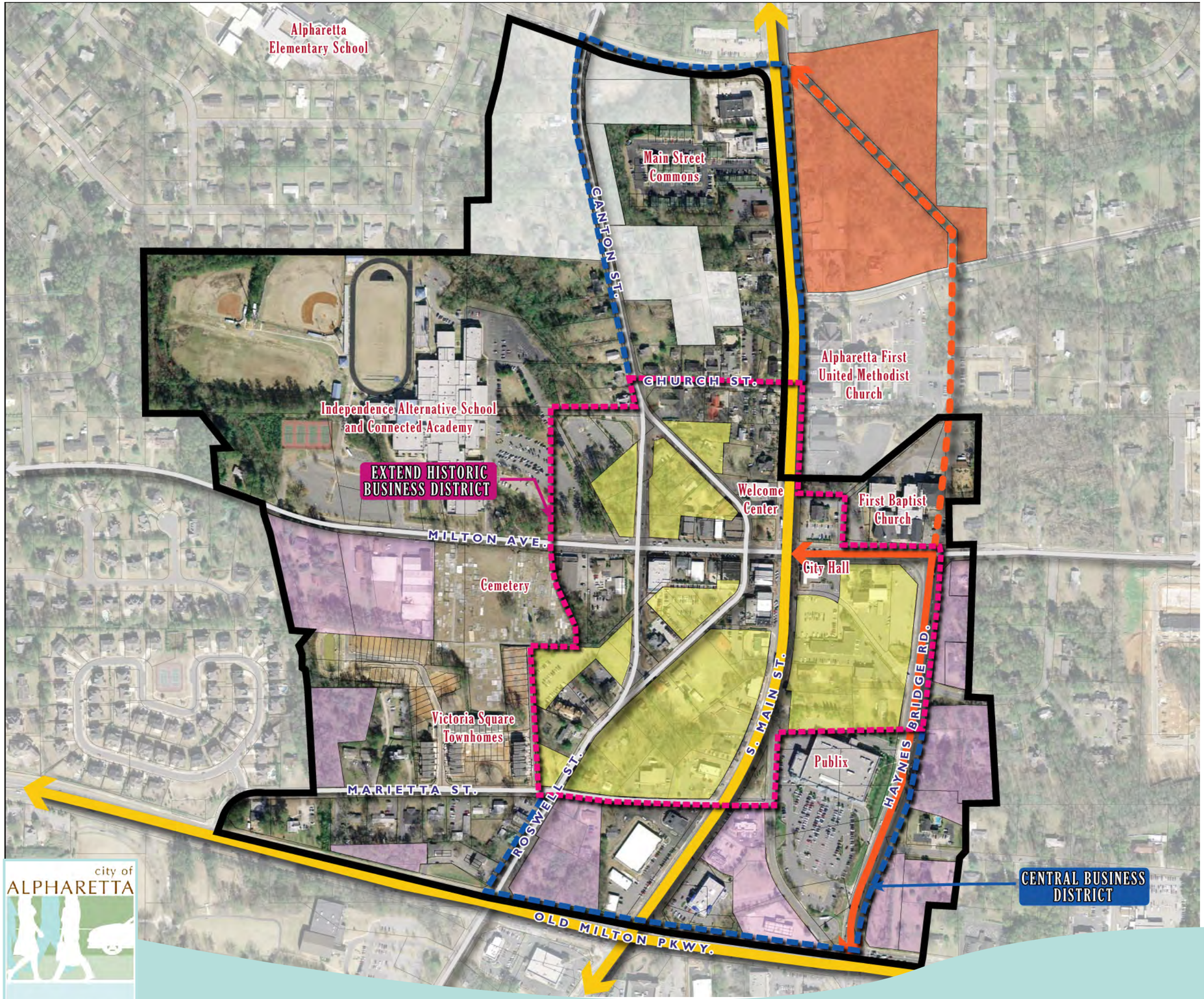
Objective: Downtown development/redevelopment opportunities and strategies

To maximize connectivity and walkability in the Downtown area, future development in the Downtown District will need to create more continuous building fronts along Downtown's major arterial streets (Main Street and Academy Street/Milton Avenue). To that end, the development opportunities map (Figure 22) affirms the City's Historic Business District as the primary focus for new, "infill" development/redevelopment. Continuing to seek development consistent with the City's downtown incentive zoning district, with strong architectural character, significant street presence, and positioned along significant sidewalk facilities, is vital to creating the type of dynamic, walkable environment desired by the city and community.

The development opportunities map highlights properties that are generally available or underdeveloped based on their current use and the potential provided by the downtown incentive zoning district. The Team does recommend that the Historic Business District and thus, the core walking district, be extended to include the bank property on the northeast corner of Main and Academy Streets and the properties on the east side of Main Street (between Main Street and Haynes Bridge Road) between Academy Street to the north and the Publix grocery store property to the south. These properties are generally low intensity, civic properties, surface parking lots and former residences that are now used for low-intensity commercial facilities.

Beyond the historic downtown core, future development should continue to enhance connectivity, the pedestrian/walking environment, bicycle connectivity, and the vitality of the downtown district by accommodating denser development patterns and architectural character consistent with the Downtown Incentive Zoning District. Development opportunities within the Central Business District, but outside the Historic Downtown Core include commercial and mixed-use development/redevelopment opportunities along Haynes Bridge Road, SR 120/Old Milton Parkway, Marietta Street, and Milton Avenue. Development opportunities on the north side of the study area along Canton Street largely fall within the downtown district's R-15 Single Family Residential area. This area is a prime opportunity for continued residential development to support building a critical mass of residents within close proximity to the downtown area while providing a transition from the downtown core, to mid to high intensity residential (multi-story flats, condos, townhomes, etc.), to single family neighborhoods.

FIGURE 22
DEVELOPMENT OPPORTUNITIES



LEGEND

- Central Business District
- Extend Historic District
- Historic Business District Development Opportunities
- Development Opportunities
- Residential Area Development Opportunities
- Haynes Bridge Extension Development Opportunities

0 250 500 1,000 FT.

Source: City of Alpharetta 2006

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3.0 Funding and Implementation

As is the case with a majority of major transportation improvements in the Atlanta region today, funding stands out as a significant issue. The lack of transportation resources across the region, and the country, have made cheaper, more cost-effective solutions become more enticing. Also, with very limited funding available for capital improvements at the local and state levels at this time, the possibility of major projects being built in the short term seems slim. However, there are some limited pots of funding the City can pursue to begin implementation of the recommendation listed in this report. These funding sources are detailed in Table 15 below:

Table 15
Potential Funding Sources

Fund Source	Description	Funding Provided By
Livable Centers Initiative (LCI) Implementation Funds	A setaside of STP-Urban funds dedicated to the implementation of projects identified in LCI Studies across the region.	ARC
Surface Transportation Program-Urban (STP)	Funds to implement a wide variety of highway, transit, bicycle, pedestrian, transportation demand management and air quality projects, studies and programs.	ARC
Surface Transportation Program –Statewide (STP)	Funds to implement a wide variety of highway, transit, bicycle, pedestrian, transportation demand management and air quality projects, studies and programs.	GDOT
Transportation Enhancement (TE)	Transportation enhancement activities, such as providing facilities for bicyclists and pedestrians, landscaping and historic preservation.	GDOT
Safe Routes To School (SRTS)	Encourages primary and secondary school children to walk and bicycle to school. Both infrastructure-related and behavioral projects are geared toward providing a safe, appealing environment for walking and biking that will support national health objectives by reducing traffic, fuel consumption, and air pollution in the vicinity of schools.	GDOT

3.1 Summary of Proposed Projects

Proposed projects and their costs are reflected in Figure 23. It is important to note the costs listed are estimates and additional design, concept, and/or study of each project would likely be required prior to programming the project in the region's Transportation Improvement Plan (TIP).

There are several examples where a project could be funded by the City or using Federal Aid (i.e. LCI, STP, etc.). If these projects are programmed using Federal Aid, their implementation could be delayed due to additional requirements to pull down Federal funding through the TIP process including alignment of adoption and approval schedules.

Additionally, it is likely opportunities exist to group projects together in order to implement them collectively. For example, there are two line items for multi-use path connections around the old Milton High School site. If these projects are grouped together, there may be a better chance of them receiving funding through the general TIP or through the LCI implementation program.

Figure 23

City of Alpharetta Downtown Circulation Study Projects for Implementation

May 2008

Priority Projects

Project	Limits	Type	Distance	Cost	Funded By..
Median along Main Street	Old Milton Avenue to Mayfield Road	Roadway Upgrade	.75 mile	$270,000 (excluding ROW)	LCI, STP
Reassign SR 9 to other City streets		Signing	N/A	$40,000	City, GDOT
Reduction of Lane Widths	Old Milton Parkway to Mayfield Road	Striping	.75 mile	Variable (maintenance)	City
Dual Right Turn lane NB Main to EB Old Milton	Old Milton and Main Street	Striping/Signal	N/A	Variable (maintenance)	City
Midblock Crossing Upgrades with Signals	Old Milton Parkway at Wills Park – 3 locations	Pedestrian	N/A	$744,000	LCI, STP, TE
Install new midblock crossing	Adjacent to Smokejack Restaurant	Pedestrian	N/A	$248,000	LCI, STP, TE
Install new midblock crossing	North of South Main Street/Marietta Street Intersection	Pedestrian	N/A	$248,000	LCI, STP, TE
Heritage Lane Path	Heritage Lane to Lynne Circle	Multi-Use Path	300 ft.	$85,000 (excluding ROW)	LCI, TE
Marietta Street/Milton Avenue Connection	Western edge of cemetery	Multi-Use Path	.25 mile	$80,000 (excluding ROW)	LCI, STP, TE, SRTS
School Campus (north and west perimeter)	Milton Avenue to Upshaw Drive	Multi-Use Path	.40 mile	$138,000 (excluding ROW)	LCI, STP, TE, SRTS
School Campus (northeast perimeter)	School Drive to Upshaw Drive	Multi-Use Path	.25 mile	$80,000 (excluding ROW)	LCI, STP, TE, SRTS
Wills Park Connection	Along Devore Road (paved shoulders)	Bicycle	.45 mile	$55,000 (excluding ROW)	City
Big Creek Greenway Connection	Webb Bridge Road over SR 400 (activated warning signal)	Bicycle Signage	N/A	$25,000	LCI, TE, City
Big Creek Greenway Connection	Via Academy Street (striping)	Bicycle Striping	.65 mile	TBD (maintenance)	City
Big Creek Greenway Connection	Via Webb Bridge Road (shared lane symbol)	Bicycle	1.6 miles	TBD (maintenance)	City
Pathway along Old Milton Parkway	Wills Road to South Main Street	Shared-Use Path	.50 mile	TBD (maintenance)	City
Pathway along Roswell Street	Old Roswell Street to Old Milton Parkway	Shared-Use Path	.20 mile	TBD (maintenance)	City
Pathway along Milton Avenue	Western end of HS Campus to Canton Street	Shared-Use Path	.30 mile	TBD (maintenance)	City
Pathway along Haynes Bridge Road	SR 400 to Academy Street	Shared-Use Path	1.6 miles	TBD (maintenance)	City
Pathway along Canton Street	Old Canton Street to Mayfield Road	Shared-Use Path	.30 mile	TBD (maintenance)	City
Streetscaping throughout downtown		Other	N/A	Variable	LCI, TE, City
Additional parking signs throughout downtown		Parking	N/A	Variable (maintenance)	City

Secondary Projects					
Project	Limits	Type	Distance	Cost	Funded By..
Marietta Street	Roswell Street to Main Street	Sidewalk	.15 mile	$80,000	LCI, STP, TE
Marietta Street	Wilshire Glen to Roswell Street (north side only)	Sidewalk	.25 mile	$58,000	LCI, STP, TE
North Point Mall Connection-Segment 1	Encore Parkway Segment (shared lane symbol)	Bicycle	.13 mile	$12,000	City
North Point Mall Connection-Segment 2	Via Westside Parkway (pathway)	Bicycle	.46 mile	TBD (maintenance)	City
North Point Mall Connection-Segment 3**	South Main Street Segment (bicycle lane)	Bicycle	.34 mile	$94,000	LCI, STP, TE, City
North Point Mall Connection-Segment 3**	South Main Street Segment (shared lane symbol)	Bicycle	.34 mile	$31,000	LCI, TE, City
North Point Mall Connection-Segment 4A	Maxwell Road Segment (paved shoulders)	Bicycle Facility	1 mile	$123,000	LCI, STP, TE
North Point Mall Connection-Segment 4B	Maxwell Road Segment (sidewalks)	Pedestrian Facility	1 mile	$230,000 (excluding ROW)	LCI, STP, TE
North Point Mall Connection-Segment 5	Roswell Street Segment (paved shoulders)	Bicycle	.32 mile	$40,000	LCI, TE
Old Canton Street	Canton Street to Milton Avenue (west side only)	Sidewalk	.14 mile	$35,000	LCI, TE
Church Street	Canton Street to North Main Street (north side only)	Sidewalk	.13 mile	$31,000	LCI, TE
Milton Avenue	From Canton Street to Cemetery Property (south side only)	Sidewalk	.16 mile	$37,000	LCI, STP, TE
Upgrade Bus Stops throughout downtown	12 locations along Main Street, Haynes Bridge Road, Milton Avenue, and Old Milton Parkway	Transit Facilities	N/A	$120,000	LCI, City
Bicycle Racks	Various locations ($75-100/rack)	Other	N/A	$3,000	LCI, TE, City, Developer
Bicycle Lockers	Municipal Parking Facilities ($800/locker)	Other	N/A	$8,000	LCI, TE, City
New 300-space Parking Structure	Old Roswell Street and Roswell Street ($12,000/space)	Parking	N/A	$3,600,000	City

** - Only one of these would need to be chosen.

cwc

3.2 Next Steps

Working with ARC staff, the City of Alpharetta should use the priority projects listed in Figure 23 as a guide for prequalification in the LCI Selection Process. ARC prequalifies up to two projects every other year. The entire prequalification process is described on the ARC's website: http://www.atlantaregional.com/html/322.aspx. Once projects have been prequalified, the City can submit an application for funding during the annual update to the Transportation Improvement Program (TIP).

The Team recommends improvements and upgrades to Main Street should be the highest priority for implementation funding. Specifically, the following projects should be submitted to ARC for prequalification at the earliest possible time. Since ARC requires a minimum project cost to be $500,000, the projects should be submitted collectively.

Project	Limits	Type	Cost
Median along Main Street	Old Milton Avenue to Mayfield Road	Roadway Upgrade	$270,000 (excluding ROW)
Install new midblock crossing	Adjacent to Smokejack Restaurant	Pedestrian	$248,000
Install new midblock crossing	North of the South Main/Marietta Street intersection	Pedestrian	$248,000

The remaining projects along Main Street (i.e. reduction of lane widths, reassignment of SR 9 markers) can be handled by City staff as part of a lead up to the construction of the afore-mentioned projects.

The other project recommended for submission to ARC would be the trail and path connections around the west and northwest sections of the Downtown area near the high school.

Project	Limits	Type	Cost
Heritage Lane Path	Heritage Lane to Lynne Circle	Multi-Use Path	$85,000 (excluding ROW)
Marietta Street/Milton Avenue Connection	Western edge of cemetery	Multi-Use Path	$80,000 (excluding ROW)
School Campus (north and west perimeter)	Milton Avenue to Upshaw Drive	Multi-Use Path	$138,000 (excluding ROW)
School Campus (northeast perimeter)	School Drive to Upshaw Drive	Multi-Use Path	$80,000 (excluding ROW)

4.0 Conclusions

This document represents the first opportunity for the City of Alpharetta to implement some of the policies and projects mentioned in the 2003 *Downtown Master Plan*. During the development of the *Final Recommendations Report*, several key goals were identified by staff and each improvement or enhancement endeavored to address each goal.

Roadway

- Move predominant north-south movement off of Main Street
- Redesign Main Street to improve safety and connectivity while maintaining mobility
    - Reassign SR 9 to other facilities
    - Adjust Lane widths
    - Additions of raised median
    - Additional streetscape treatments such as pole banners, signing, other design elements on road signs
        - Wayfinding signage
        - Distinctive street name signs

Transit

- Augment and expand transit options in the Study Area
    - Realign MARTA Route 140
    - Amenities (shelters, etc)

Pedestrian and Bicycle

- Create a safe and enjoyable pedestrian network throughout downtown
    - Zone System
    - ADA Compliance
    - Intersections
    - Midblock Crossings
- Increase connectivity of bicycle transportation in and around the Study Area
    - On-Street Bicycle Facilities and Treatments
        - Traffic Calming
        - Bicycle Lanes
        - Paved Shoulders
        - Shared Lanes
    - Off-Street Bicycle Facilities and Shared-Use Pathways
        - New Pathway Connections
        - Bicycle Parking
    - Connectivity to Nearby Destinations
        - Wills Park

- Big Creek Greenway
- North Point Mall

Parking

- Improve, expand, and better facilitate parking in and around the downtown area
  - Parking Recommendations by corridor
  - Parking Structure
  - Signage
  - Other Recommendations

Land Use

- Downtown development/redevelopment opportunities and strategies
  - Historic Business District
  - Central Business District

Each of these enhancements represents a specific investment in the infrastructure within the downtown area. Taken together, the improvements will create a sense of place within downtown Alpharetta that is inviting and defines the downtown environment. It is important to note that implementation will take a large amount of support from the public and local policy leaders to ensure funding is identified and channeled to these improvements. Although funding in the Atlanta region is limited, projects with the right support through a Plan (such as the *Final Recommendations Report*) can be identified for implementation.

The City of Alpharetta has been a progressive leader in the metropolitan Atlanta region in terms of how to address its growth and create a sense of place for itself. The recommendations mentioned in this report will assist the City in achieving the next steps of implementation while setting the standard for other local municipalities to follow by showing the success of improved connectivity throughout the downtown area and advanced quality of life for current and future residents of Alpharetta.

city of
ALPHARETTA

downtown circulation study

Existing Conditions Report

Prepared By:

URS

With

Urban Collage, Inc.

Sprinkle Consulting, Inc.

March 2008

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1.0 Transportation Inventory and Assessment

1.1 Transportation System Characteristics

The overall goal of the Downtown Alpharetta Circulation Study is to promote more efficient movement of people and goods originating in, destined for, or traveling through the downtown area. The study seeks to identify strategies for improving traffic flow and circulation, connectivity between activity centers, safety for all modes, and promote the use of alternative modes.

The first step to accomplishing the project objectives is the Transportation Inventory and Assessment. The transportation assessment focuses on existing conditions in an approximately one mile square area within the heart of the downtown area centered between the Milton Street intersections at Roswell and Main Streets. Although the assessment placed special emphasis on the downtown area, it considered the surrounding regional network characteristics to ensure proper consideration of the function and performance of downtown Alpharetta's transportation network relative to the larger regional system.

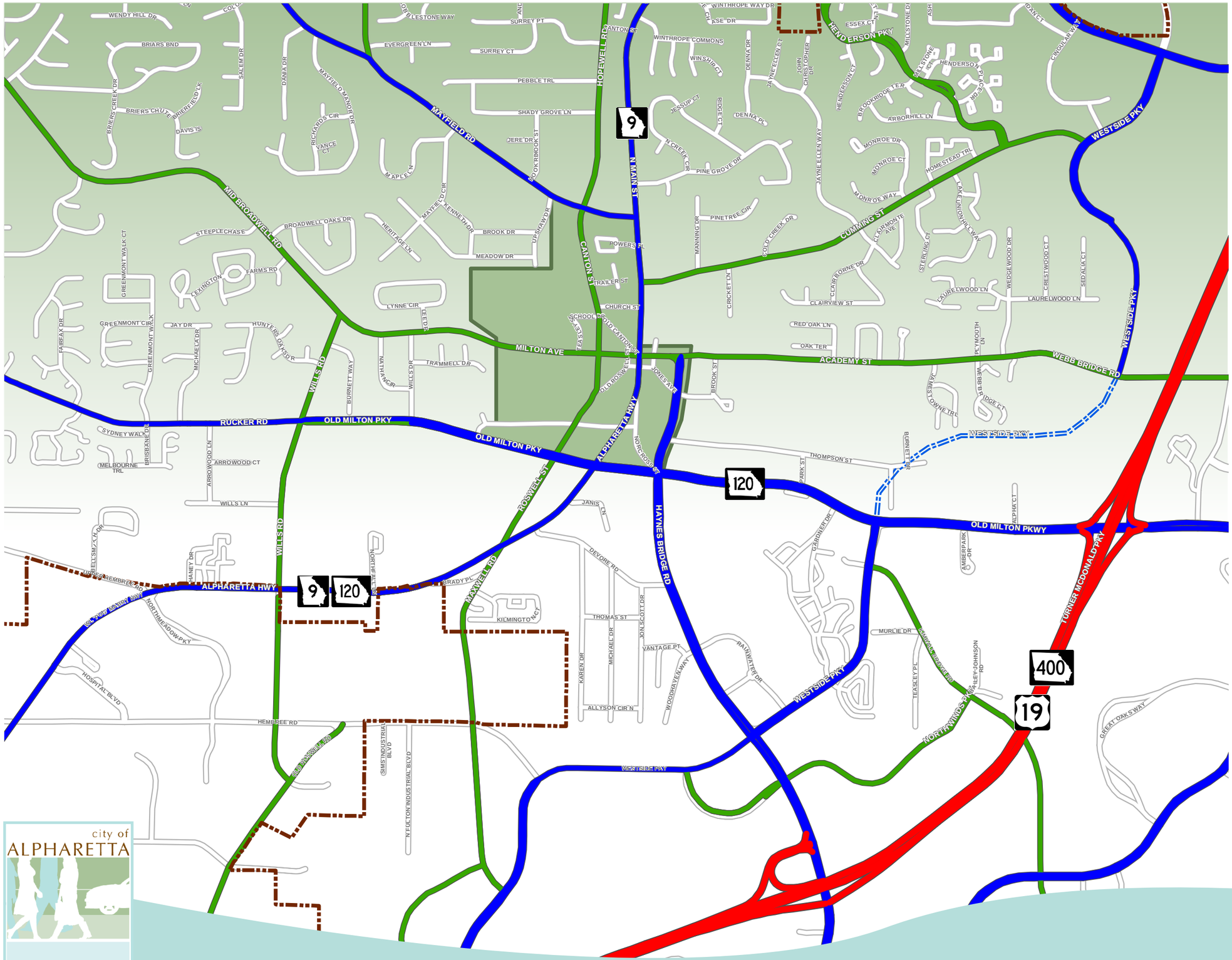
1.2 Travel Characteristics

The transportation system within the City has been greatly influenced by SR 400; a multi-lane, limited access roadway connecting Atlanta and Dahlonega. Access points along SR 400 in the Alpharetta area have been a catalyst for residential and commercial development all over north Fulton County. The combination of the strong influence SR 400 has on local travel patterns and the fact that most of the local roadways converge close to or within the downtown area generate an abundance of through traffic in the downtown area.

1.3 Functional Classification and Number of Lanes

Functional classification is defined as a process by which streets and highways are grouped into classes or systems according to the character of traffic service that they are designed to provide. The functional classifications of major roadways within the City of Alpharetta's roadway network are illustrated in Figure 1.

FIGURE 1
FUNCTIONAL CLASSIFICATION



LEGEND

Functional Classification

- Freeway
- Arterial
- Collector
- Local Street
- Under Construction
- Alpharetta City Limits
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: City of Alpharetta; 2008

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Interstate Highway, Freeway, Tollway and Expressway

Interstate highways, freeways, tollways, expressways, and parkways provide for the rapid and efficient movement of large volumes of traffic between regions and within one region. Direct access to abutting property is not an intended function of facilities falling into these categories. Design characteristics support the function of traffic movement by providing multiple travel lanes, a high degree of access control, and few or no at-grade intersections.

SR 400 (co-signed with US 19) is a multi-laned, divided, limited access toll facility that is classified as a freeway that connects Dahlonega to Atlanta. SR 400 traverses the City with interchanges at:

- Exit 8 Mansell Road
- Exit 9 Haynes Bridge Road (direct access to downtown)
- Exit 10 SR 120/Old Milton Parkway (direct access to downtown)
- Exit 11 Windward Parkway

SR 400 links Alpharetta to downtown Atlanta to the south and to other Georgia destinations to the north such as Lake Lanier, the City of Gainesville, and the north Georgia mountains.

Arterial

Arterials provide the highest level of service at the greatest speed for the longest uninterrupted distance, with some degree of access control. Arterials within the city of Alpharetta include SR 9 (Main Street), SR 120 (Old Milton Parkway), Rucker Road, and Mid-Broadwell Road.

Collector

Collectors provide a less highly developed level of service at lower speeds for shorter distances by collecting traffic from local roads and distributing it to arterials. The area northwest of the City is served by collectors oriented toward downtown Alpharetta.

Within the study area collectors include Roswell Street/Canton Street, Wills Road, Cumming Street, and Milton Avenue/Academy Street.

Collectors just beyond the study area (largely oriented north-south) include Wills Road, Hopewell Road, Henderson Parkway, Kimball Bridge Road, Old Roswell Road, and Maxwell Road. East-west collectors include Mid-Broadwell Road, Webb Bridge Road, and Northwinds Parkway.

Local

Local roadways consist of all roadways not defined as arterials or collectors. They primarily provide direct access to parcels of land with little or no through movement.

1.4 Parking

An inventory of parking supply within the study area was conducted by field review. Parking within the downtown area primarily consists of angled, on-street parking and surface lots. Parking is free and adequate information regarding restrictions, such as time limits and permit requirements, is provided. One example is the on-street parking along both sides of Milton Avenue, just east of its

Public Parking on Old Roswell Street

intersection with Roswell Street/Canton Street. This parking is regulated with 2-hour limits from 8 AM to 8 PM. Private parking is also provided in association with a number of the retail and commercial establishments, office, institutional, and residential facilities within the study area. Immediately adjacent to the study area, large frontage lots typically characterize the major retail establishments, strip developments, and shopping malls just outside of the downtown area (e.g. along Haynes Bridge south of Academy Street, Westside Parkway, Mansell Road, and the like).

The primary paved parking facilities within the downtown area are illustrated in Figure 2. These facilities include:

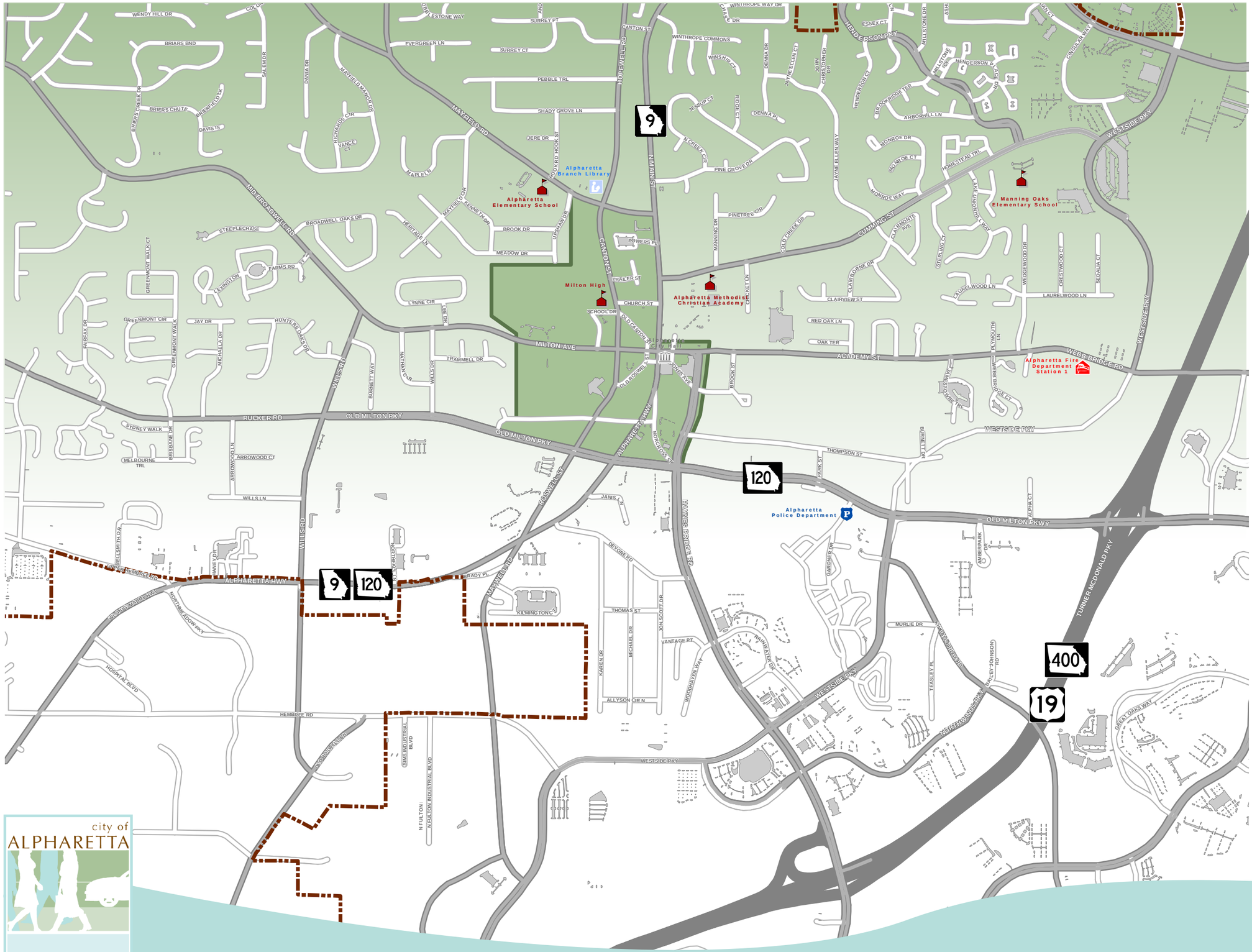
1. On Old Roswell Street, just south of Milton Avenue.
2. On South Main Street adjacent to City Hall at the intersection of Main Street and Academy Street. (This parking area extends beyond the rear of City Hall and includes an additional parking area along Haynes Bridge Road just south of the intersection of Academy Street and Haynes Bridge Road).
3. On Roswell Street accessed by a lengthy driveway entrance that continues below grade and is adjacent to a cemetery. This lot is located across from the intersection of Roswell Street and Old Roswell Street.

Overall, in most cases advance wayfinding and/or directional signage is completely absent to direct patrons to parking as well as to major downtown destinations. In other cases, signs are provided, but only in the immediate area of the lot (such as near the entrance). The City parking area located on Roswell Street at Old Roswell Street is a prime example of a facility that could be better advertized using wayfinding signage.

Under-utilized parking lot off of Roswell Street

Shared parking within the downtown area appears to be limited and may not be currently used to their full potential. Additionally, some parking lots appear to be underutilized.

FIGURE 2
PAVED PARKING FACILITIES



LEGEND

Community Facilities

- Courthouse
- Fire Station
- Library
- Police Station
- School
- Paved Parking Facilities
- Alpharetta City Limits

Roadways

- Freeway
- Major Roads
- Local Street
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: City of Alpharetta/URS Field Review; 2008

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In 2006, the City approved a redevelopment plan for the approximately 7.5 acres of the city's downtown area adjacent to City Hall (bounded respectively on the east, west and north by Haynes Bridge Road, South Main, and Academy Streets). The plan calls for construction of 80,000 square feet of retail and restaurant space; 40,000 square feet of office space; and 162 residential condominiums, all around a one acre public plaza. Also, the current 13,000-square-foot Alpharetta City Hall will be demolished to make way for construction of a new, 50,000-square-foot municipal building. The development will also include two parking decks. Funds generated by the proposed Alpharetta Tax Allocation District (TAD) will be used to partially fund construction of the two parking decks, the one-acre plaza, and two internal roads.

Kiosk on South Main Street

1.5 Signage

A good signage system can perform multiple functions. On the most basic level, it provides effective information and direction for people to find their way around a downtown, a building complex, park, or other public space. It also has potential as a tool for creating and maintaining an image and providing a sense of place and local pride. Currently, signage within the study area primarily includes signs that:

1. Regulate (post limits, stop, and yield signs)
2. Restrict or limit parking,
3. Identify municipal facilities,
4. Identify the historic downtown area,
5. Inform and educate (e.g. map on kiosk on Main Street, south of Milton Avenue and historic markers)
6. Provide direction to or about public parking lots.

The City is currently performing a street sign inventory. The inventory findings will provide information needed for the development of additional informational and directional signage. Opportunities might exist for further incorporating history or cultural heritage of the City of Alpharetta. Consideration of the placement and location of signage in conjunction with other amenities such as benches, cafes, restrooms, and phones, or places where paths cross, might also serve to create “mini-destinations" or “places-within-a-place”. Continuous signage for both pedestrians and vehicles (i.e., repeated at each point of choice) until the destination is reached, as well as signage from the point of parking that directs patrons to the merchants, as mentioned previously, would also serve to improving the overall travel experience and potentially reduce traffic congestion levels. Signage to identify passenger and commercial loading zones would also add to improved circulation and traffic flow, especially as the downtown area continues to grow as additional development occurs and traffic demand increases.

1.6 Traffic Controls

1.6.1 Traffic Signals

Currently, the City of Alpharetta maintains traffic signals at 115 intersections. A total of 69 signals, or about 60%, communicate with Alpharetta’s traffic control center, located on Hembree Road at the Alpharetta Department of Public Works office. Communications are established as follows:

- 46 signals via direct fiber
- 13 via dialup master or direct dial, and
- 10 via remote systems (connected over the Internet).

The signals within the City are scheduled to be re-timed every two years. The City is currently lobbying the State Legislature for funding related to an Adaptive Traffic Control System. This signal control system relies on sensors and computer software that automatically adjusts signal timing based on real-time traffic flow. The signalized intersections located within the study area are illustrated in Figure 3.

1.6.2 Red Light Camera Program

The Alpharetta Red Light Camera Program was initiated in 2005. The red light camera enforcement system is part of a city-wide safety program operated by the Alpharetta Police Department in an effort to reduce the number of red light violations and intersection crashes. The program employs cameras to capture images of vehicles that cross the stop line and proceed through an intersection after the traffic signal has turned red.

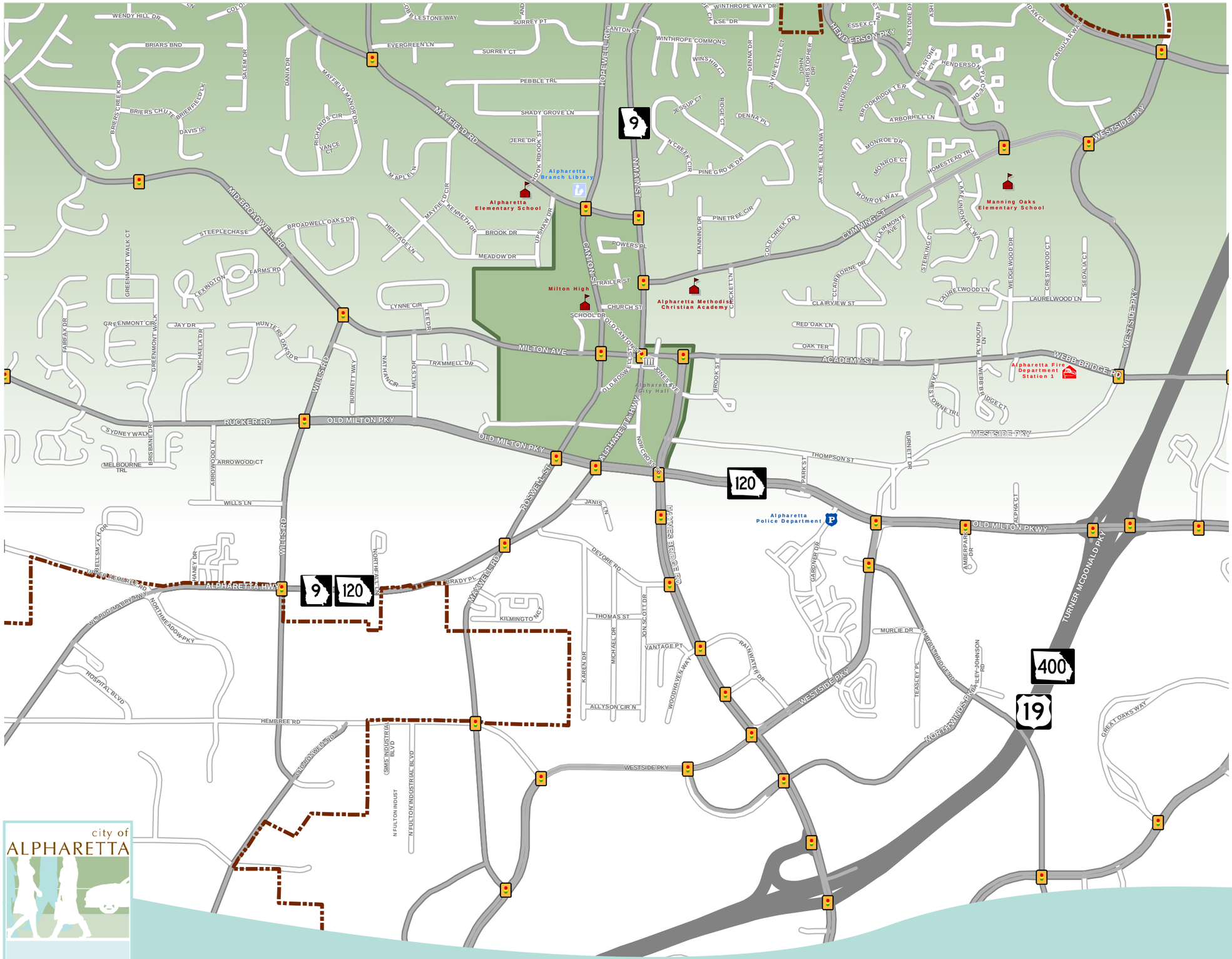
Red light camera enforcement systems are currently in place at the following intersections (the intersections in the study area are shown in *italics*):

- North Point Parkway and Haynes Bridge Road
- *SR 9/Main Street and Academy Street*
- SR 120/Old Milton Parkway and North Point Parkway
- *SR 120/Old Milton Parkway and Haynes Bridge Road*
- Westside Parkway and Windward Parkway
- North Point Parkway and Mansell Road
- *SR 9/South Main Street and SR 120/Old Milton Parkway*

1.6.3 Signal Timing/Interconnect Projects

In order for traffic signals to be simultaneously programmed and consistently work together, they must be connected. This connection is usually a physical wire that connects the individual control boxes along a specific corridor. By connecting each control box, a signal electrician only needs to upload new data into one control box to give commands to the entire corridor of signals. The City of Alpharetta currently has received grants for signal interconnects for North Point Parkway and Windward Parkway. The grants will be used to place fiber optic cable along these corridors connecting the traffic signals to the City's Traffic Control Center. This will allow City traffic engineers to control signal timing based on real-time traffic volumes and patterns.

FIGURE 3
SIGNALIZED INTERSECTIONS



LEGEND

Community Facilities

- Courthouse
- Fire Station
- Library
- Police Station
- School
- Traffic Signals
- Alpharetta City Limits

Roadways

- Freeway
- Major Roads
- Local Street
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: City of Alpharetta; 2008

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1.7 Posted Speeds

Posted speed limits within the study area are illustrated in Figure 4. The posted speed limits within the study area are typically set at 25 miles per hour (MPH) along local roadways, 35 MPH along collectors, and vary from 35 to 45 MPH along arterials.

Additional information to consider includes potential issues related to speeding and enforcement may be sought from local and state authorities as a follow up to this assessment, as appropriate.

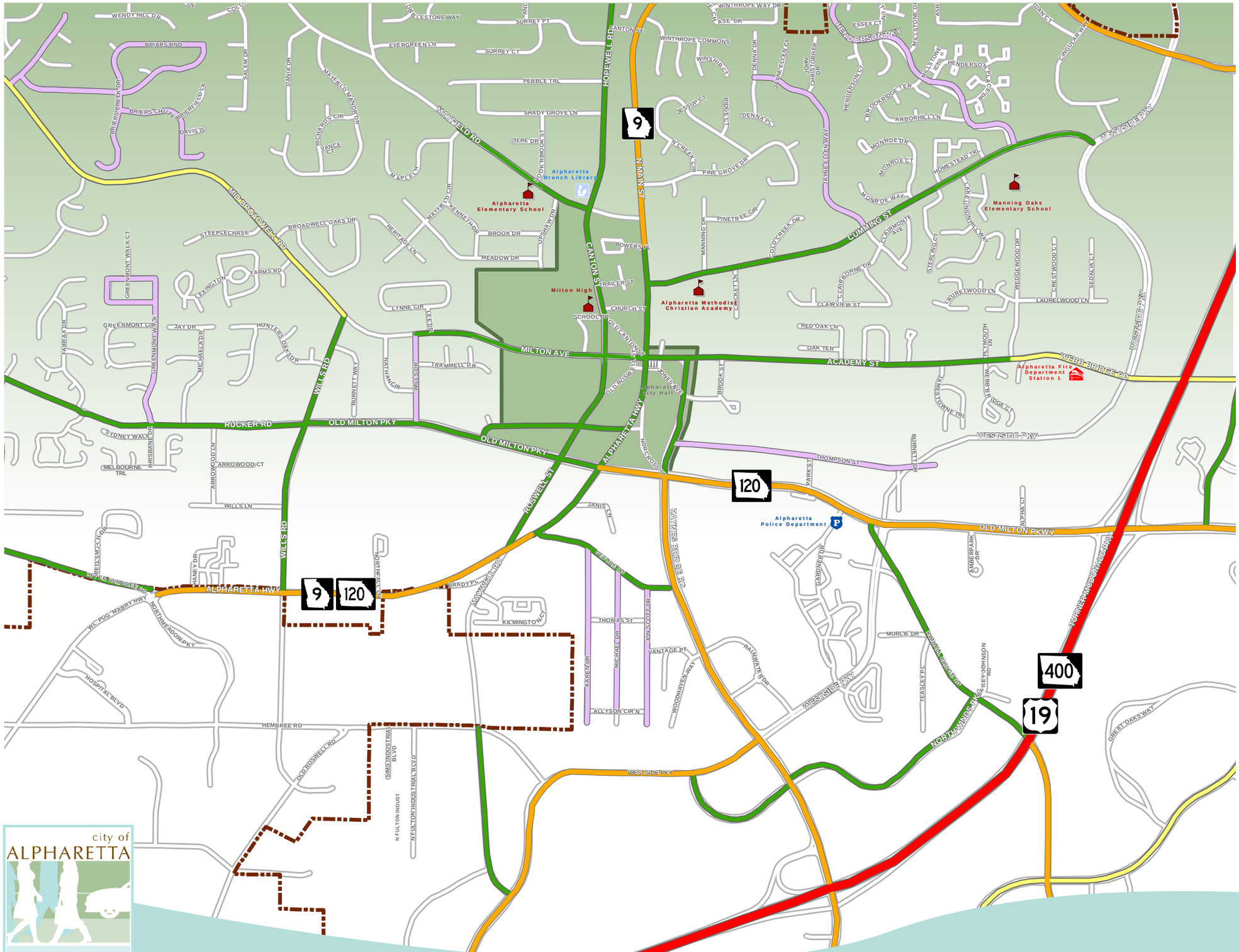
1.8 Traffic Operations/Level of Service (LOS)

An analysis was conducted to determine and qualify general traffic conditions in and around the downtown Alpharetta Circulation study area. This analysis utilized general Level of Service (LOS) thresholds to assign a letter grade of A, (indicating free-flow conditions) through F, (indicating over-capacity conditions). The LOS thresholds assumes generalized roadway characteristics used for more detailed operational level analysis such as peak to daily traffic ratios, peak directional characteristics, traffic signal spacing, and truck percentages. It is important to note LOS analyses are frequently used for traffic impact studies requested by the Georgia Regional Transportation Authority (GRTA) as part of their Development of Regional Impact (DRI) process.

The analysis for this study was conducted by comparing Georgia Department of Transportation (GDOT) daily traffic counts (factored to Annual Average Daily Traffic) in the study area to the LOS thresholds. Data collected at GDOT traffic count stations employed for this analysis are identified in Figure 5. Due to fluctuating traffic count volumes from year to year, the maximum observed traffic count volume from the years 2003 through 2006 was used for the basis of the analysis. Although the analysis was conducted using daily traffic volumes, the thresholds incorporate aforementioned assumptions (such as peak to daily traffic ratios and peak directional characteristics) and, as a result, estimate LOS during peak conditions.

The results of the LOS analysis are categorized by traffic count locations and are provided in Figure 6 and Table 1.

FIGURE 4
POSTED SPEED LIMIT



LEGEND

Posted Speed Limit

- 65 MPH
- 45 MPH
- 40 MPH
- 35 MPH
- 30 MPH
- 25 MPH
- No Data Provided

Community Facilities

- Courthouse
- Fire Station
- Library
- Police Station
- School
- Alpharetta City Limits
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: City of Alpharetta; 2008

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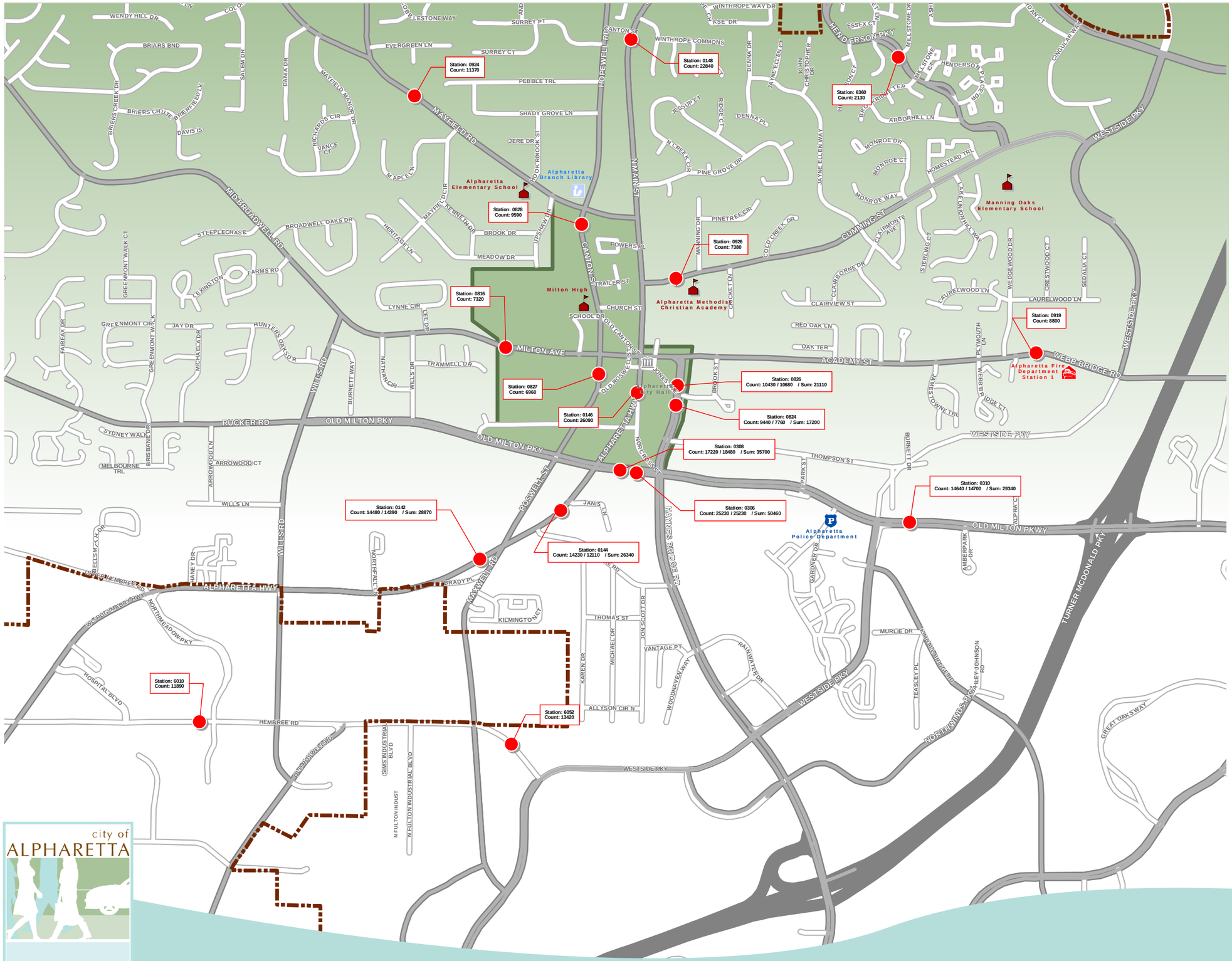
FIGURE 5
STUDY AREA TRAFFIC COUNTS



LEGEND

- GDOT Count Station
- Alpharetta City Limits

Roadways

- Freeway
- Major Roads
- Local Street
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: GDOT 2006

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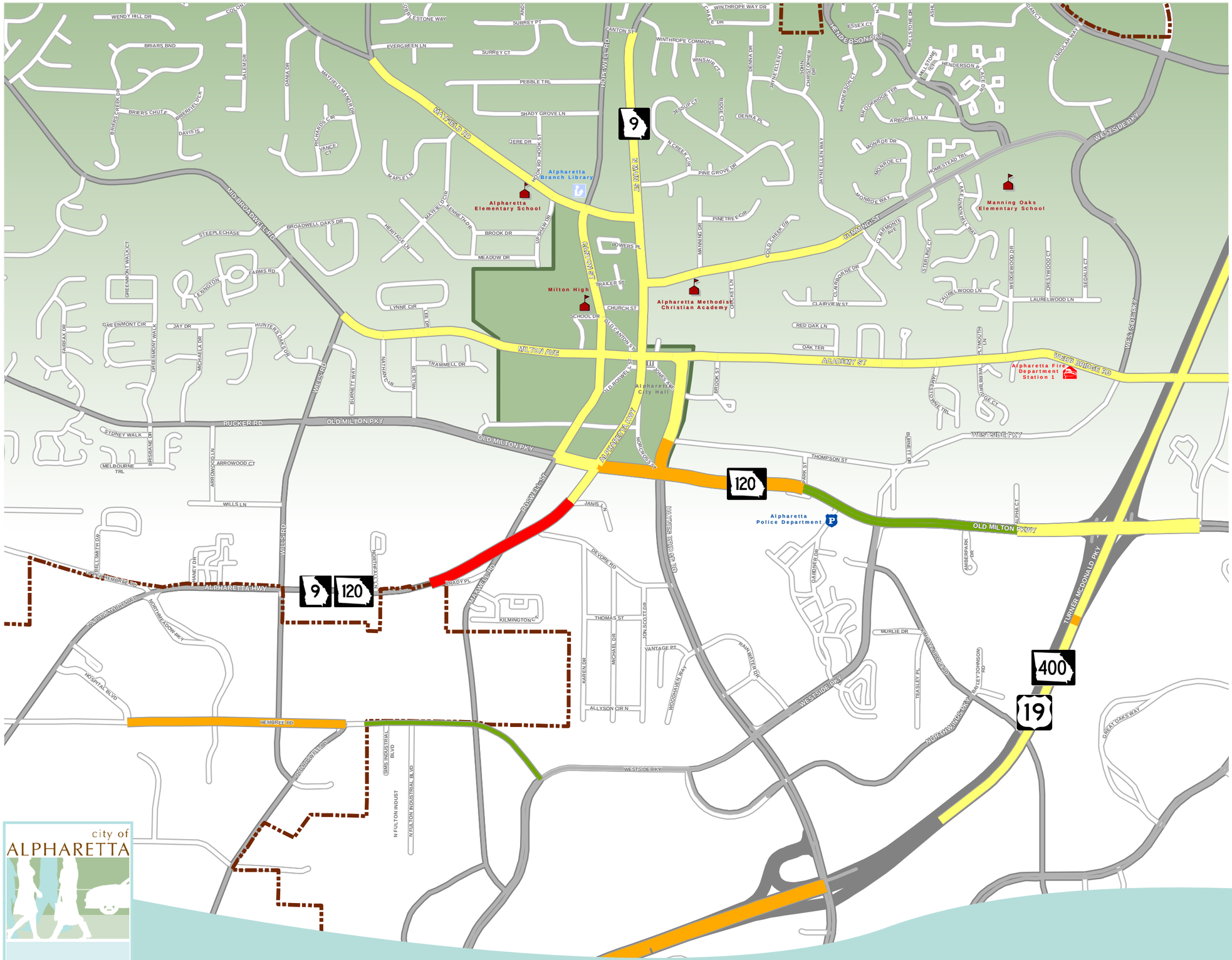
FIGURE 6
GENERALIZED EXISTING LEVEL OF SERVICE



LEGEND

Level of Service

- LOS C
- LOS D
- LOS E
- LOS F

Community Facilities

- Courthouse
- Fire Station
- Library
- Police Station
- School
- Alpharetta City Limits

Roadways

- Freeway
- Major Roads
- Local Street
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: URS Analysis

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Table 1
Existing Level of Service

Roadway	Location	GDOT Count Station	Existing Segment LOS
SR 9/South Main Street	Maxwell Road to Janis Lane	142	F
SR 9/South Main Street	SR 120/Old Milton Parkway to Jones Avenue	144	D
SR 9/South Main Street	Academy Street to Pine Grove Drive	146	D
SR 9/South Main Street	Canton Street to Windward Parkway	148	D
SR 120/Old Milton Parkway	SR 9/South Main Street to Haynes Bridge Road	306	E
SR 120/Old Milton Parkway	Park Street to Kimball Bridge Road	308	D
SR 120/Old Milton Parkway	Thompson Street to SR 400	310	C
SR 120/Old Milton Parkway	Big Creek Tributary to State Bridge Road	312	D
SR 400	Mansell Road to Haynes Bridge Road	458	E
SR 400	Haynes Bridge Rd. to SR 120/Old Milton Pkwy.	459	D
SR 400	SR 120/Old Milton Pkwy. to Windward Parkway	460	D
Rucker Road	Wills Road to North Hickory Trail	810	B
Milton Avenue	Wills Road to North Main Street	816	D
Haynes Bridge Road	SR 400 to Rock Mill Road	823	D
Haynes Bridge Road	SR 120/Old Milton Parkway to SR 400	824	D
Haynes Bridge Road	SR 120/Old Milton Parkway to Academy Street	826	D
Canton Street	Milton Avenue to Trailer Street	827	D
Canton Street	Mayfield Road to Shady Grove Lane	828	D
Webb Bridge Road	Wedgewood Road to Main Street	919	D
Mayfield Road	Providence Road to Canton Street	924	D
Cumming Street	North Main Street to Westside Drive	926	D
Hembree Road	Hembree Parkway to Old Roswell Road	6010	E
Morrison Parkway	Haynes Bridge Road to Old Roswell Road	6052	C

The results of the LOS analysis indicate that the majority of the downtown Alpharetta area currently experiences LOS D during the peak hour. However, inadequate levels of service are observed along segments on SR 9/South Main Street from Maxwell Road to Janis Lane, SR 120/Old Milton Parkway from South Main Street and Haynes Bridge Road, Hembree Road between Hembree Parkway and Old Roswell Road, and along SR 400 between Mansell Road and Haynes Bridge Road.

1.9 Safety

Roadway safety was evaluated through analysis of historic crash data available through GDOT's Critical Analysis Reporting Environment (CARE) database. A summary of the characteristics of crashes is presented in Table 2. The summary provides a profile of the severity, harmful event, weather, lighting, collision type, roadway conditions, and event location within the study area. Additionally, the annual average number of crashes occurring at intersections and the segment crash rates period were determined to identify critical intersection and mid-block crash locations within the study area.

Table 2
Crash Summary Profile

Severity	2004	2005	2006	2007	Grand Total
Non-Fatal Injury	61	55	61	39	216
PDO Crash	245	252	288	107	892
Grand Total	306	307	349	146	1108
Injuries	80	77	82	53	292
Harmful Event	**2004**	**2005**	**2006**	**2007**	**Grand Total**
Overturn		1	1	1	3
Other Non-Collision	1	2	1	1	5
Pedestrian	1			1	2
Pedalcycle	1				1
Parked Motor Vehicle	3		2		5
Motor Vehicle in Motion	290	290	335	141	1056
Other Object (Not Fixed)	2	1			3
Deer	1	4	1		6
Median Barrier	1				1
Highway Traffic Sign Post	1				1
Luminaire/Light Support			1		1
Utility Pole		3	2		5
Curb	1	3	2	1	7
Embankment		1			1
Tree	1		2		3
Other Fixed Object	3	2	2	1	8
Grand Total	**306**	**307**	**349**	**146**	**1108**
Weather	**2004**	**2005**	**2006**	**2007**	**Grand Total**
Clear	203	204	253	109	769
Cloudy	73	71	64	29	237
Rain	29	31	32	7	99
Sleet		1		1	2
Other	1				1
Grand Total	**306**	**307**	**349**	**146**	**1108**
Lighting	**2004**	**2005**	**2006**	**2007**	**Grand Total**
Daylight	256	257	301	133	947
Dusk	4	6	4		14
Dawn	6	1	7	1	15

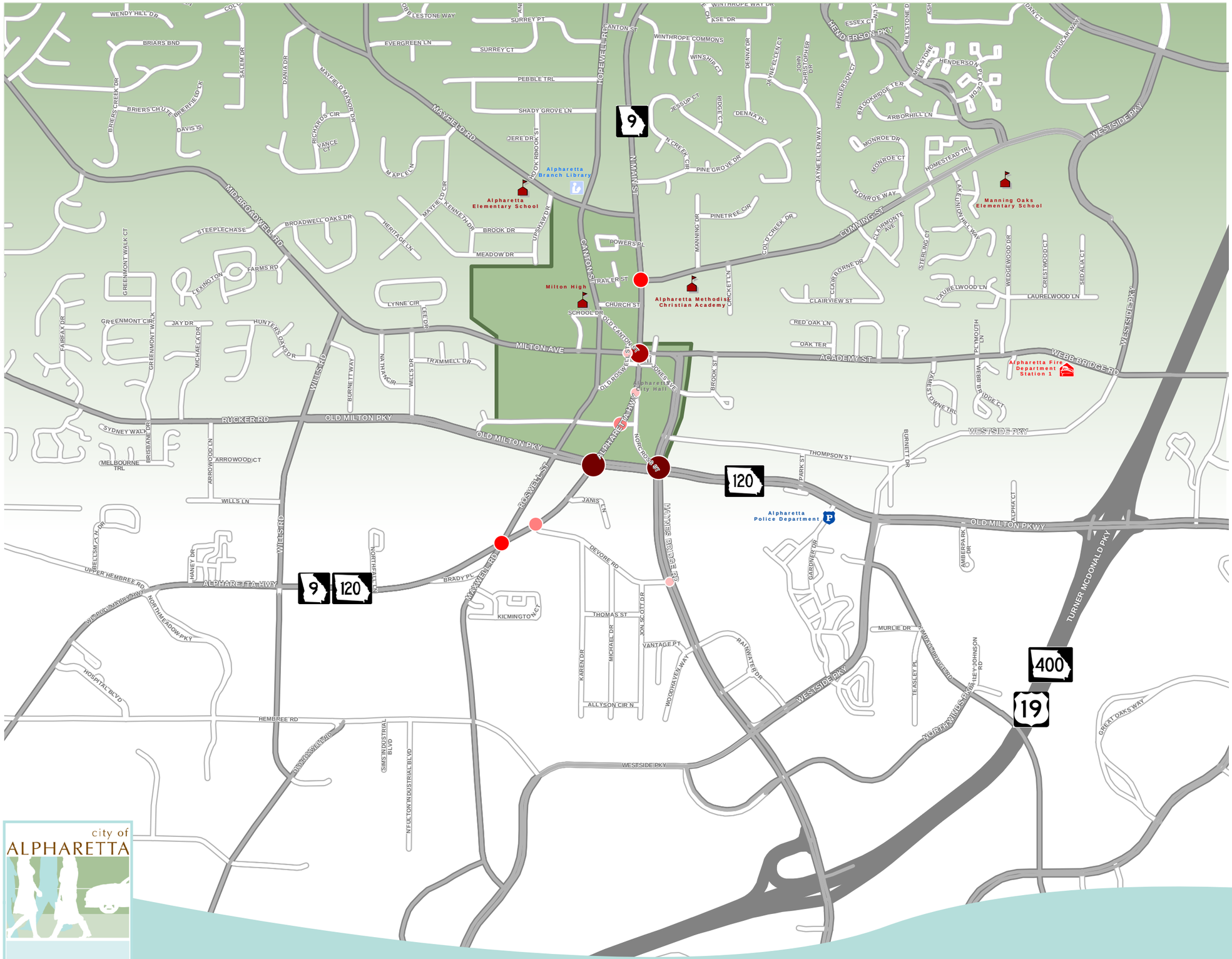
Dark-Lighted	38	37	31	11	117
Dark-Not Lighted	2	6	6	1	15
Grand Total	**306**	**307**	**349**	**146**	**1108**
Manner of Collision	**2004**	**2005**	**2006**	**2007**	**Grand Total**
Angle	86	91	112	44	333
Head On	12	4	6	5	27
Rear End	149	156	165	76	546
Sideswipe - Same Direction	38	36	47	11	132
Sideswipe - Opposite Direction	10	4	8	5	27
Not A Collision With A Motor Vehicle	11	16	11	5	43
Grand Total	**306**	**307**	**349**	**146**	**1108**
Event Location	**2004**	**2005**	**2006**	**2007**	**Grand Total**
On Roadway	297	294	336	142	1069
On Shoulder	2	5	3	3	13
Off Roadway	6	7	9	1	23
Median		1	1		2
Ramp	1				1
Grand Total	**306**	**307**	**349**	**146**	**1108**
Is Crash at Intersection?	**2004**	**2005**	**2006**	**2007**	**Grand Total**
No	68	93	98	48	307
Yes	238	214	251	98	801
Grand Total	**306**	**307**	**349**	**146**	**1108**
Roadway Condition	**2004**	**2005**	**2006**	**2007**	**Grand Total**
Dry	260	256	307	134	957
Wet	44	50	42	11	147
Icy	2	1		1	4
Grand Total	**306**	**307**	**349**	**146**	**1108**

Source: GDOT Care Data, 2004-2006 and through July 2007

1.9.1 High Frequency Intersection Crash Locations

The locations of critical intersections within the study area were identified based on crash frequency. Based on the annual average number of crashes occurring during a seven year period, between 2000 through 2006, the following top ten high frequency intersection crash locations were identified as critical intersections (see Figure 7 and Table 3).

FIGURE 7
HIGH FREQUENCY INTERSECTION CRASH LOCATIONS



LEGEND

Top 10 Intersections

Total Crashes

- 48 - 60
- 61 - 84
- 85 - 117
- 118 - 181
- 182 - 240

Community Facilities

- Courthouse
- Fire Station
- Library
- Police Station
- School

Roadways

- Freeway
- Major Roads
- Local Street
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: 2000 - 2006 CARE Data

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Table 3
Top 10 High Frequency Intersection Crash Locations

Rank	Intersection Location	Total No. of Crashes	Average No. of Crashes[1]
1	SR 120/Old Milton Parkway at Haynes Bridge Road	240	34.3
2	SR 9/South Main Street at SR 120/Old Milton Parkway	227	32.4
3	SR 9/South Main Street at Academy Street	181	25.9
4	SR 9/North Main Street at Cumming Street	117	16.7
5	SR 9/North Main Street at Roswell Street	108	15.4
6	SR 9/South Main Street at Marietta Street	84	12.0
7	SR 9/South Main Street at Devore Road	78	11.1
8	Haynes Bridge Road at Devore Road	60	8.6
9	Milton Avenue at Old Canton Road	59	8.4
10	SR 9/South Main Street at Norcross Street	48	6.9

Source: GDOT Care Database, 2000-2006
[1]Average per year over a seven-year period from 2000 through 2006

The largest number of intersection crashes was observed to occur at the intersection of SR 120/Old Milton Parkway and Haynes Bridge Road (240 crashes). As indicated in Figure 7, the higher frequency intersection crash locations, overall, appear to be concentrated at intersections along SR 9/Main Street in the central portion of the study area.

1.9.2 Segment Crash Rates

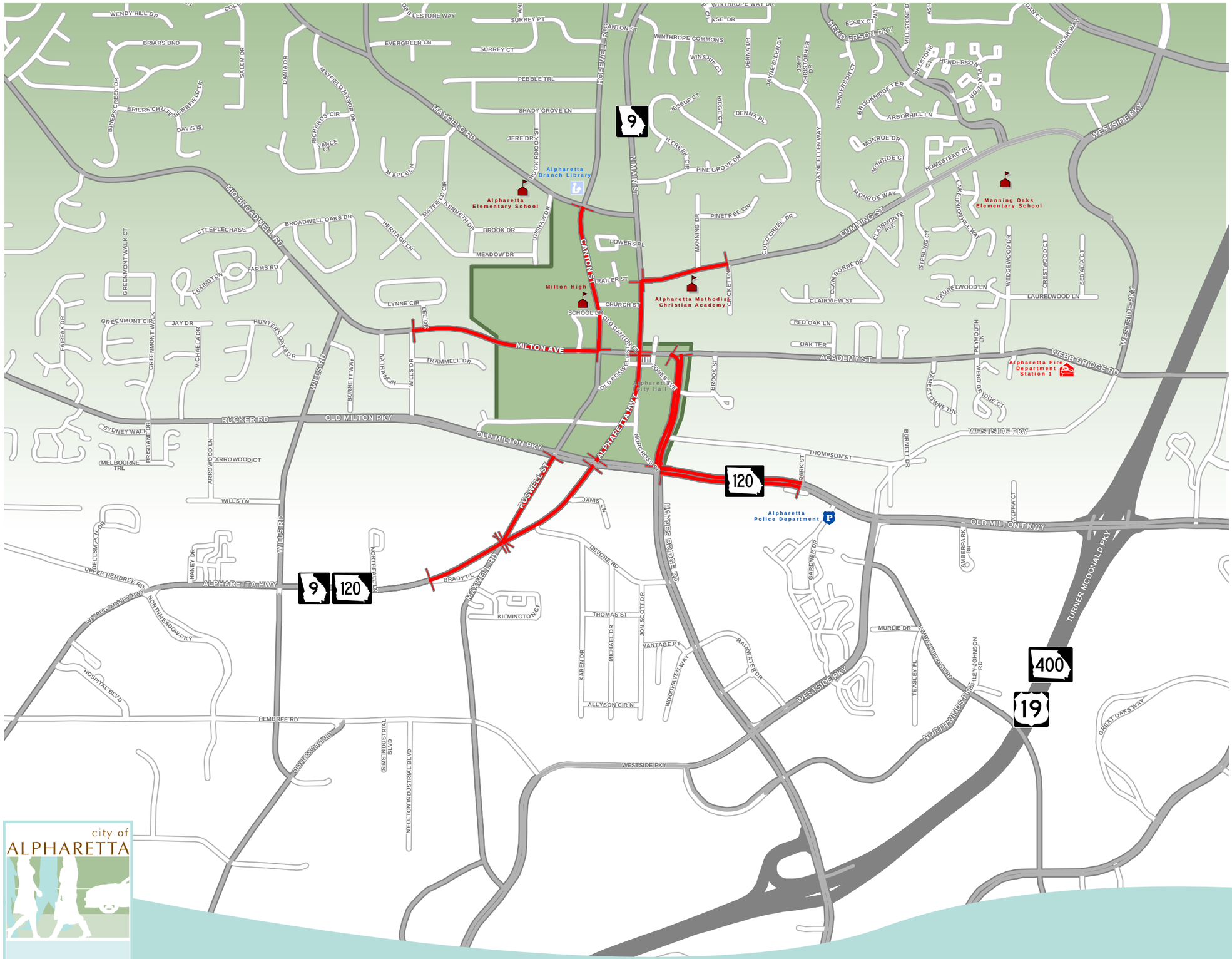
To determine the non-intersection (segment) crash locations, motor vehicle crash rates were computed. The critical roadway segments, within the study area, showing higher crash rates are identified as "hot spots". Hot spot locations are listed in Table 4 and illustrated in Figure 8.

Table 4
Top 10 Crash Hot Spots
Identified Based on Segment Crash Rate

Rank	Route Name[1]	From/To	Length (miles)	Average Daily Traffic	Crash Rate (Crashes per 100 MVM)[2]
1	Roswell Street	South Main St./Old Milton Pkwy.	0.39	1,650	1,887
2	SR 9	Old Milton Pkwy./Milton Avenue	0.31	29,140	927
3	SR 9	Milton Avenue/Cumming Street	0.18	27,330	851
4	SR 9	Brady Place/Roswell Street	0.3	34,170	772
5	Cumming Street	North Main Street/Cricket Lane	0.2	25,930	416
6	SR 120	Haynes Bridge Road/Park Street	0.27	16,270	355
7	Canton Street	Milton Avenue/Mayfield Road	0.32	35,480	322
8	SR 9	Roswell Street/Old Milton Pkwy.	0.4	8,260	291
9	Haynes Bridge Rd	Old Milton Pkwy./Academy Street	0.24	33,810	279
10	Milton Avenue	Wills Drive/Roswell Street	0.62	8,940	275

Source: GDOT Care Database, 2004 -2006 and available 2007 data (July-January)
[1] Locations are approximate
[2]MVM = Average crash rate in million vehicle miles

FIGURE 8
HIGH FREQUENCY HOTSPOT SEGEMENT CRASH LOCATIONS



LEGEND

- Top10 Hotspot Segments

Community Facilities

- Courthouse
- Fire Station
- Library
- Police Station
- School

Roadways

- Freeway
- Major Roads
- Local Street
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: 2000 - 2006 CARE Data

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The highest crash rates have been observed at expected locations within the study area. Specifically, the top three crash locations are SR 9/South Main Street at SR 120/Old Milton Parkway, SR 120/Old Milton Parkway at Haynes Bridge Road, and SR 9/South Main Street at Academy Street. It can be implied these intersections rank high due to the large volumes of turning movements occurring during morning and evening peak hours.

1.10 Public Transit (routes, service characteristics, and ridership)

The Metropolitan Atlanta Rapid Transit Authority (MARTA) provides fixed route transit service to the City of Alpharetta by means of three bus routes, Route 140, 143, and 185.

Route 140 Bus at Park & Ride

Route 140 – North Point/Mansell Road Park/Ride

From the North Springs rail station traveling along SR 400, Route 140 travels to the Mansell Park and Ride lot located at the southwest quadrant of the SR 400/Mansell Road interchange. Major destinations served by this route include the North Point Mall, North Point Market Center, Georgia State University North Campus, Regency Park, and the Chubb Institute.

Route 143 – Windward Park/Ride

From the North Springs rail station, Route 143 travels along SR 400 to the Windward Park and Ride Lot. The route's full circuit includes a loop along McGinnis Ferry Road.

Route 185-Alpharetta/Holcomb Bridge Road

Traveling southwest to northwest, this route follows SR 400 to Holcomb Bridge Road then turns north along Alpharetta Highway (Main Street within the Alpharetta city limits). Route 185 proceeds due east and crosses SR 400 along Windward Parkway to North Point Parkway. Route 185 serves the Mansell Business Center, Roswell Market Place, North Fulton Regional Hospital, Alpharetta City Hall, and the Windward Park and Ride Lot.

A summary of operating characteristics, including points of interest served and average weekday stop level passenger boardings are presented by route in Table 5 for the purpose of describing current transit utilization. The transit routes with stop locations are illustrated in Figure 9.

Public transportation service to Alpharetta includes Park and Ride lots at Windward Parkway and SR 400 and the SR 400/Mansell Road interchange. These lots provide facilities for commuters to connect with the MARTA bus and rail systems.

The parking capacity of the Windward Parkway Park and Ride Lot is 502 spaces. MARTA bus routes serving this location are: 140 Northpoint/Mansell Park and Ride; 143 Windward Park and Ride, and; 185 Alpharetta/Holcomb Bridge Road.

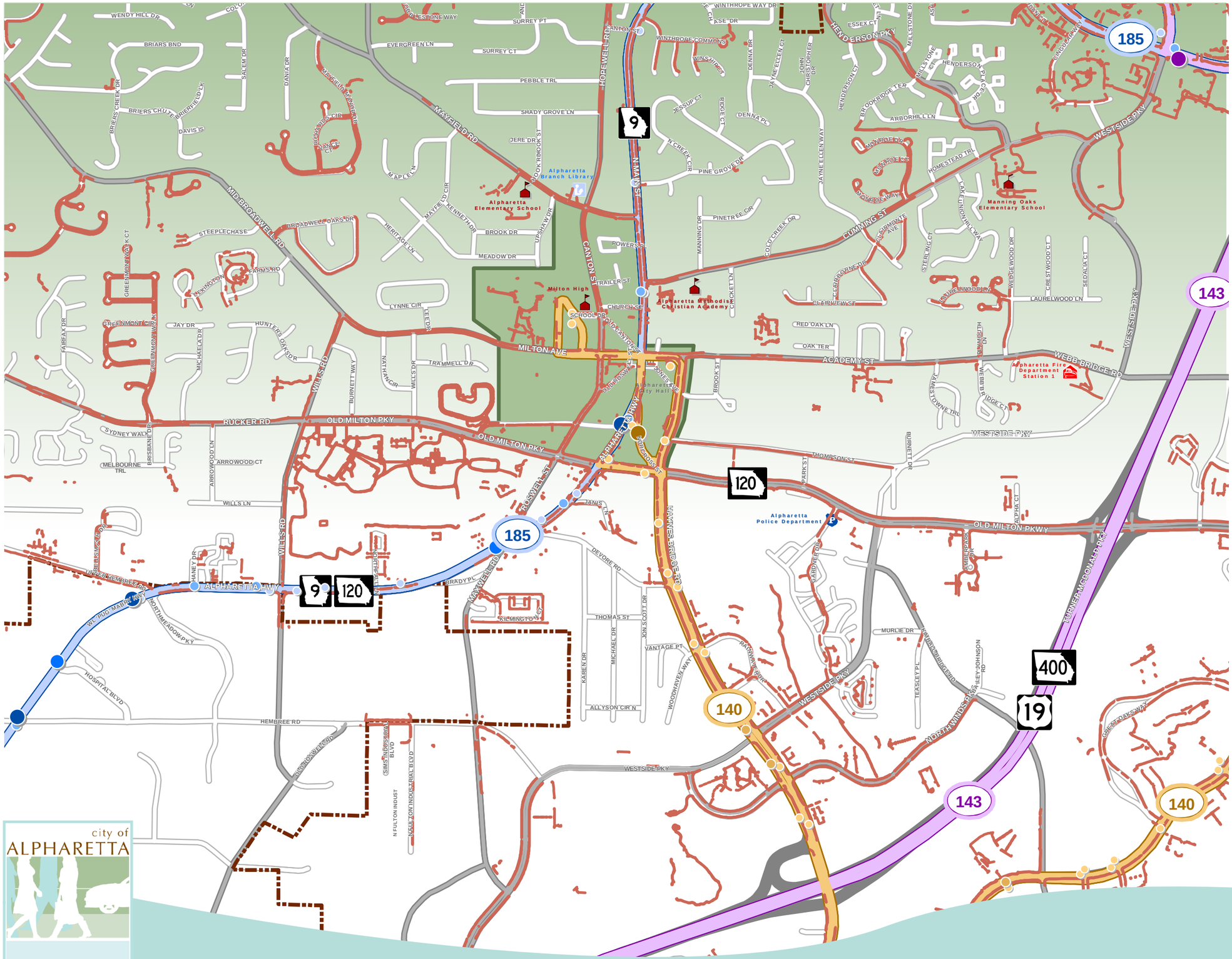
The parking capacity of the Mansell Road Park and Ride Lot is 438 spaces. MARTA bus routes serving this location are Route 85 Roswell/Mansell Road and 140 Northpoint/Mansell Park and Ride Lot.

Table 5
MARTA Route Operating Characteristics

Route	Major Destinations Served	Days of Operation	Hours of Operation	Operating Frequency (Minutes)[1]	Average Weekday Ridership (2007)[2]
Route 140: North Point/Mansell Road Park/Ride	➢ Windward Parkway Park and Ride Lot ➢ Mansell Road Park and Ride Lot ➢ N11 North Springs Rail Station ➢ Independence High School ➢ South Main and Academy Streets ➢ North Point Mall ➢ North Point Market ➢ GSU North Campus ➢ Regency Park ➢ Chubb Institute	Mon. – Fri.	6:00 a.m. – 12:30 am.	Peak: 15 Off Peak: 20	1,703
		Sat. – Sun.	6:00 a.m. - 12:30 a.m.	Peak and Off Peak: 40	
Route 143: Windward Park/Ride	➢ N11 North Springs Station ➢ Windward Parkway Park and Ride	Mon. – Fri.	5:30 a.m. 8:04 p.m.	Peak: 20 Off Peak: 20	662
		Sat. – Sun.	No Weekend Service		
Route 185: Alpharetta/Holcomb Bridge Road	➢ N11 North Springs Station ➢ Windward Parkway Park and Ride ➢ North Fulton Regional Hospital ➢ Alpharetta City Hall ➢ Roswell Market Place ➢ Mansell Business Center	Mon. – Fri.	4:55 a.m. – 1:05 am.	Peak: 23-30 Off Peak: 30-37	1,545
		Sat. -Sun.	5:27 a.m. - 12:50 a.m.	Peak: 33-44 Off Peak: 30-47	

Source: MARTA 2008 bus schedules and stop level ridership
[1]Where operating frequency varies during peak and off peak periods, it is summarized as a range.
[2]MARTA Bus Ridership was based on passenger boardings based on August 2007 markup.

FIGURE 9
STUDY AREA TRANSIT ROUTES



LEGEND

Route 140 Ridership
- 0 - 5
- 6 - 15
- 16 - 30
- 31 - 60

Route 143 Ridership
- 2 - 5
- 6 - 15
- 16 - 30
- 31 - 60

Route 185 Ridership
- 2 - 5
- 6 - 15
- 16 - 30
- 31 - 60

Existing Sidewalks

MARTA Bus Routes
- 140
- 143
- 185

Roadways
- Freeway
- Major Roads
- Local Street
- Alpharetta City Limits
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: MARTA; City of Alpharetta

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A comprehensive plan helps to set the overall future direction for a municipality. Recognizing the importance of comprehensive planning, the City of Alpharetta has established its own long-range plan for guiding development in the City for the next twenty years. The overall goal of the plan is to accommodate development through the timely, orderly, and efficient arrangement of land uses and public facilities and services that meet the needs of the present and future population of Alpharetta.

To accomplish this, the City, through their Comprehensive Planning efforts, has established guiding principles for transit that include:

- Identifying one or more locations for internal circulator services;
- Providing linkages to connect sidewalks to public transportation; and
- Providing bus shelters to encourage and accommodate use of public transportation.

In addition to the City's comprehensive planning efforts, other organizations have developed plans and policies, with potential impacts to Alpharetta, to address the more overarching regional issues related to transportation. At the regional level, the Transportation Planning Board (TPB) is working to create a seamless, multi-modal regional transportation system that relieves congestion and improves air quality for the Atlanta region. The TPB is a joint venture of MARTA, the Atlanta Regional Commission (ARC) and the Georgia Regional Transportation Authority (GRTA). The TPB, as part of their development of a comprehensive plan for transit investment in the Atlanta Region, recently put forth “Concept 3”, a conceptual regional transit plan that proposes arterial Bus Rapid Transit (BRT) along SR 120 through Alpharetta from the City of Dallas in Paulding County to Lawrenceville in Gwinnett County. It also includes a MARTA heavy rail extension from its current terminus at the North Springs Station to Windward Parkway. The TPB’s Concept 3 also envisions Freeway BRT service along SR 400 from the proposed Windward Station to Cumming, Georgia.

1.11 Planned/Programmed Transportation Projects

The planned and programmed transportation improvement projects that are part of the Atlanta Regional Commission’s Envision6 Regional Transportation Plan (RTP) and the FY 2008-2013 Transportation Improvement Program (TIP) were reviewed to identify projects with potential impact to this study. Three programmed projects from the TIP were identified having relevance to the Downtown Alpharetta Circulation Study (see Table 6 and Figure 10).

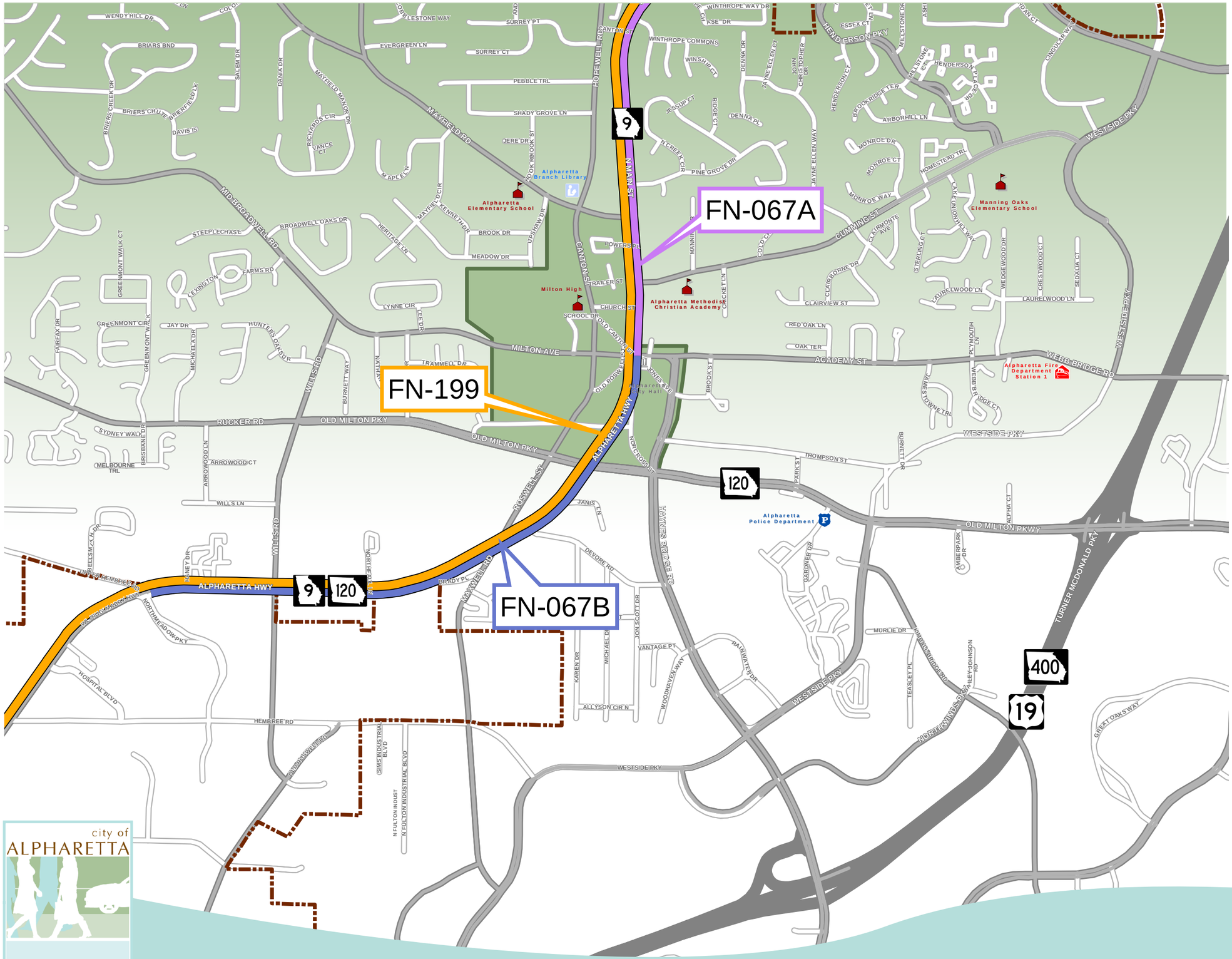
The Georgia Department of Transportation’s (GDOT’s) database was reviewed to identify other projects with potential relevance to the study area. No Statewide Transportation Improvement Program (STIP), Construction Work Program (CWP), or Fast Forward Congestion Relief projects were identified.

Table 6
Transportation Improvement Program Projects

ARC Number	GDOT Project #	Project Type	TIP/RTP Status	Project Description	Sponsor	Project Length (mi.)	Network Year	Total Cost
FN-067A	721780	Roadway Capacity (Widening from 2 to 4 Lanes)	Long Range	SR 9 (North Main Street) from Academy Street to Windward Parkway	GDOT	1.97	2030	$16,023,600
FN-067B[1]	721790	Roadway Capacity (Widening from 2 to 4 Lanes)	Long Range	SR 9 (South Main Street) Upper Hembree Road to Academy Street	GDOT	1.7	2030	$12,318,000
FN-199	0006727	ITS-Smart Corridor	Programmed	SR 9 ATMS Abernathy Road to Forsyth County Line	City of Sandy Springs	12	2010	$3,500,000

Source: Envision6 Regional Transportation Plan and FY 2008-2013 Transportation Improvement Project Lists
[1]This project may be listed inaccurately in the RTP and/or TIP.

FIGURE 10
ENVISION6 REGIONAL TRANSPORTATION PLAN PROJECTS



LEGEND

Study Area Envision 6 Projects

- FN-067A
- FN-067B
- FN-199

Roadways

- Freeway
- Major Roads
- Local Street
- Alpharetta City Limits
- LCI Study Area

0 250 500 1,000 1,500 2,000 Feet

Source: ARC Envision6; 2008

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2.0 Transportation and Land Use System Assessment

Alpharetta's progressive and proactive approach to planning and development has been successful in maintaining overall quality of life by attracting and sustaining growth. The City's existing red light camera program and its planned signal interconnect projects are being implemented and provide a means for managing traffic safely and efficiently. Public parking, sidewalks, crosswalks, directional signage, and other amenities are provided to serve the traveling public. Also, the City is well served in terms of the types and number of major thoroughfares within its boundaries. Overall, the inventory of the transportation system indicates a robust network within and surrounding the downtown Alpharetta study area, however some transportation issues and needs, as described in previous chapters, are unmet; thus, opportunities exist for addressing a broad spectrum of transportation issues and needs identified as result of the transportation inventory and assessment:

- Implement strategies for addressing peak hour LOS/congestion
- Improve traffic circulation by consideration of options (e.g. routing)
- Balance the need to accommodate a high volume of vehicular traffic within and through the study area with the needs of the downtown area and of pedestrians, cyclists and transit users
- Enhance connectivity for all modes from downtown Alpharetta to other activity centers within the region
- Consider parking management options such as shared parking, to more effectively manage parking
- Consider promoting better access management strategies
- Provide additional wayfinding/kiosks to direct patrons to parking options and to major downtown destinations
- Consider installing directional signage to advertise area destinations
- Identify means to minimize the frequency and severity of motor vehicle crashes
- Add transit amenities such as bicycle and pedestrian access, bus shelters, benches, receptacles, service and schedule information at existing bus stop locations
- Consider how transit can better serve the downtown area (e.g. shuttles linking the downtown district with major employment centers and malls)

3.0 Urban Design

The "downtown" of Alpharetta is located at the crossroads of Main Street and Milton Avenue/Academy Street. The historic downtown core borders Main Street from its intersection with Norcross Street on the south to Church Street on the north. The approximate ¼ mile stretch of Main Street includes the City Hall, Visitor's Center, several historic 2-story retail buildings, a few smaller one-story retail buildings, and one new retail development built to look like older architecture. Milton Avenue from Main Street to Roswell Street contains a significant block of historic retail buildings; some occupied, some for sale, and some in search of tenants. The strength of the historic downtown core is its two to three blocks of older buildings with strong street presence (buildings at the back of the sidewalk), the attractive downtown streetscaping along Main Street and Milton Avenue, and the continued presence of important civic facilities such as City Hall and the Visitor's Center.

The area along South Main Street from Old Milton Parkway to the intersection of South Main Street and Norcross Street is occupied by more modern retail catering to the driver including a Publix

grocery store, fast-food restaurants, and other retail buildings (new and old) with parking between the roadway and building entrances.

Beyond Main Street are four major land uses:

1. The religious institutions to the northeast of the intersection of Main Street and Academy Street bring a significant number of patrons to the downtown area, but lack good pedestrian connectivity to the shops and retailers on Main Street and Milton Avenue.
2. The former site of Milton High School now accommodates Independence Alternative School and Connected Academy, alternative education facilities for north Fulton County.
3. A large cemetery faces the school site on the south side of Milton Avenue.
4. Southwest of downtown along Marietta Street, two newer residential developments (one attached, one single family detached, but both more dense than traditional residential developments) began the trend of residential redevelopment around the historic downtown, bringing a larger number of Alpharetta residents within walking distance of the historic downtown core.

The remainder of the study area includes a number of transitioning properties. Some properties have transitioned from residential to commercial on more heavily traveled roadways. Several areas along Canton Street near the school site are being transformed into denser residential developments. Low-density (one acre and larger) single family homes throughout the study area are subject to market pressure and potential assembly and/or redevelopment.

In light of the existing historic downtown core and modern development trends and styles, it will be important to identify where and how the historic downtown core can reasonably expand over the next 10-20 years while concentrating on reinforcing the economic health of downtown Alpharetta. Continued enhancement of roadway crossings, the pedestrian environment, and architectural design will be necessary to maintain the historic character of the downtown core. Based on the limited building heights appropriate in historic downtown areas like Alpharetta, consistent building character and avoiding “gaps” along retail/office streets will also be extremely important to sustaining the area.

In the next phase of work, the Team will identify specific development opportunity parcels as part of the downtown circulation strategy. Recommendations concerning the potential development character of those parcels to enhance the downtown area and environment will be discussed.

3.1.1 Existing Land Use

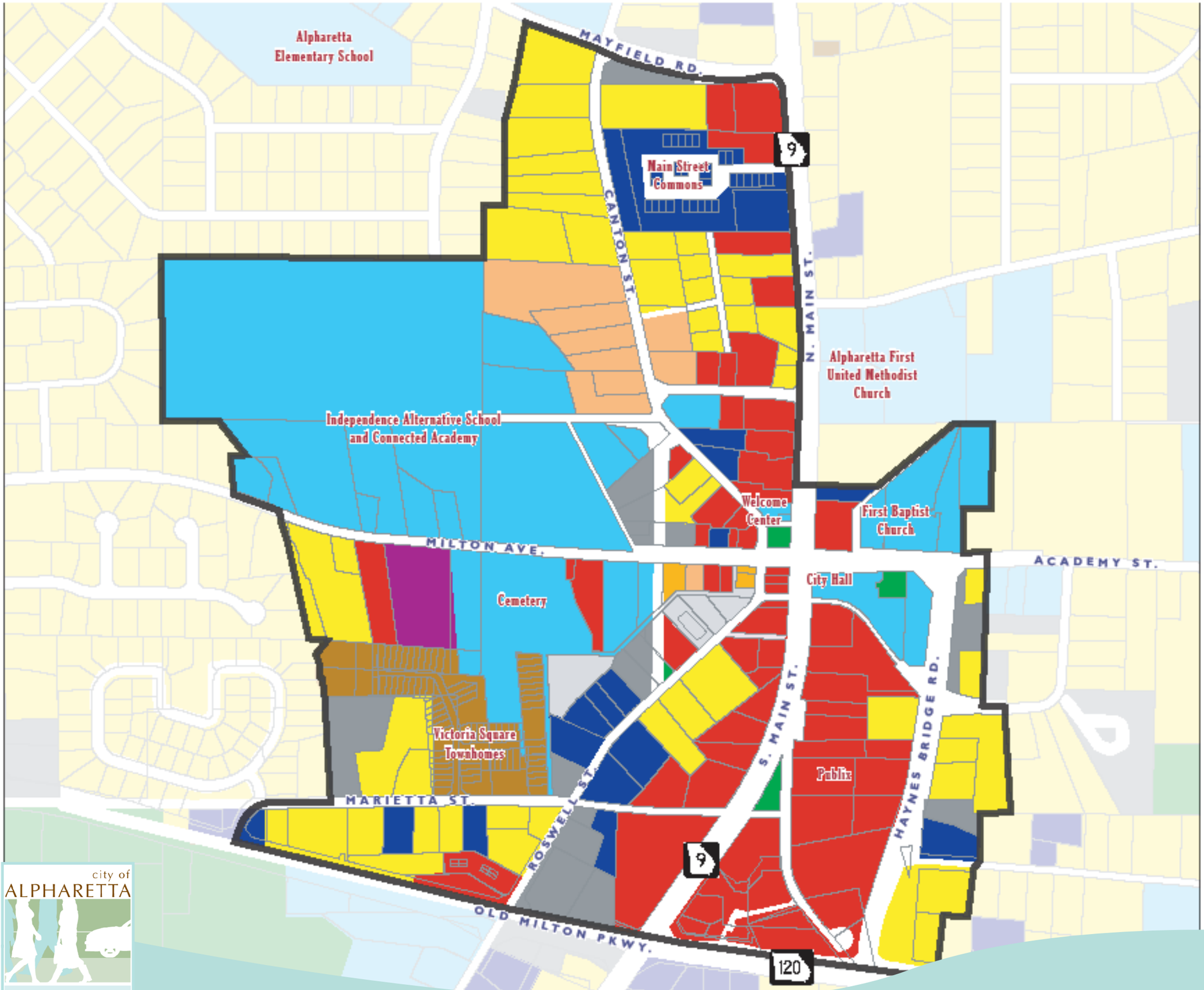
Figure 11 shows the existing land use map which graphically displays by color the current use of each property within the study area as of January 2008. As detailed in the Urban Design Character section above, Main Street is bordered almost exclusively by retail and civic/institutional properties. The block including and to the southeast of City Hall is the subject of a City Center development planned for 2008. The Canton Street area north of Milton Avenue is largely residential including a variety of older single family homes and several proposed and new multi-family residential developments. Main Street Commons, a newer office park is located between Canton Street and North Main Street just south of Mayfield Road.

Milton Avenue includes the old Milton High School site, the Cemetery and the study area’s only light industrial use. South of Milton Avenue, the Roswell Street corridor includes a number of older

homes and buildings that have been converted to small office space. Marietta Street includes some older residences and Victoria Square, a new attached townhome development.

While the study area as a whole includes a mix of civic, retail, office, and residential properties, enhanced walkability and potential for some vertical mixed-use properties could enhance the vitality of the downtown area and build the critical mass necessary for the long term success of downtown retailers.

FIGURE 11
EXISTING LAND USE



LEGEND

- LCI Study Area
- Retail Sales & Services
- Office Professional
- Light Industrial
- Public Parking
- Parking
- Mixed-Use
- Parks / Recreation / Conservation
- Multi-Family Residential
- Single Family Residential
- Undeveloped
- Under Construction / Proposed Development

0 250 500 1,000 1,500 2,000 Feet

Source: Urban Collage

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3.1.2 Zoning

Current zoning regulations in downtown Alpharetta reinforce the commercial development found on Main Street, Milton Avenue, and Roswell Street. A current zoning map is shown in Figure 12. Residential zoning classifications (R-10 multi-family and R-15 single family) and special use zoning (SU) make up most of the remainder of the study area.

The City of Alpharetta Unified Development Code includes a mixed-use (MU) zoning category within the framework of a development master plan. The district allows greater design flexibility, but includes specific use minimums and maximums for residential, commercial and office retail portions of the development and requires a provision of a minimum of 10 percent of the gross land area for public space. The development code also defines a Central Business District and Historic Business District where other zoning requirements (off-street parking for example) are waived or modified.

In 2005, the City of Alpharetta created a Downtown Incentive Zoning District to encourage development and/or redevelopment of properties in Historic Downtown Alpharetta. The Downtown Overlay was based upon the City's 2003 Downtown Master Plan with the purpose of making Downtown Alpharetta a premiere destination by encouraging a mix of uses (shopping, living, employment, recreation and entertainment) in a pedestrian-friendly environment. The boundary of the Downtown Incentive Zoning District is the same as the Study Area for this effort, with the exception of the exclusions of the First Baptist Church property on Academy Street and properties to the east side of Haynes Bridge Road from the zoning overlay.

The incentive zoning classification can be elected for a district property at the developer's request (an HD designation is added to the applicable zoning classification). The incentive district allows for increases in maximum building heights, reductions in required setbacks, reduction in parking requirements and increases in residential density over the existing zoning to enhance the mixed-use nature of Downtown Alpharetta. Subject properties and projects who elect the incentive zoning classification incur a reduced number of permitted uses and are subject to greater architectural design guidelines and streetscape guidelines to enhance building character and the pedestrian environment in the downtown area. The downtown overlay also identifies and seeks to preserve specimen trees in the Historic District.

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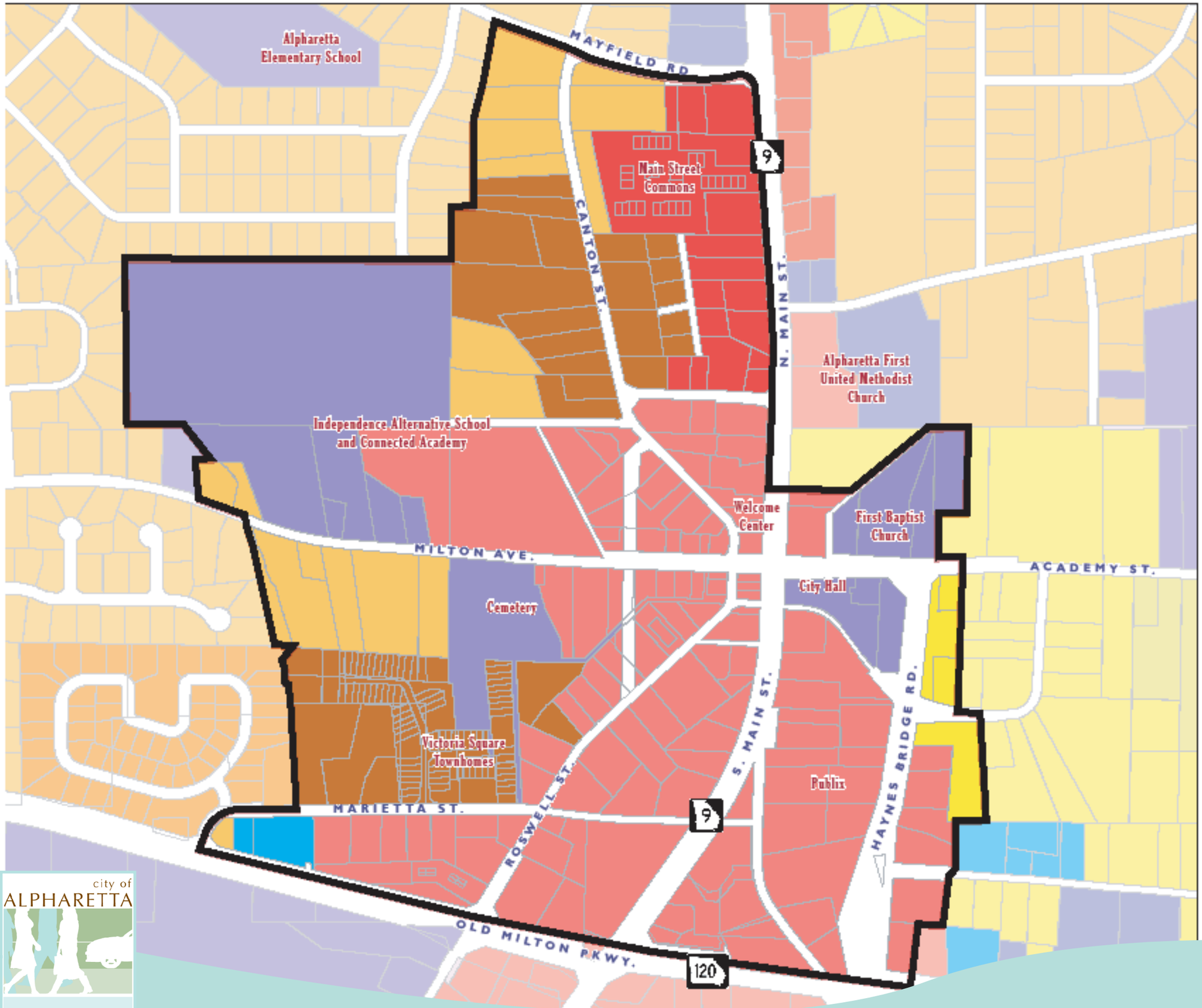
FIGURE 12
CURRENT ZONING



LEGEND

- LCI Study Area
- C - 1 Neighborhood Commercial
- C - 2 General Commercial
- O - P Office Professional
- R - 10M Multi Family Residential
- R - 12 Single Family Residential
- R - 15 Single Family
- SU Special Use

0 250 500 1,000 1,500 2,000 Feet

Source: Urban Collage

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4.0 Pedestrian and Bicycle Facilities

To analyze existing conditions for bicycles and pedestrians in downtown Alpharetta, the Team reviewed maps, aerial imagery and conducted site visits to inspect conditions on the ground. In general, longitudinal walking conditions are good; most streets have sidewalks on both sides, while there are isolated examples of sidewalks on one side only. Crossing conditions are more challenging, however. Heavy traffic volumes and continuous turning movements at several intersections make pedestrian crossing a daunting task while a lack of mid-block crossing opportunities along Main Street inhibits circulation between businesses, parking, and transit stops on opposite sides of the street. Bicycling conditions are also very challenging, both within the downtown area and extending out to the principal destinations of Wills Park, the North Point LCI district and the northern terminus of the Big Creek Greenway on Webb Bridge Road. While it is possible to ride in the streets with traffic, there are very limited accommodations for bicyclists who do not feel comfortable doing so.

5.0 Pedestrian Conditions

5.1 Sidewalk Coverage

Most streets in the core study area have sidewalks on both sides of the street. Selected streets in the district immediately bounded by Main, Canton, Roswell, and Old Roswell Streets have attractive streetscape elements including wide sidewalks of brick-like paver stones (Figure 13). A few streets have no sidewalk on one side; these include the north side of Marietta Street between Roswell Street and Wilshire Glen, the west side of Old Canton Street, and the north side of Church Street. Sidewalks on the south side of Milton Avenue give way to commercial driveways between the cemetery and Roswell Street. There are no sidewalks on either side of Marietta Street between Roswell Street and South Main Street. While inconvenient, these gaps do not seriously inhibit pedestrian connectivity within downtown Alpharetta.

5.2 ADA Issues

While a full audit of ADA compliance is not within the scope of this project, it is worth noting that many non-compliant facilities were observed during the Team's site visit, including excessive cross slopes at driveway crossings and the absence of tactile warning strips at curb ramps. The attractive brick and paver-block walkways noted above can induce uncomfortable vibrations for some wheelchair users.

5.3 Pedestrian Crossings

Areas of concern with regard to pedestrian crossing are the continuous turn lanes from eastbound Academy Street to southbound Haynes Bridge Road, and from westbound Old Milton Parkway to southbound Haynes Bridge Road, as well as the high volume of right-turn-on-red movements from westbound Academy Street to northbound North Main Street. The signage reminding the continuous turn movements to "Keep Moving" at these locations create confusion regarding who must yield at the crosswalks. Even though there are advance signs reminding motorists of their legal duty to stop for pedestrians, the "Keep Moving" signs are situated right at the crossing location and seem to undercut the legal duty to yield at that location (Figure 14). It should also be noted that the control cabinet for the traffic signals at the intersection of Academy Street and Haynes Bridge Road inhibits visibility between pedestrians attempting to cross to the southwest divider island and motorists turning south onto Haynes Bridge from eastbound Academy Street (Figure 15).

Figure 13
Attractive Streetscapes

Figure 14
Keep Moving Sign

Figure 15
Signal Control Box

Also of concern is the lack of safe mid-block crossing opportunities along South Main Street. There are signalized crossings at Academy Street and Old Milton Parkway, but no signalized, marked, or enhanced crossings in the 1,800 feet in between. Pedestrians were observed crossing South Main Street at locations along this stretch, often with urgency to catch a bus. Improved crossings in these areas would greatly enhance connectivity within the downtown area, particularly between the parking lots west of South Main Street and any future developments to the east. Crossing improvements could also improve connectivity to the Publix store from the west as well as between bus stops on the west side of South Main and the layover station on Norcross Street.

6.0 Bicycling Conditions

6.1 On-Street Facilities

There were no bicycle-specific facilities along any of the roadways in the core study area. Riders are left to negotiate traffic on the street as allowed according to Georgia law. Given the high traffic volume on the primary roadways in the study area, it is likely that only those experienced with riding in traffic would feel comfortable doing so.

6.2 Off-Street Facilities

The Team did observe several examples of eight-foot wide sidewalks. The Team is uncertain of the history of the sidewalks and if they are intended to serve as bicycle facilities. These sidewalks can accommodate some cyclists, but it is important to note that they are not designed as bicycle facilities; they are wide sidewalks. The minimum width recommended for a two-way pathway is eight feet according to the AASHTO *Guide for the Development of Bicycle Facilities*[1], which allows for such widths only where certain criteria are met, including locations where both pedestrian and bicycle traffic are expected to be minimal (p. 36). Nevertheless, these sidewalks are found along both sides of Old Milton Parkway (west of South Main Street), the west side of Canton Street (between Old Canton Street and Mayfield Road), the north side of Milton Avenue (from Canton Street to the west end of the Independence Alternative School campus), the east side of Roswell Street between Old Milton Parkway and Old Roswell Street, and the east side of Haynes Bridge Road (between Old Milton Parkway and Academy Street). The brick and paver-stone sidewalks described in the pedestrian section above are also predominantly eight feet wide, but it is especially problematic to designate wide sidewalks as bicycle facilities in these areas, given their higher expected levels of pedestrian activity.

6.3 Bicycle Parking

It is worth noting that bicycle parking was not observed by the Team anywhere except at the Alpharetta Public Library and on the campus of the Independence Alternative School. None was observed at retail destinations such as Publix nor anywhere associated with the public parking lots along Old Roswell Street or on the sidewalks of Milton or Main Streets. The bicycle parking at the library was a considerable distance from the entrance and on the day of the field visit was occupied by an abandoned luggage cart (Figure 16). Neither the rack at the library nor the one at Independence Alternative School were of the kind recommended by the Association of Bicycle and

[1] AASHTO, *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials, Washington, D.C., 1999. Often referred to as the AASHTO *Bike Guide.*

Pedestrian Professionals[2], which lend themselves easily to securing both the front wheel and the frame, preferably with a U-style lock.

6.4 Connectivity to Nearby Destinations

The Team was requested to examine bicycle connections from downtown to three destinations: Wills Park, the northern terminus of the Big Creek Greenway (on Webb Bridge Road), and the North Point Mall LCI study area. Access to Wills Park from downtown is relatively good if one makes use of the wide sidewalks along Roswell Street, crosses Old Milton Parkway at the signal, and proceeds west using the wide sidewalk on the south side of Old Milton Parkway. The advisability of using the wide sidewalk will diminish, however, if usage of this route becomes common for either bicycles or pedestrians (see above for discussion of the limitations of eight-foot "pathways").

Access to Big Creek Greenway along Academy Street and Webb Bridge Road is presently achieved via the riding in the roadway, which is marked with D1-11 ("Bike Route") and R4-4 ("Begin Right Turn Lane, Yield to Bikes") signs. A narrow shoulder of variable width (less than what the AASHTO *Bike Guide* establishes as the minimum width for a designated bike lane) is provided on the eastbound lane only and only as far as the bridge over SR 400 (Figures 17A and 17B). This facility designation strategy suffers from the fact that the D1-11 sign is a directional sign, meant for use at decision-making points along a trip, rather than on an intended straightaway. The result of the signage deployed along this roadway may be to alert motorists of the likely presence of bicycles, but is not clear that it actually provides significant wayfinding information to bicyclists.

Access to the North Point Mall is difficult. There is an 8-foot sidewalk on the east side of Haynes Bridge Road from Old Milton Parkway to SR 400, but the problems associated with 8-foot pathways remain a concern. General concerns about the safety of sidepaths (enumerated in the AASHTO *Bike Guide)* are especially acute in this area given the size and frequency of intersections with both commercial driveways and busy roadways along this stretch. Another route possibility is via Roswell Street to Maxwell Road to Westside Parkway and Encore Parkway. There is an eight-foot wide sidewalk along Westside Parkway, but otherwise this route is traversed in the roadway.

6.5 Summary

There is a skeleton of a good network for walking and biking in downtown Alpharetta, but could stand some thoughtful improvements. Sidewalk coverage is almost complete; targeted investments toward maintenance and ADA-compliance upgrades will be necessary to keep the network current with demand and regulatory requirements. Crossing conditions are a concern, especially at locations with heavy continuous turning movements and along South Main Street, where planned redevelopment projects will likely increase pedestrian traffic back and forth. Conditions for bicycling are more problematic. The system of wide sidewalks can serve very low levels of bicycle traffic, but will need careful improvement of either bicycle or pedestrian traffic is to increase measurably. These "pathways" can provide access for light traffic between downtown and Wills Park. Bicycle access to the Big Creek Greenway and the North Point Mall area are both hampered by traffic conditions that many cyclists will find uncomfortable and a lack of clearly designated bicycle facilities.

[2] APBP, *Bicycle Parking Guidelines*, Association of Pedestrian and Bicycle Professionals, Cedarburg, WI.

Figure 16 Bicycle Parking
At Alpharetta Public Library

A

B

Figures 17A and 17B
Variable Shoulder Width
Along Academy Street

Attachment 11c:

Joint GDOT & Alpharetta PIOH Display

CONCEPT PLAN – MAY 2010

FULTON COUNTY
WIDENING AND RECONSTRUCTION

S.R 9 /S. MAIN ST. @ UPPER HEMBREE RD
TO S.R. 9 /N. MAIN ST.@ WINDWARD PKWY

PROJECT No.: STP–114–1(84) & (85)

PEMAS011401084 & PEMAS011401085

P.I. No.: 721780 & 721790

POND
Architects-Engineers-Planners
3500 Parkway Lane
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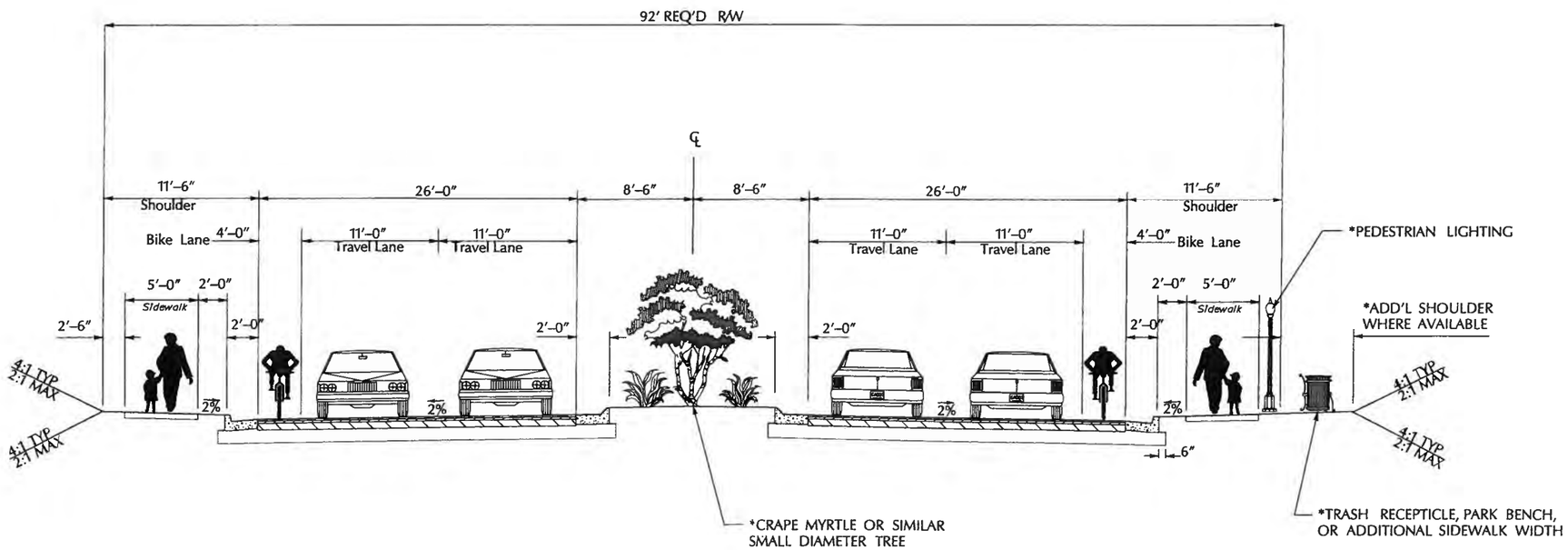
Web www.pondco.com



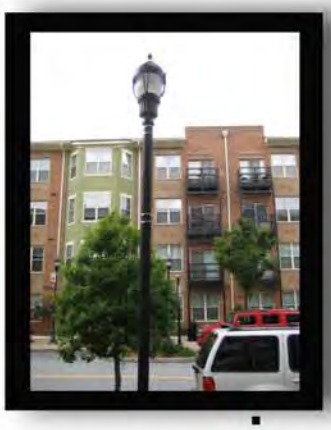
*ADDITIONAL RIGHT OF WAY AND STREETSCAPING POSSIBILITIES REQUIRE COORDINATION AND FUNDING FROM THE CITY OF ALPHARETTA

TYPICAL SECTION

State Route 9 Potential Design Elements:

Street Furniture, Ornamental Roadway Lighting, and Pedestrian Lighting

*Incorporation of the elements creates a safe and inviting pedestrian environment and enhances corridor aesthetics, through downtown Alpharetta.



Main Street Typical Section - Concept Layout

Wayfinding Signage

Proposed signage will direct visitors to the downtown amenities.

Creates a sense of place.

*Will be coordinated with the City of Alpharetta.

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Georgia Department of Transportation

S.R. 9 Corridor (Main Street)

S.R. 9 Intersection

						Exist	Proposed
Sheet 1	45 mph			860	1 Upper Hembree Rd/Northmeadow Pkwy	5 lane	4 lane w/ median
					2 Haney Drive		
				1060	3 Cambridge Square		
				1940	4 Wills Road		
					5 Northfall Lane		
				1260	6 [School Bus Parking Lot]		
Sheet 2	35 mph	City LCI			7 Brady Place	4 lane	
				775	8 Roswell St/Maxwell Rd		
				1250	9 Relocated Roswell St/Devore Road		
					10 Janis Lane		
				1775	11 Old Milton Parkway		
					12 Marietta Street		
					13 Norcross Street		
					14 Jones Avenue		
				1075	15 Academy Street/Milton Avenue		
					16 Church Street		
				955	17 Cumming Street		
					18 Powers Place		
				1495	19 Mayfield Road		
Sheet 3	45 mph				20 Pine Grove Drive	2+1	
				1225	21 [Medical Complex]		
				1065	22 Canton Street		
					23 Winthrope Park Drive	2 lane	
Sheet 4				1500	24 Vaughn Drive		
					25 Winthrope Chase Drive		
				745	26 Water Oak Place		
				1600	27 Henderson Village Pkwy/Cogburn Road		
				720	28 [Lowe's Shopping Center]		
					29 Windward Parkway		

Legend

- Proposed Signal
- Existing Signal
- Proposed Median Opening
- 900 distance to next median opening (feet)

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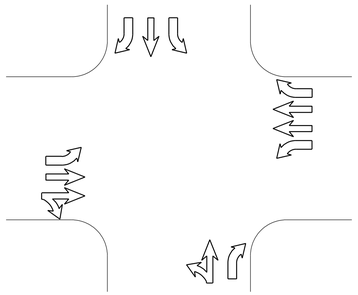
GDOT
Georgia Department of Transportation

Upper Hembree Road/ Northmeadow Pkwy

2012 Volume = 36,200 vpd / 13,665 vpd
2032 Volume = 44,175 vpd / 16,670 vpd

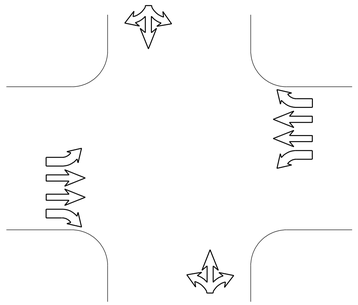


LOS = E
Delay = 65.6 seconds

LOS = E
Delay = 59.7 seconds

Cambridge Square

2012 Volume = 36,200 vpd / 2,380 vpd
2032 Volume = 44,175 vpd / 2,925 vpd

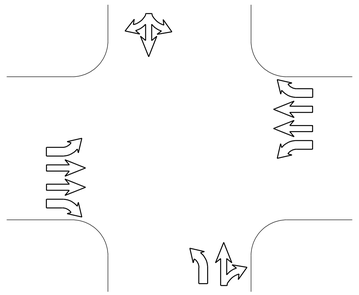


LOS = E
Delay = 41.5 seconds

LOS = E
Delay = 43.7 seconds

Wills Road

2012 Volume = 36,165 vpd / 8,810 vpd
2032 Volume = 44,125 vpd / 10,745 vpd

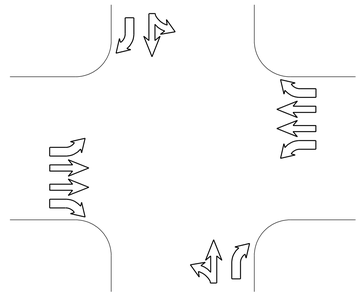


LOS = E
Delay = 68.8 seconds

LOS = D
Delay = 53.8 seconds

Maxwell Street

2012 Volume = 35,500 vpd / 6,630 vpd
2032 Volume = 43,380 vpd / 8,075 vpd

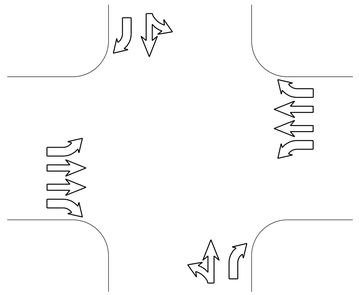


LOS = E
Delay = 59.7 seconds

LOS = B
Delay = 16.0 seconds

Relocated Roswell St./ Devore Road

2012 Volume = 35,500 vpd / 5,670 vpd
2032 Volume = 43,380 vpd / 6,920 vpd

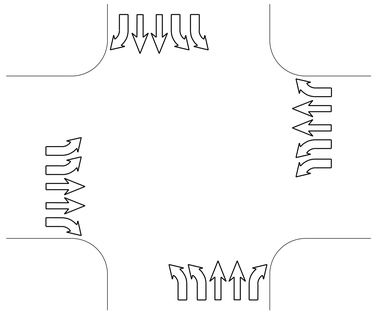


LOS = C
Delay = 24.1 seconds

LOS = B
Delay = 13.1 seconds

Old Milton Parkway

2012 Volume = 34,290 vpd / 40,005 vpd
2032 Volume = 41,835 vpd / 48,805 vpd

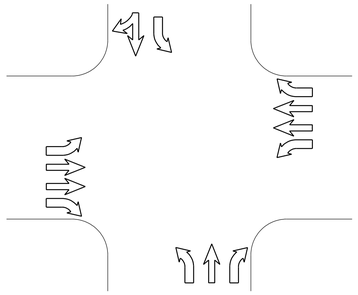


LOS = F
Delay = 163.8 seconds

LOS = F
Delay = 89.6 seconds

Academy Street/ Milton Avenue

2012 Volume = 36,245 vpd / 19,870 vpd
2032 Volume = 44,230 vpd / 24,240 vpd



LOS = F
Delay = 118.3 seconds

LOS = E
Delay = 57.1 seconds

Legend

LOS = D Delay = 48 seconds	WITHOUT IMPROVEMENTS 2032
LOS = C Delay = 40 seconds	WITH IMPROVEMENTS 2032
	PROPOSED LANEAGE

Traffic Data

POND
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Fax 678-336-7744
Web www.pondco.com

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

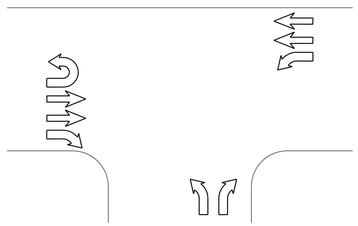
TRAFFIC SUMMARY
PI 721790
PI 721780
S.R. 9 (MAIN STREET)
FULTON COUNTY

DRAWING No. 1

3/1/2007 GPLN

Cumming Street

2012 Volume = 36,065 vpd / 7,815 vpd
2032 Volume = 44,010 vpd / 9,540 vpd

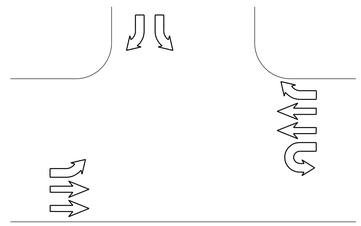


LOS = F
Delay = 139.8 seconds

LOS = B
Delay = 15.8 seconds

Mayfield Road

2012 Volume = 31,180 vpd / 12,660 vpd
2032 Volume = 38,050 vpd / 15,445 vpd

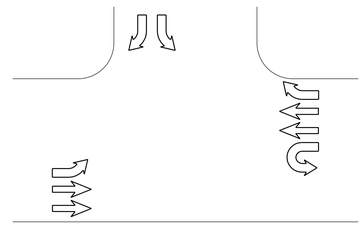


LOS = E
Delay = 63.1 seconds

LOS = B
Delay = 18.6 seconds

Canton Street

2012 Volume = 28,580 vpd / 3,570 vpd
2032 Volume = 34,880 vpd / 4,350 vpd

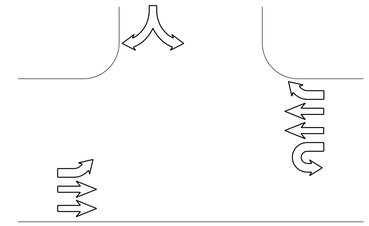


LOS = F
Delay = >900 seconds

LOS = F
Delay = >900 seconds

Vaughn Drive

2012 Volume = 28,820 vpd / 1,985 vpd
2032 Volume = 35,180 vpd / 2,435 vpd

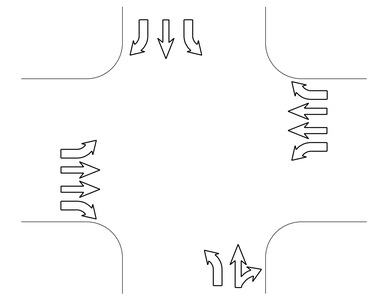


LOS = F
Delay = >900 seconds

LOS = F
Delay = 574.2 seconds

Henderson Village Pkwy/ Cogburn Road

2012 Volume = 28,810 vpd / 4,545 vpd
2032 Volume = 35,160 vpd / 5,565 vpd

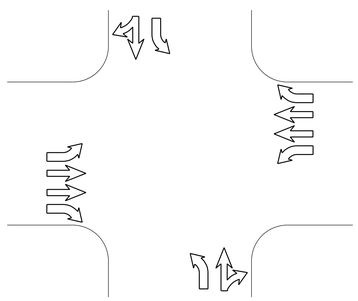


LOS = E
Delay = 79.3 seconds

LOS = B
Delay = 12.2 seconds

Lowe's Shopping Center

2012 Volume = 25,720 vpd / 3,290 vpd
2032 Volume = 31,385 vpd / 3,995 vpd

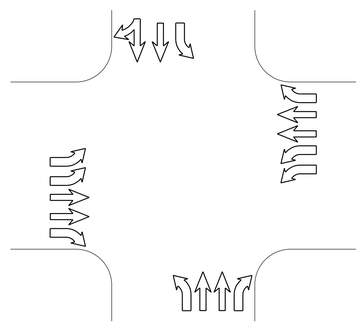


LOS = F
Delay = 149.7 seconds

LOS = A
Delay = 9.6 seconds

Windward Parkway

2012 Volume = 26,285 vpd / 27,235vpd
2032 Volume = 32,075 vpd / 33,220 vpd



LOS = F
Delay = 138.1 seconds

LOS = D
Delay = 43.5 seconds

Legend

LOS = D Delay = 48 seconds	WITHOUT IMPROVEMENTS 2032
LOS = C Delay = 40 seconds	WITH IMPROVEMENTS 2032
	PROPOSED LANEAGE

Traffic Data

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Fax 678-336-7744
Web www.pondco.com

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY

TRAFFIC SUMMARY
PI 721790
PI 721780
S.R. 9 (MAIN STREET)
FULTON COUNTY

DRAWING No. 2

3/1/2007 GPLN

Why are these Improvements Needed?

- The primary purpose for the widening and reconstruction of SR 9/Main Street is to relieve traffic congestion and to provide safety and operational improvements along SR 9/Main Street from Upper Hembree Road to Windward Parkway, through downtown Alpharetta.
- The crash data used in this analysis included 1,090 crash reports from January 2005 to December 2007. According to crash data, the frequency and severity of the crashes in the study area appear to be substantially higher than the statewide rates. The combination of high traffic volumes and several intersections along SR 9/Main Street causes the crash rates to be higher than the statewide rates for similar roadway types.
- The proposed raised median would eliminate or restrict turning movements at certain intersections and are expected to reduce the high number of rear end and angle crashes.

Crash Data

Year	Crashes			Injuries		
	Total	Rate	Statewide	Total	Rate	Statewide
2005	368	970	727	120	357	179
2006	386	1017	787	87	174	189
2007	336	885	649	138	258	151

Rates per 100 million vehicle miles

Frequency and severity of crashes are substantially higher than statewide rates

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STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: PROGRAM DELIVERY
CRASH DATA
PI 721790
PI 721780
S.R. 9 (MAIN STREET)
FULTON COUNTY
DRAWING No. 3

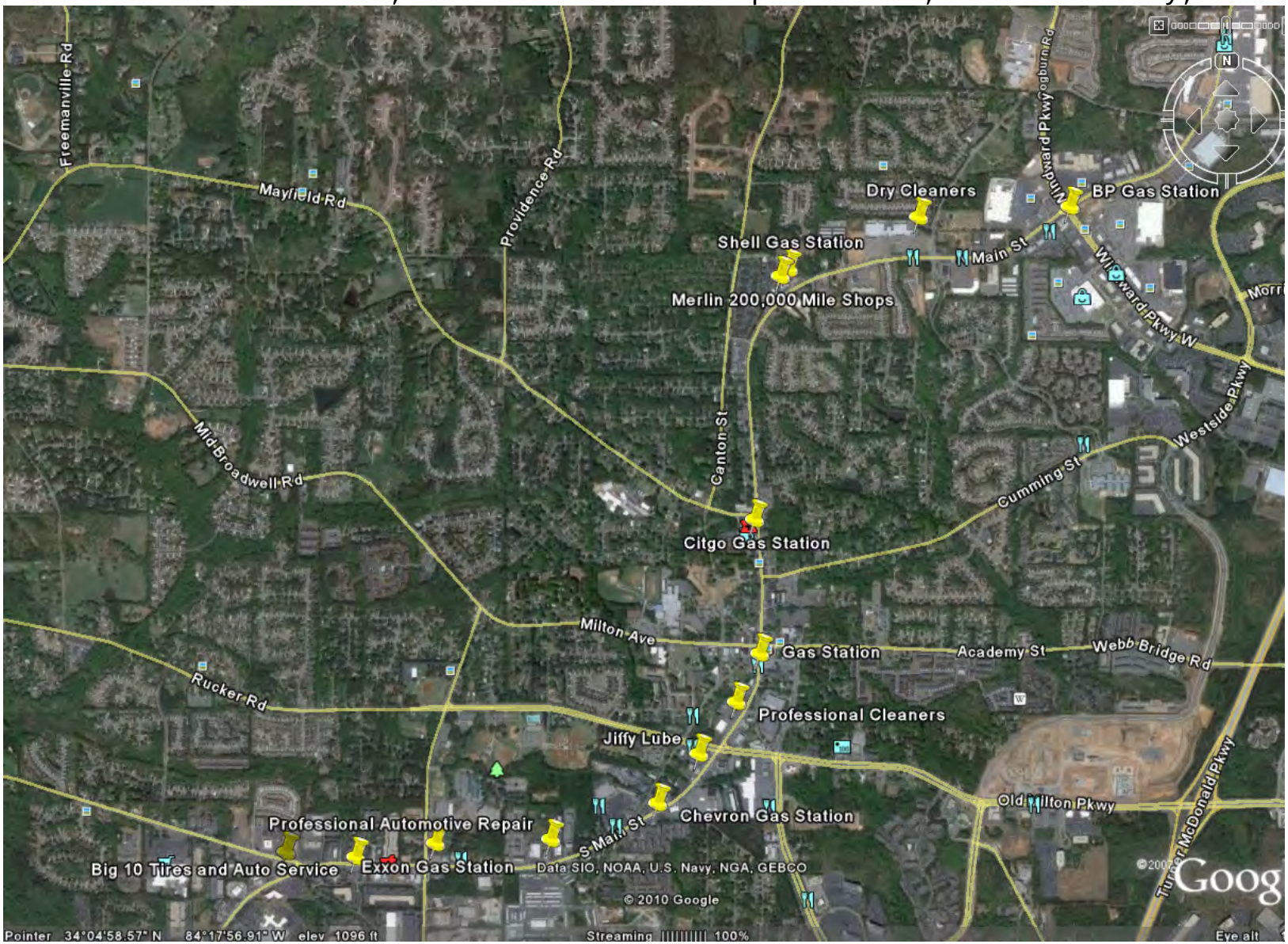
3/1/2007 GPLN

Attachment 11d:

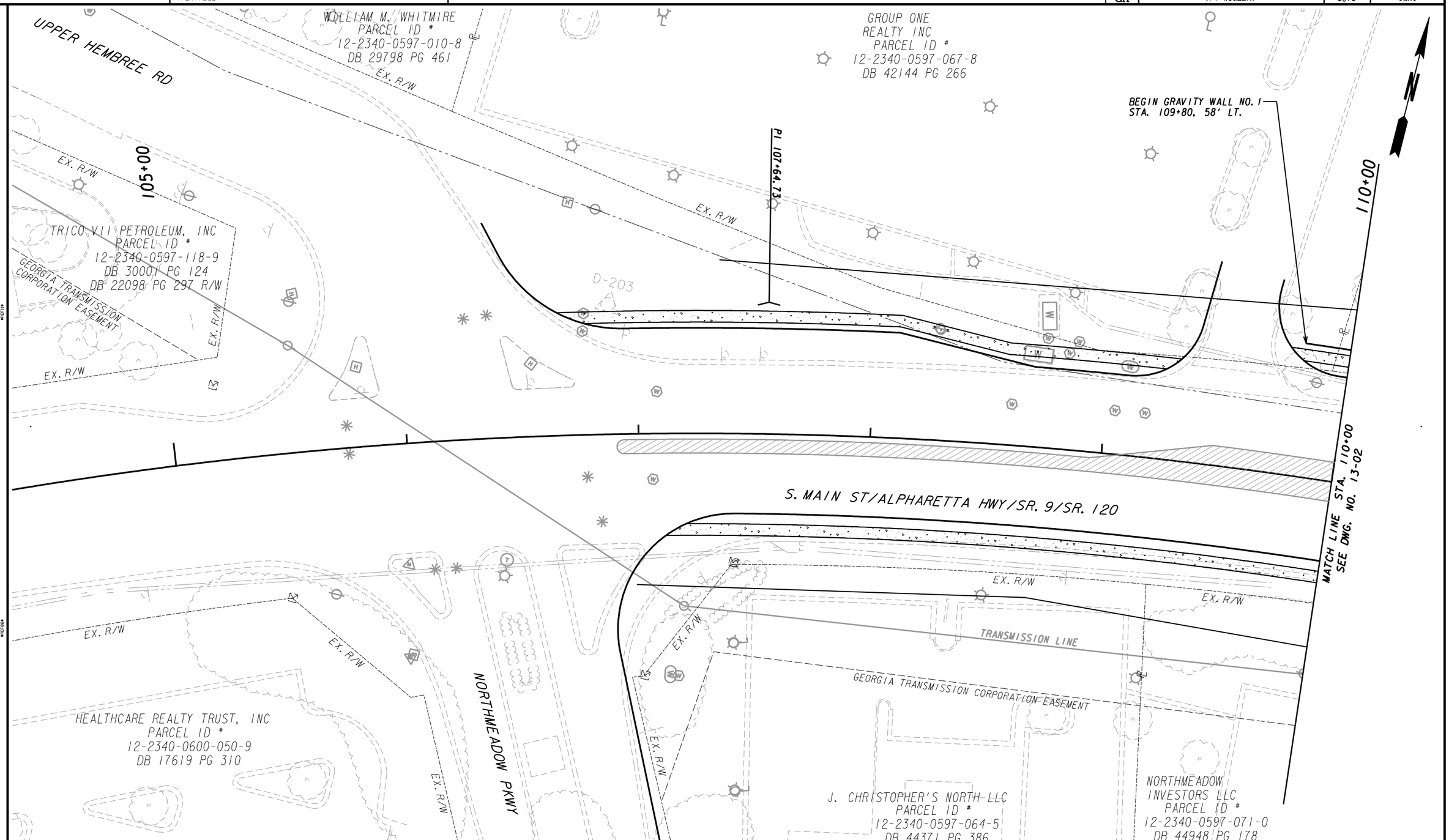
UST/Hazardous Waste Site

Description	Owner	Parcel	Address	PI No.
Shell Gas Station	TRICO VII Petroleum, Inc.	12-2340-0597-118-9	11714 Alpharetta Hwy, Roswell, GA 30076	721790
Big 10 Tires and Auto Service	PI SE, LLC	12-2340-0600-063-2	11845 Alpharetta Hwy, Roswell, GA 30076	721790
Exxon Gas Station	D.N. Shah	12-2460-0645-023-7	1670 Alpharetta Hwy #A, Alpharetta, GA 30009	721790
Professional Automotive Repair	V. Clarke Otten	12-2462-0648-005-9	421 S Main St. Alpharetta, GA 30004	721790
Chevron Gas Station	Dimpal Enterprises, Inc.	12-2581-0693-036-4	280 S Main St, Alpharetta, GA 30009	721790
Jiffy Lube	Quaker State Minit Lube, Inc.	12-2583-0694-065-0	207 S Main St, Alpharetta, GA 30009	721790
Professional Cleaners	BUR ROG, Inc.	12-2584-0695-109-4	113 S Main St, Alpharetta, GA 30009	721790
Gas Station	S&B Mart, Inc.	22-4823-1269-056-7	33 S Main St, Alpharetta, GA 30009	721790
Citgo Gas Station	General Convenience Store, Inc.	22-4822-1252-104-5	174 N Main St, Alpharetta, GA 30009	721780
Merlin 200,000 mile shops	TLM Automotive, Inc.	22-4960-1124-179-5	540 N Main St, Alpharetta, GA 30009	721780
Shell Gas Station	Alpha Food, LLC	22-4960-1124-178-7	560 N Main St, Alpharetta, GA 30009	721780
Dry Cleaners	Stonewood Partners, LLC	22-4960-1110-077-7	670 N Main St, Alpharetta, GA 30009	721780
BP Gas Station	CynthiaC. Hodge TR ET AL	22-5120-1112-054-8	5005 Windward Parkway, Alpharetta, GA 30004	721780

PI# 721780- & 721790-, SR 9/Main Street Improvements, Fulton County, GA



DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	$PI NUMBER$	CI	SH



PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

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Architects - Engineers - Planners
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Suite 600
Norcross, Ga. 30092
Phone 678-336-7740
Fax 678-336-7744
Web www.pondco.com
Project No.

SCALE IN FEET
0 20 40 80

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

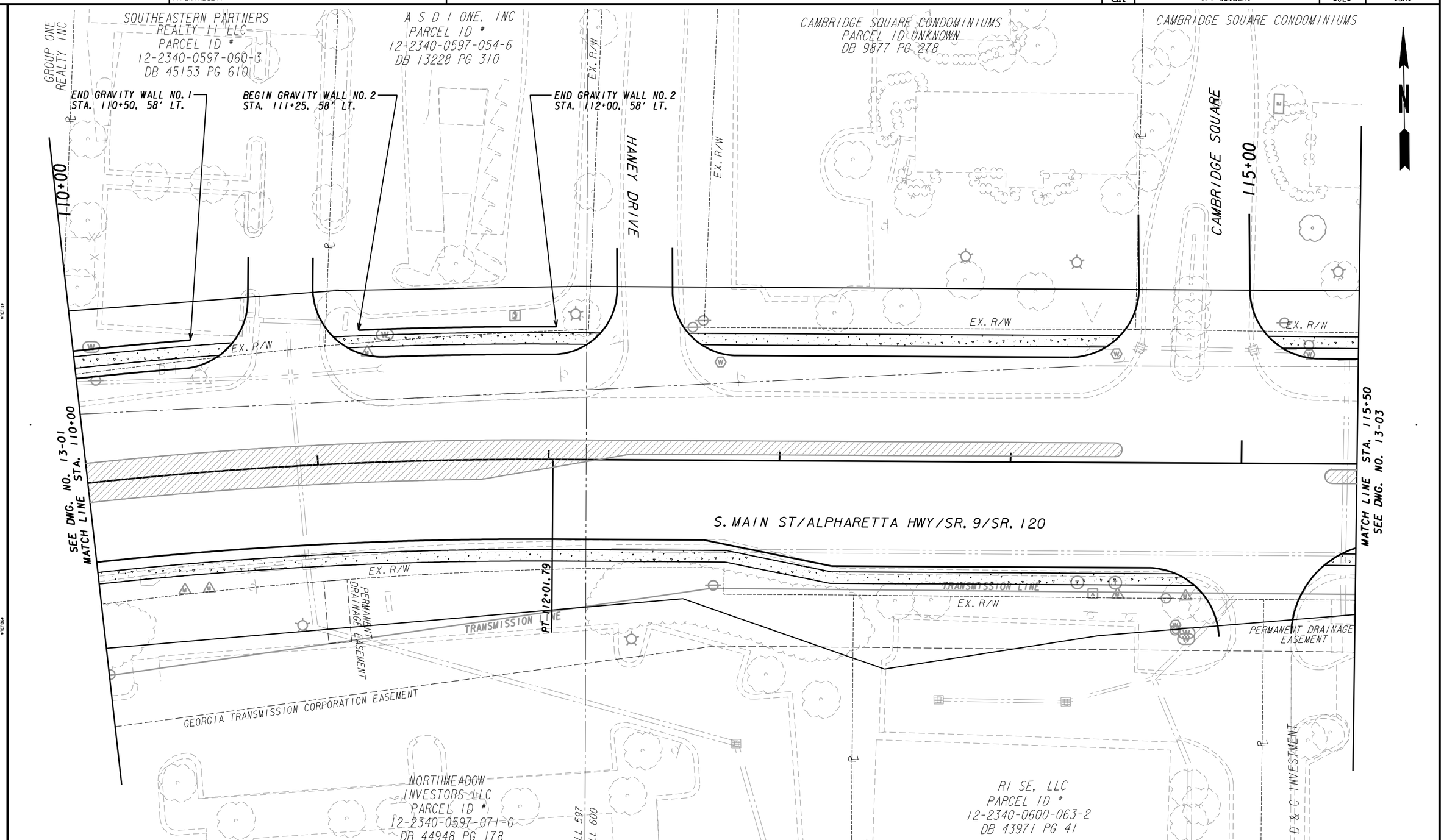
MAINLINE PLAN

S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120

DRAWING No.
13-01

1/5/2009 GPLM

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	$PI NUMBER$	$C2$	SH



PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

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Project No.

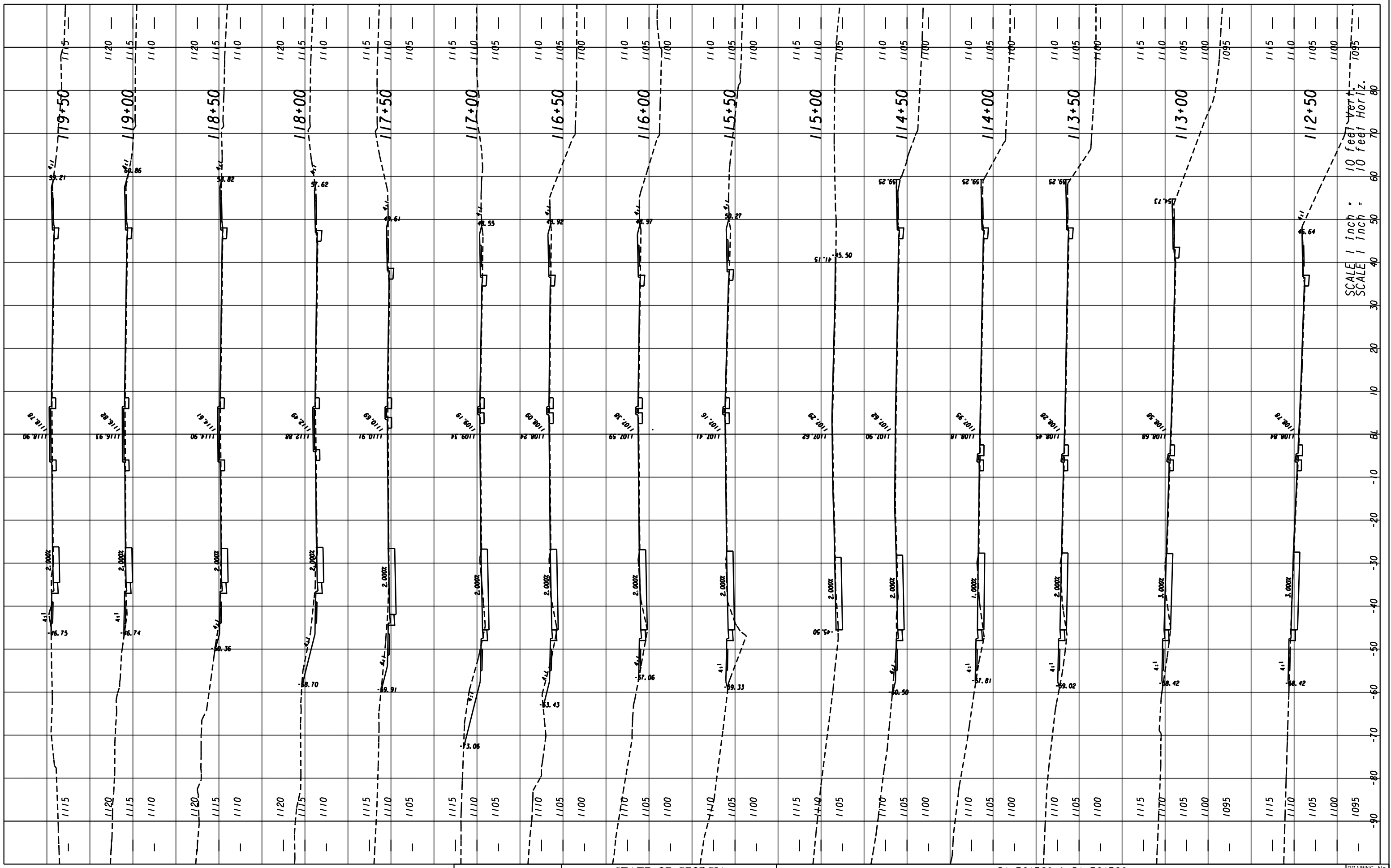
SCALE IN FEET
0 20 40 80

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:
DRAINAGE REPAIR MAP
S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120
DRAWING No. 23-02

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	GA.			



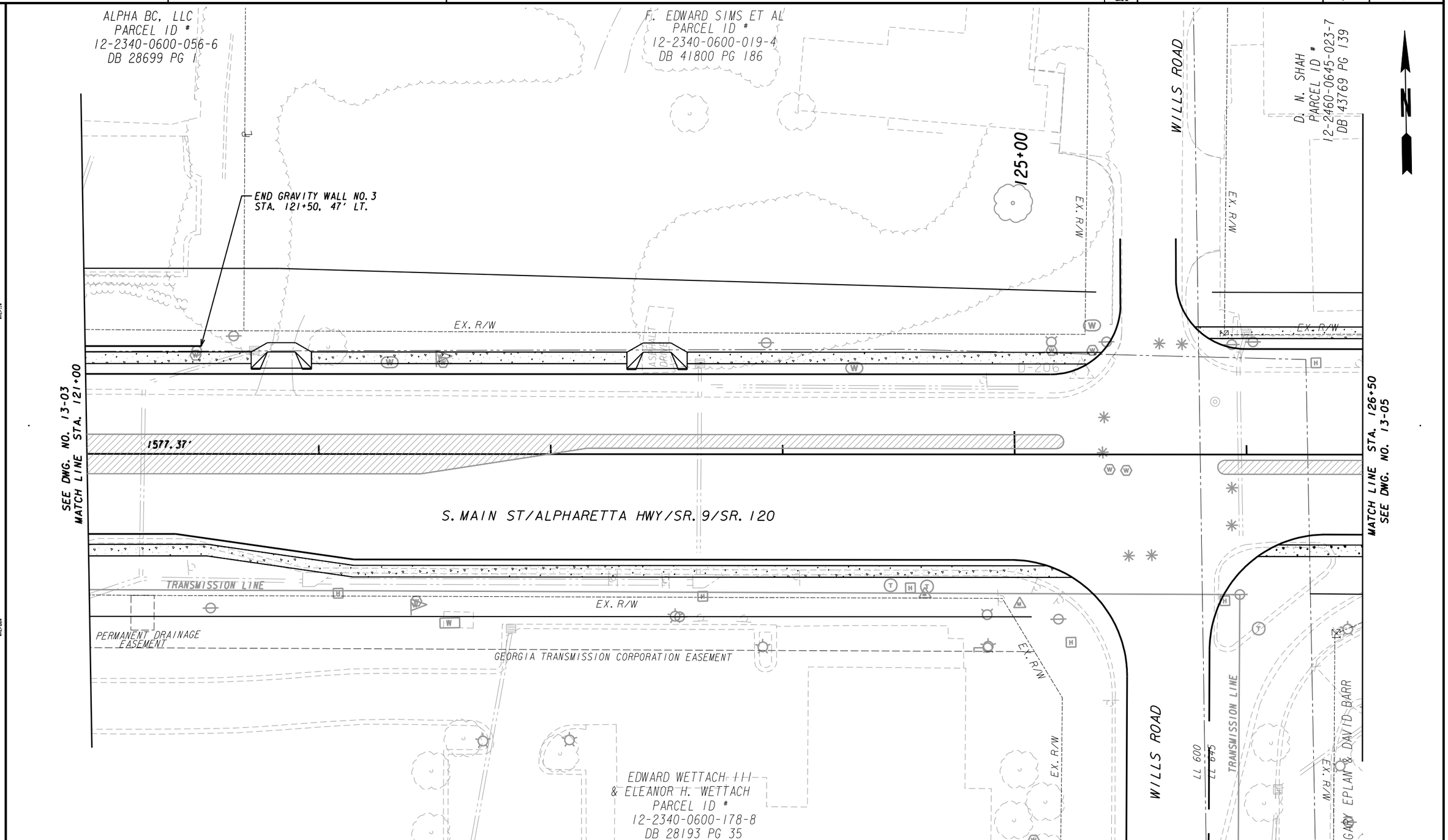
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-02

$DATE$
DGN
PRF

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	$P1 NUMBER$	$C4$	SH



PROPERTY AND EXISTING R/W LINE	BEGIN LIMIT OF ACCESS.....BLA		
REQUIRED R/W LINE	END LIMIT OF ACCESS.....ELA		
CONSTRUCTION LIMITS	LIMIT OF ACCESS		
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	REQ'D R/W & LIMIT OF ACCESS		
EASEMENT FOR CONSTR OF SLOPES			
EASEMENT FOR CONSTR OF DRIVES			

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Project No.

SCALE IN FEET
0 20 40 80

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE:

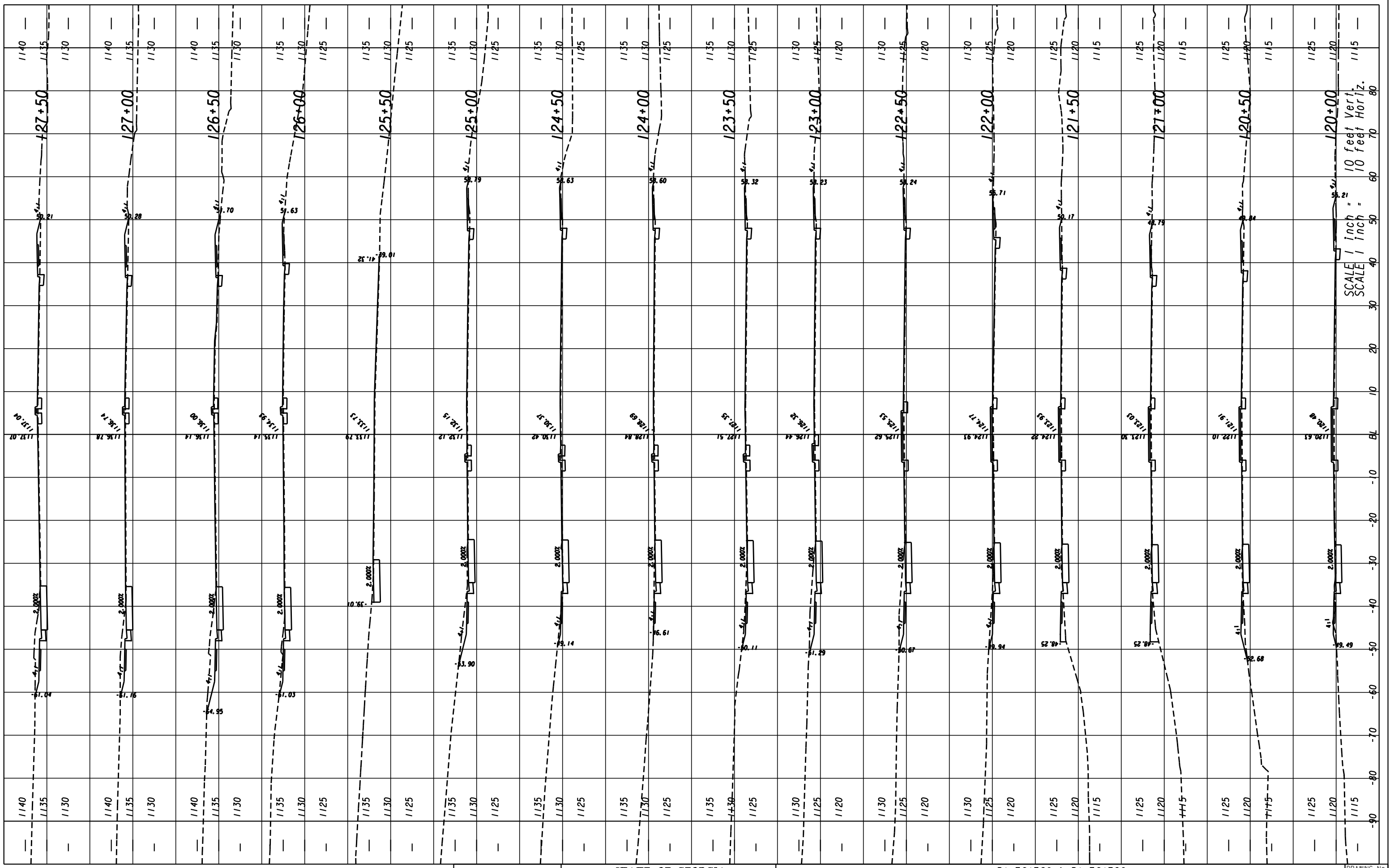
MAINLINE PLAN

S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120

DRAWING No.
13-04

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	GA.			



STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-03

$DATE$
DGN
PRF

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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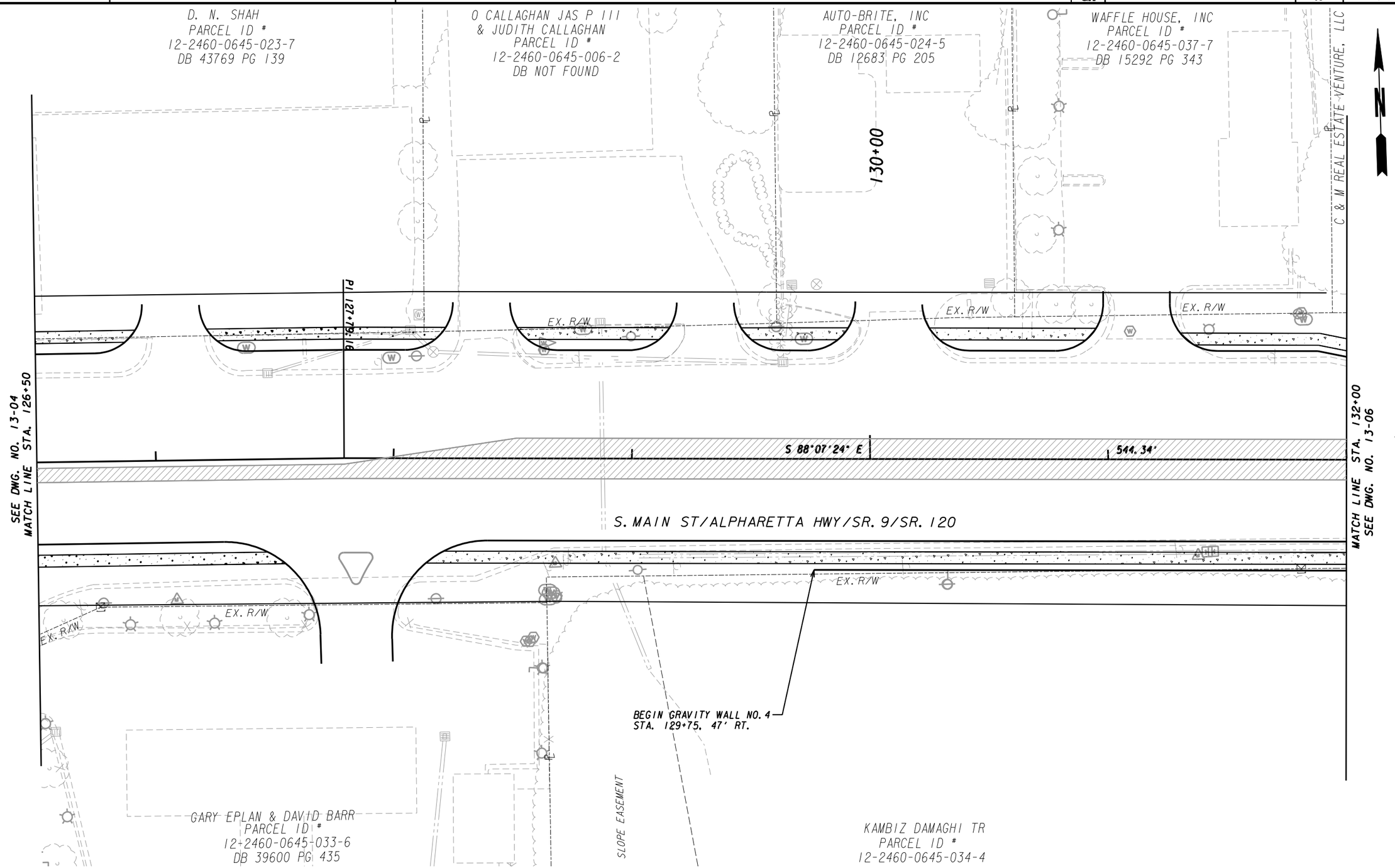

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

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Project No.

SCALE IN FEET
0 20 40 80

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

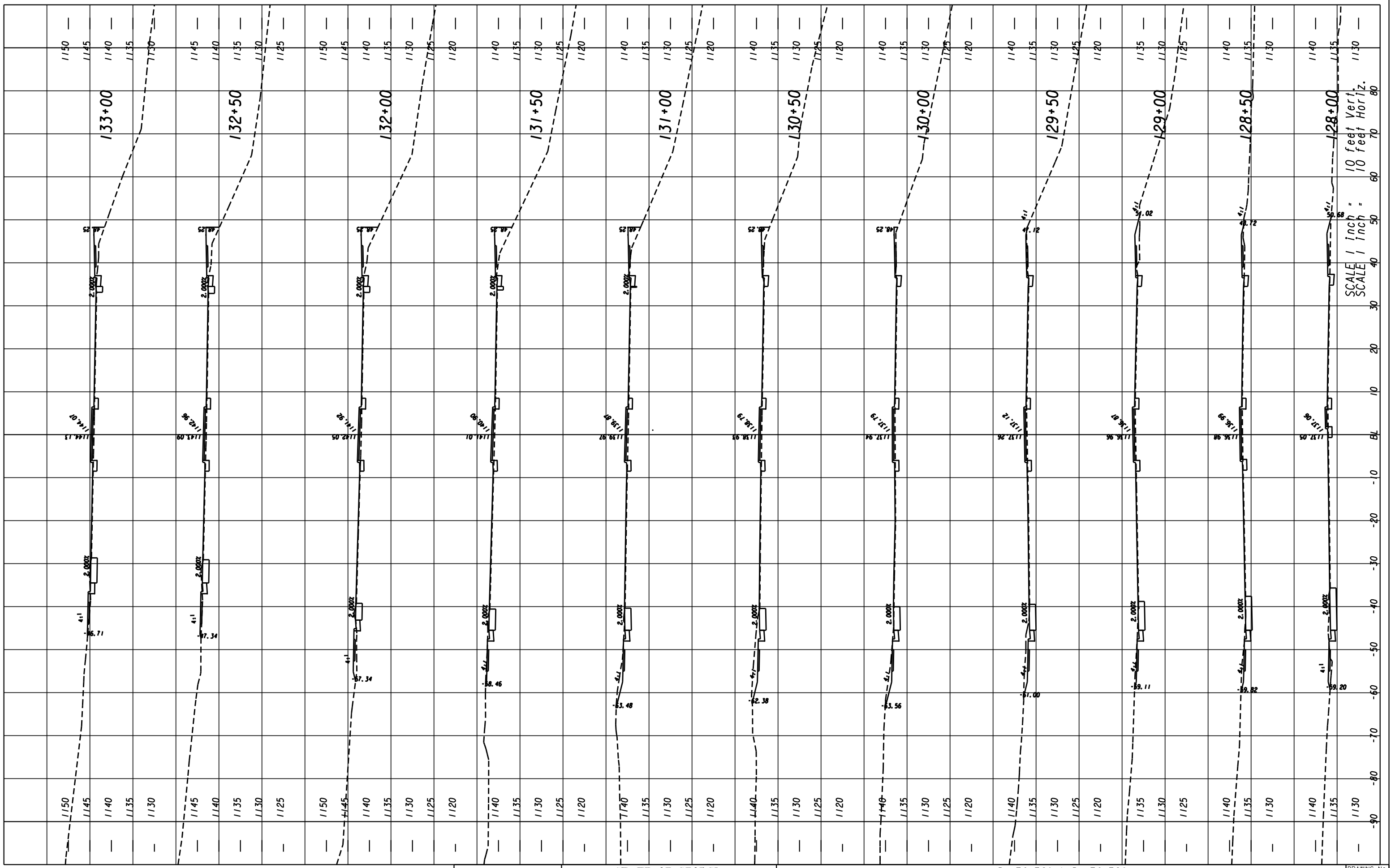
MAINLINE PLAN

S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120

DRAWING No.
13-05

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	GA.			



STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-04

$DATE$
DGN
PRF

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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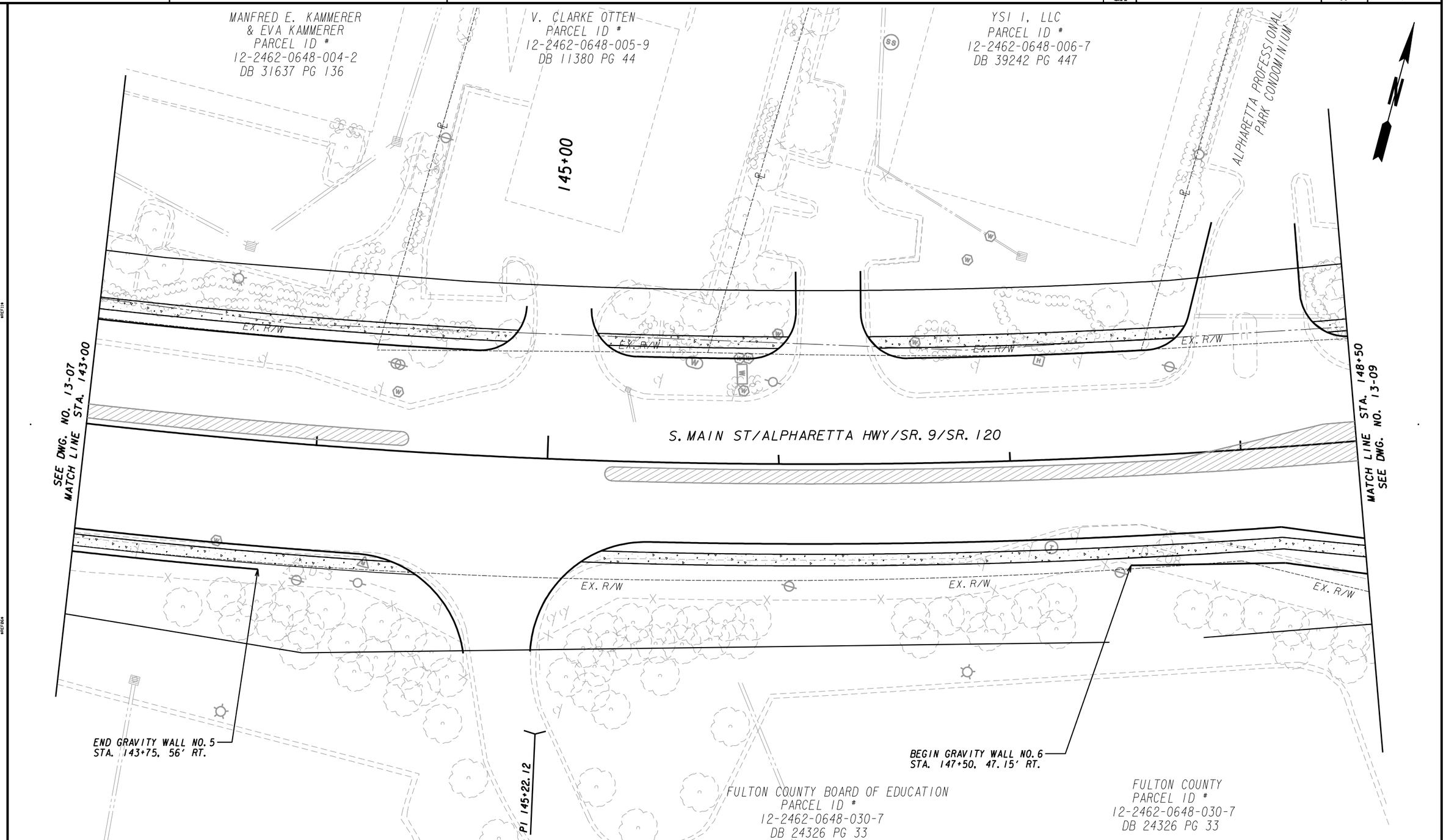

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

MAINLINE PLAN

S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120

DRAWING No.
13-08

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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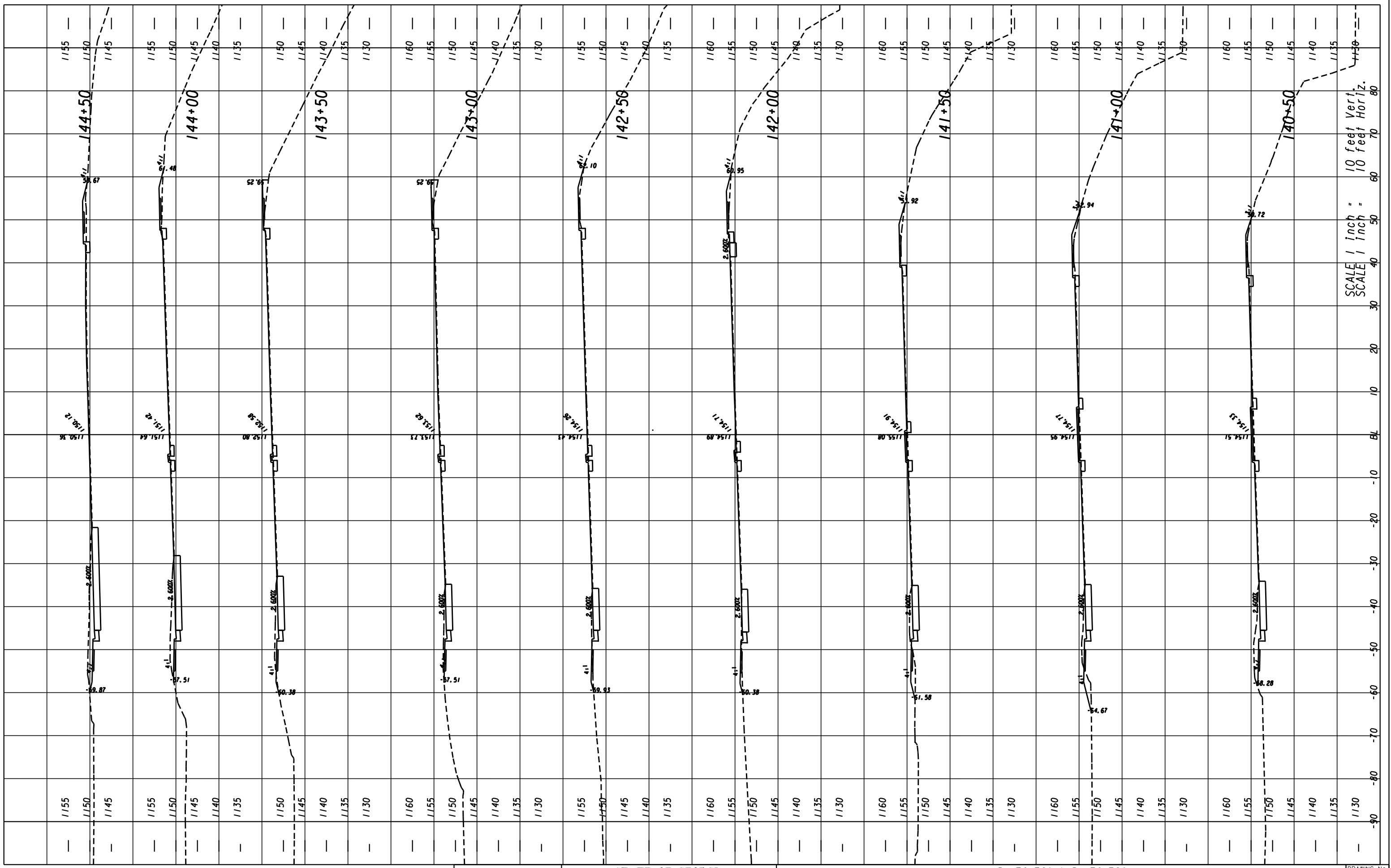

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STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING No.
23-06

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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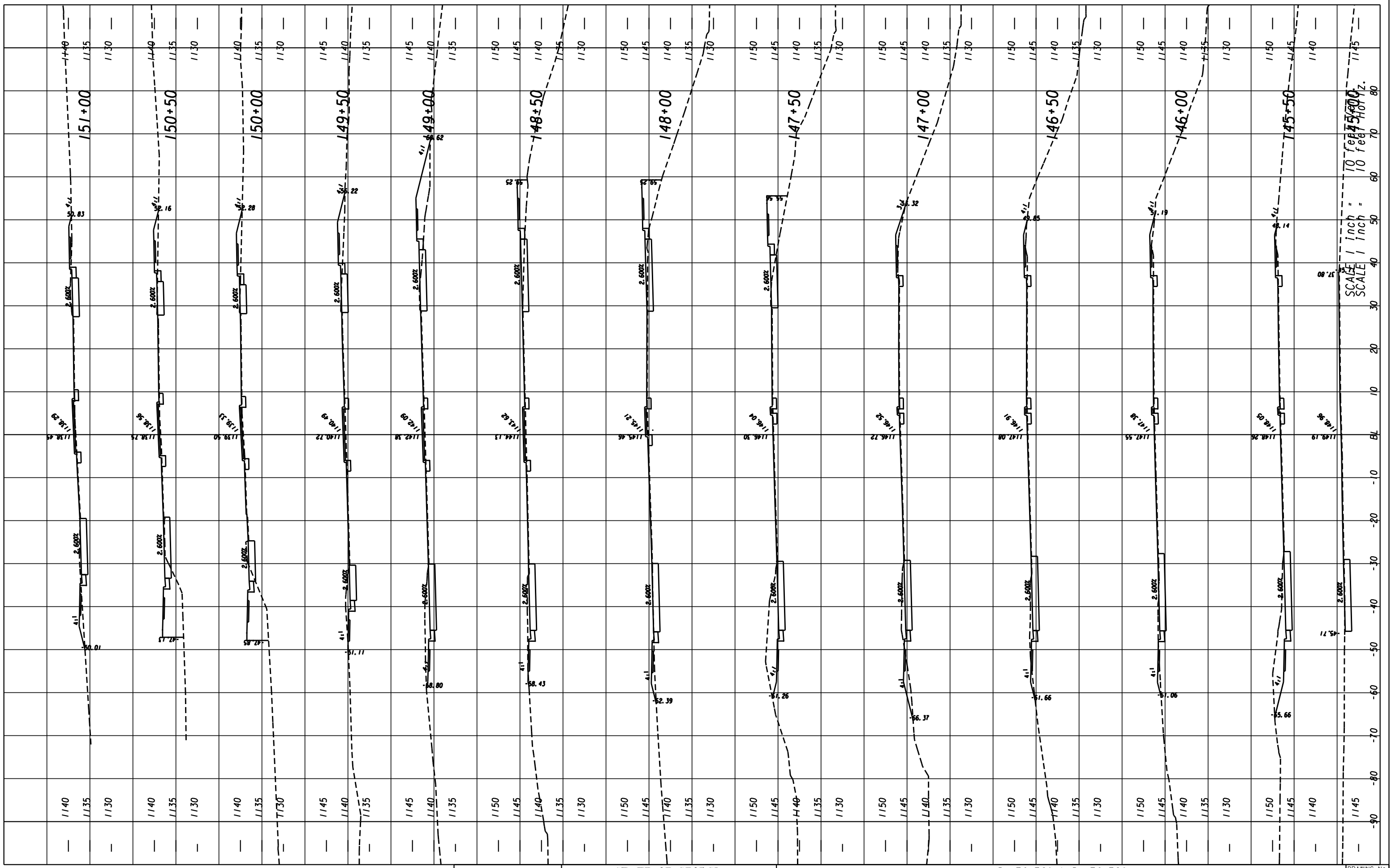

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-07

$DATE$
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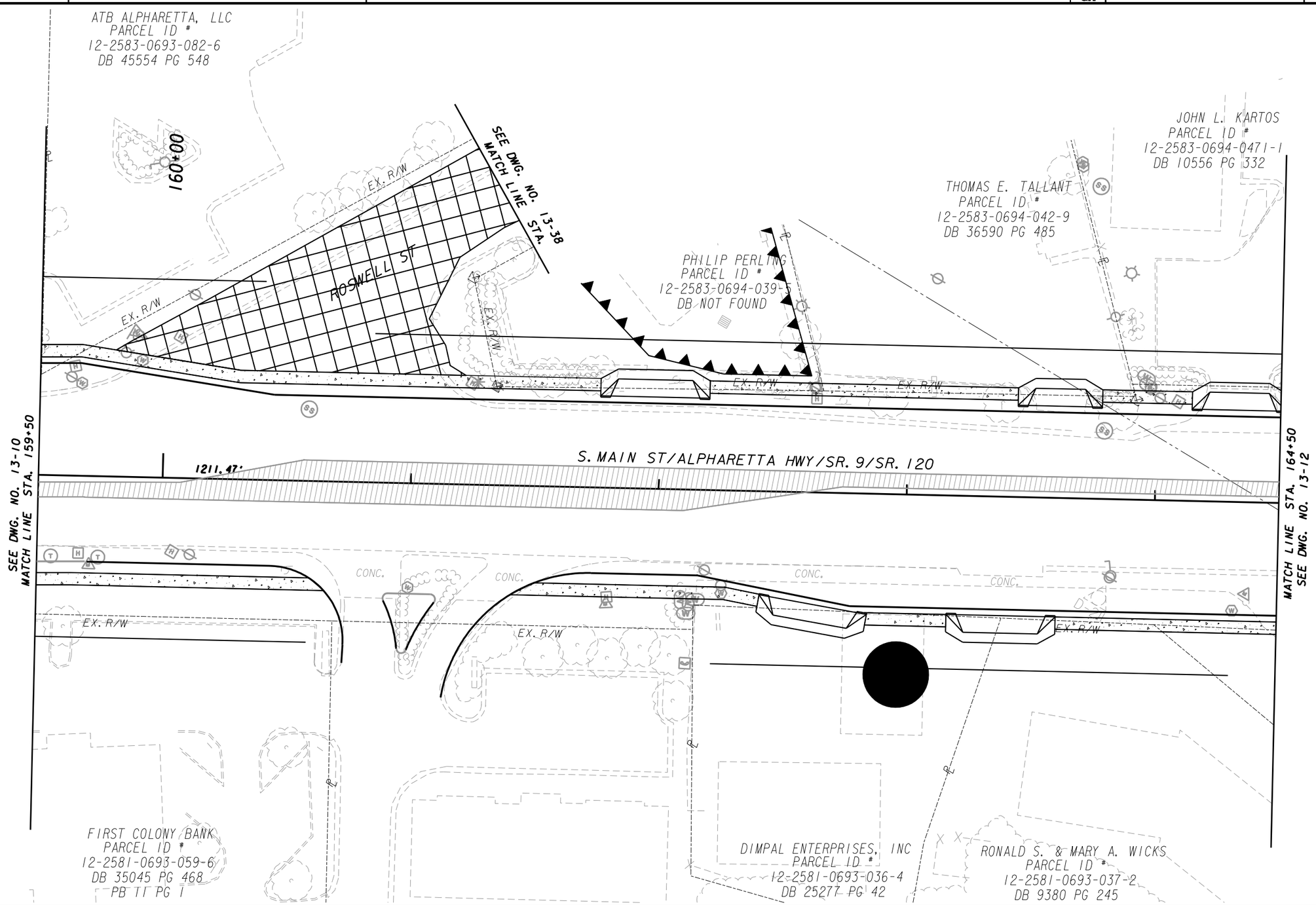

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
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REVISION DATES

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OFFICE:

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SR. 9/SR. 120

DRAWING No.
13-11

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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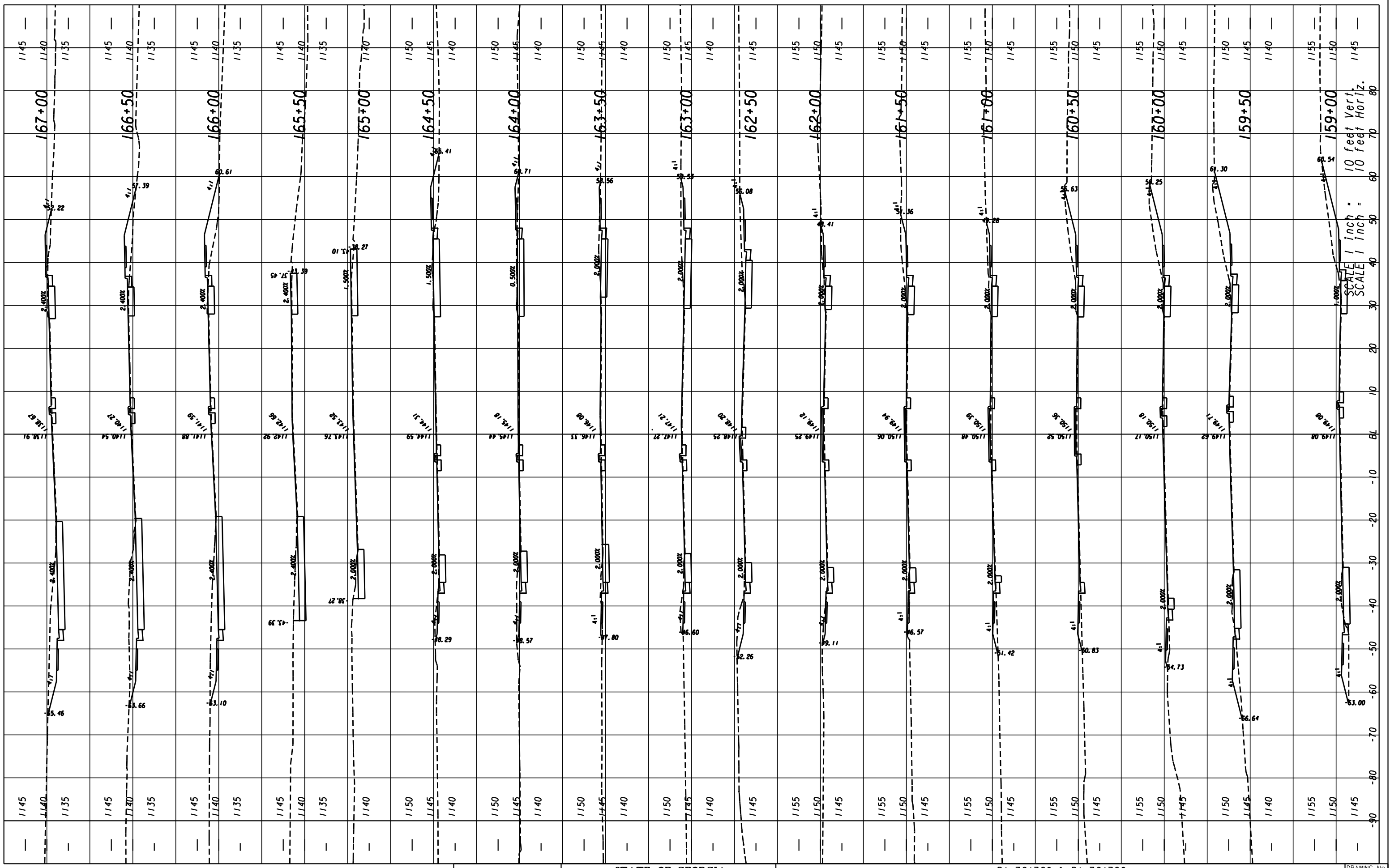

$DATE$
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DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-09

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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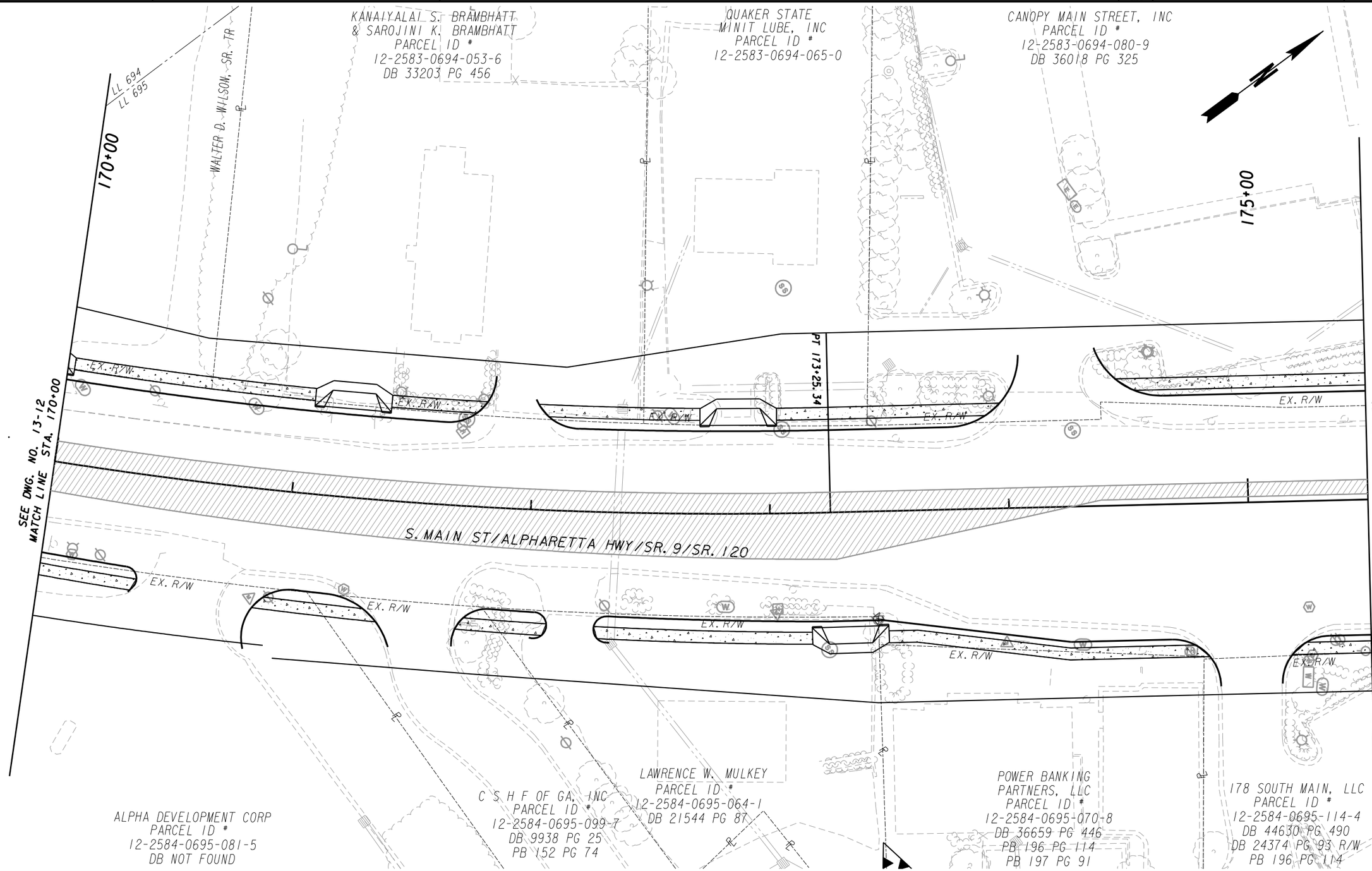

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
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EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
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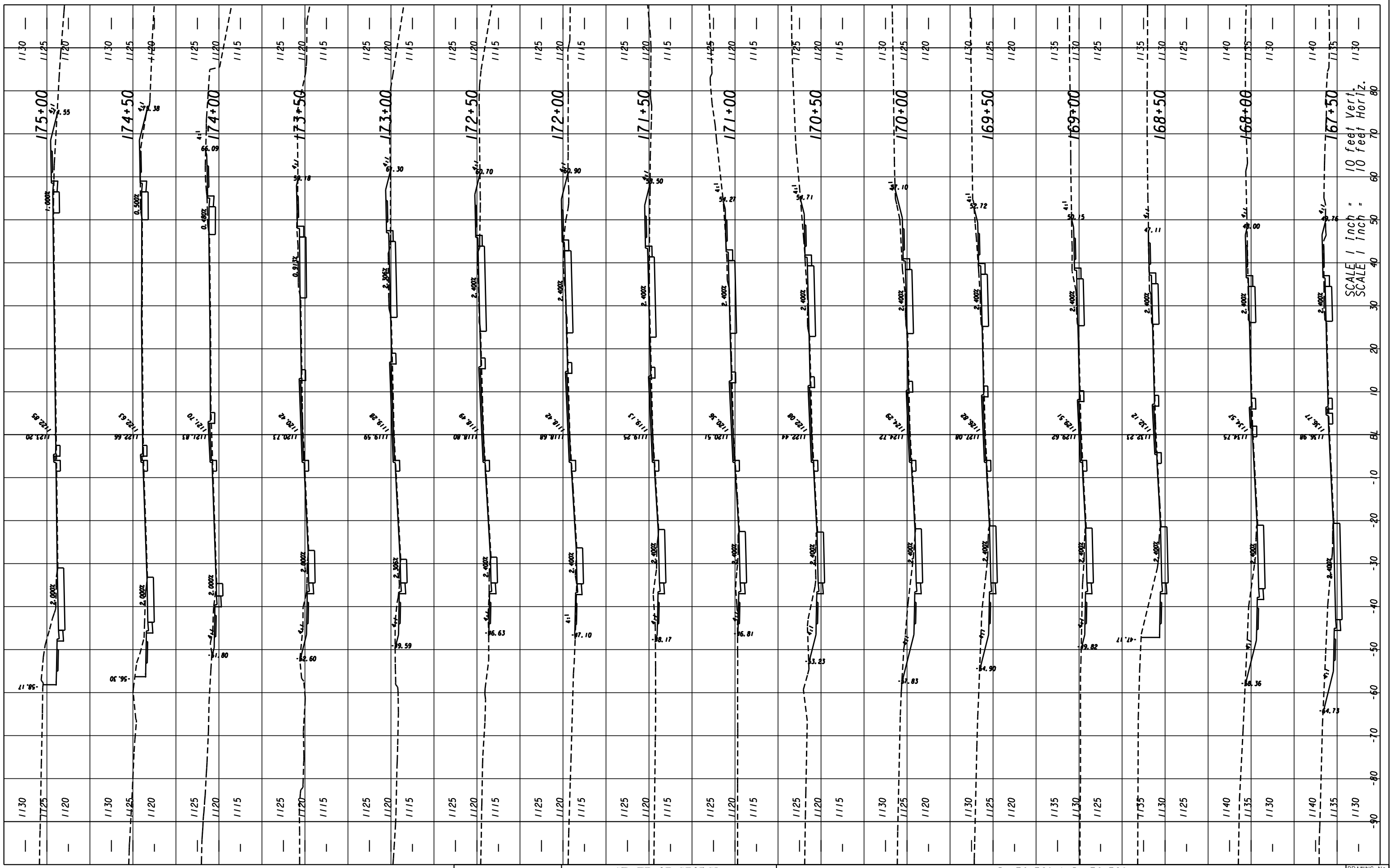
SR. 9/SR. 120

DRAWING No.
13-13

1/5/2009 GPLM

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	GA.			



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PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-10

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DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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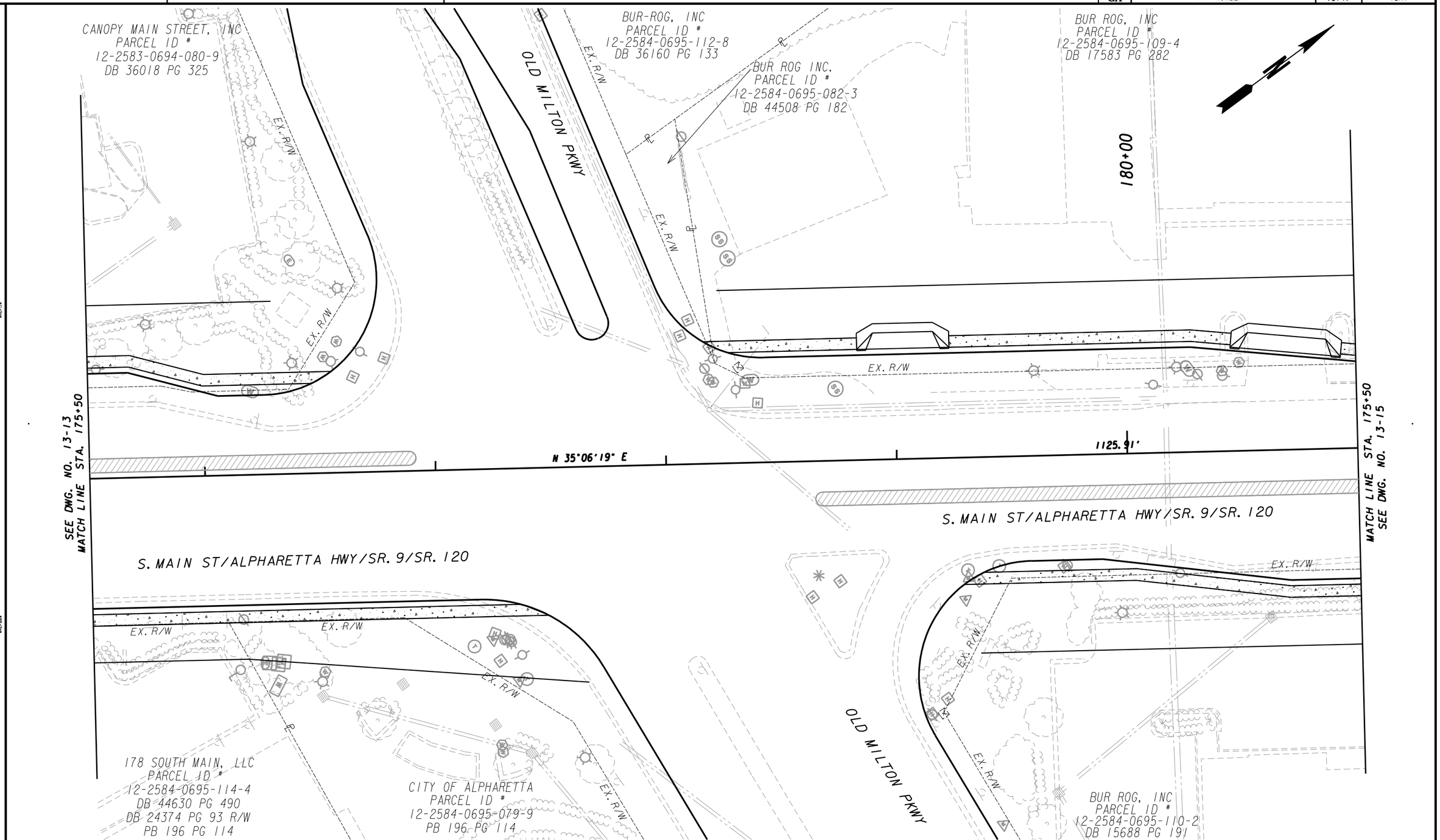

PROPERTY AND EXISTING R/W LINE	
REQUIRED R/W LINE	
CONSTRUCTION LIMITS	
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES	
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DRAWING No.
13-14

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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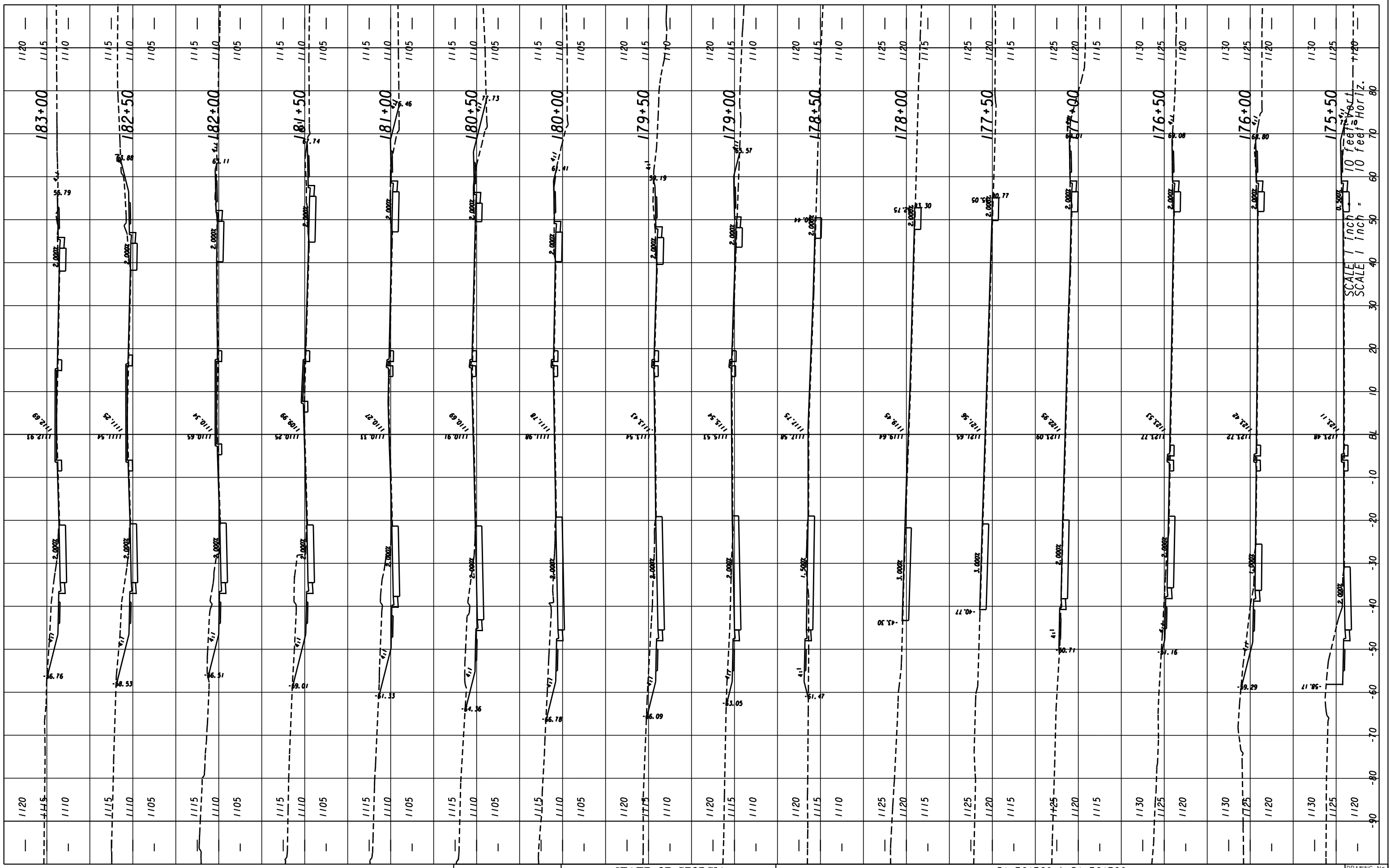

STATE OF GEORGIA
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PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-11

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DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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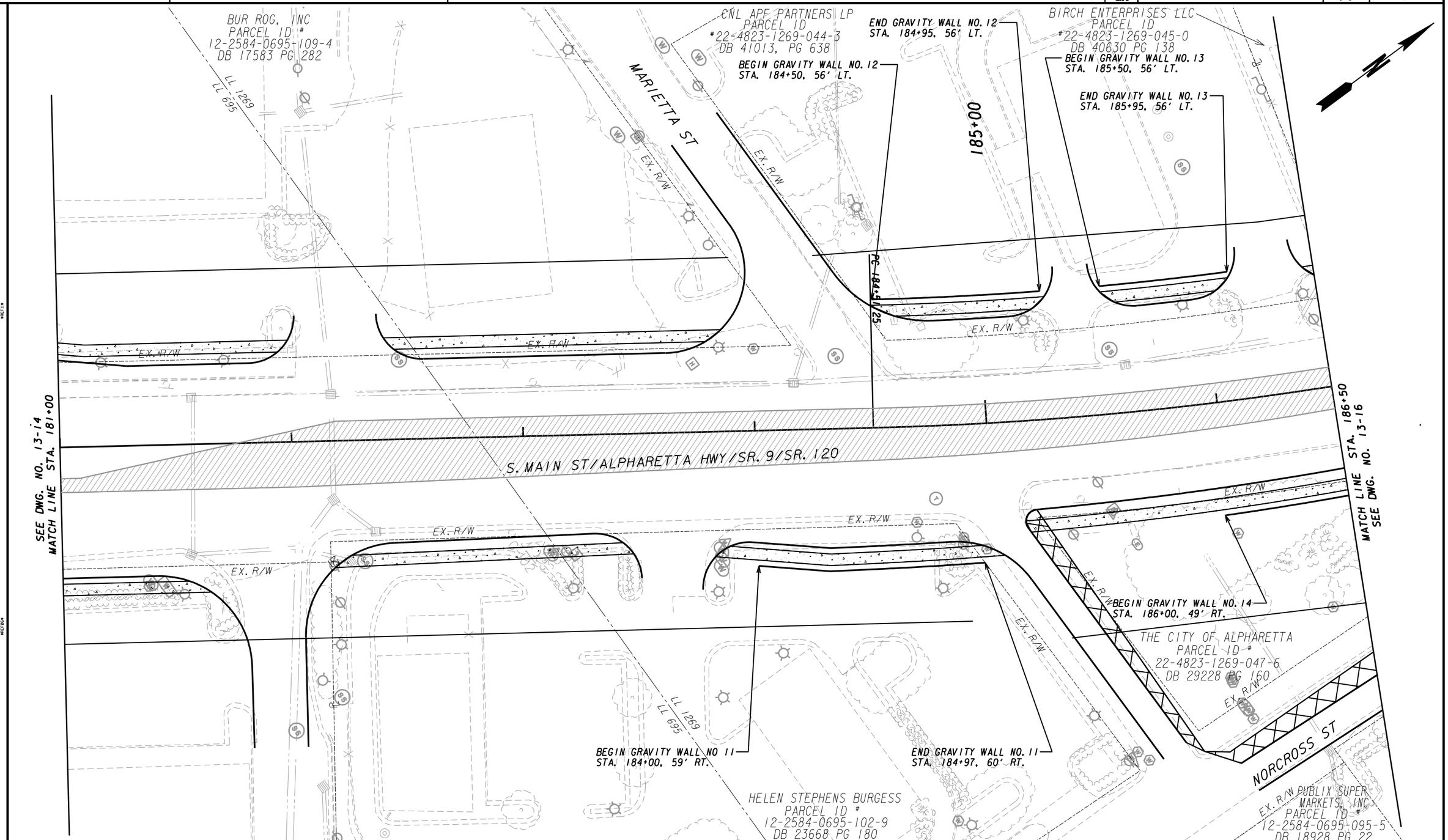

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
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SR. 9/SR. 120

DRAWING No. 13-15

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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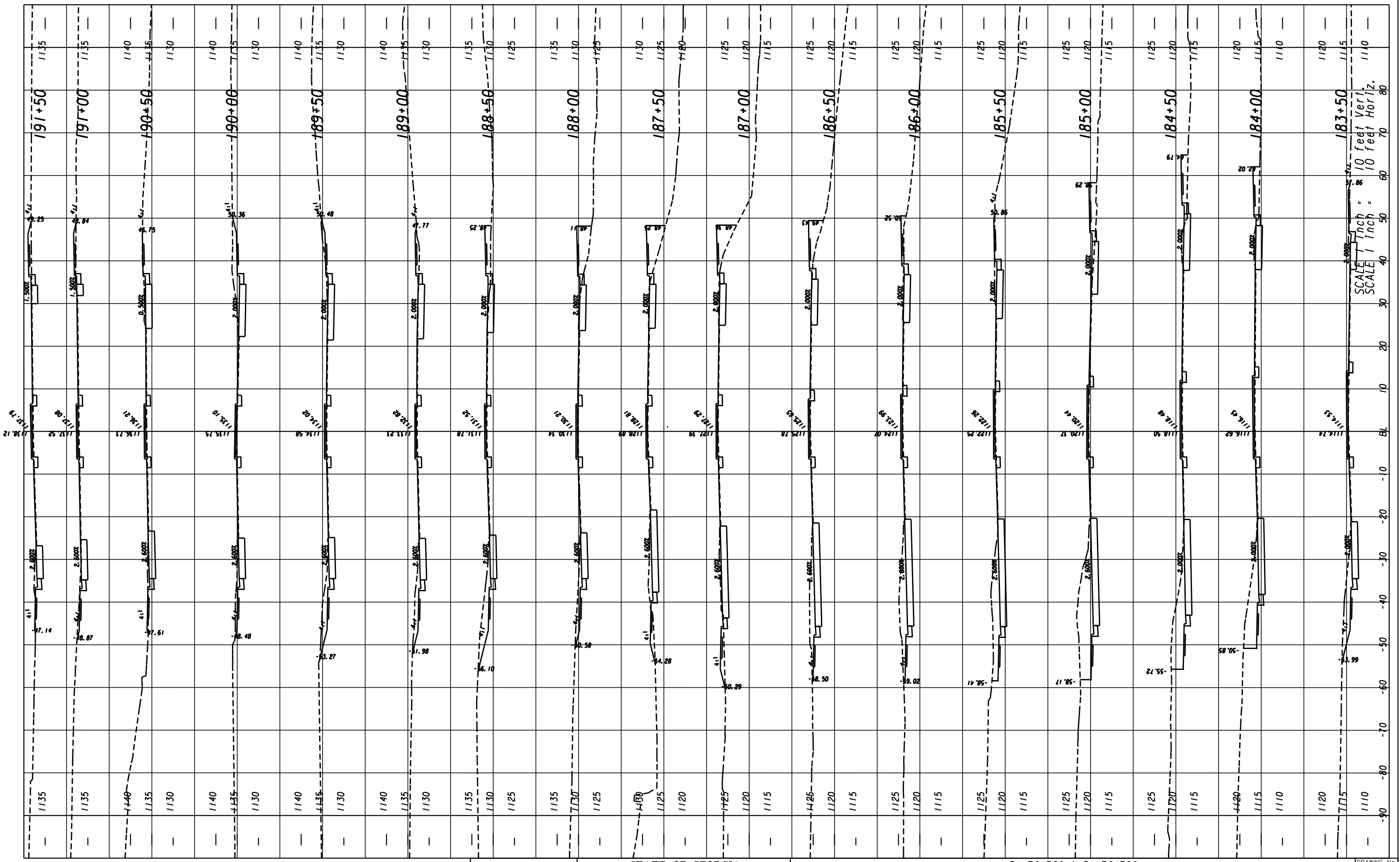

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
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PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-12

$DATE$
DGN
PRF

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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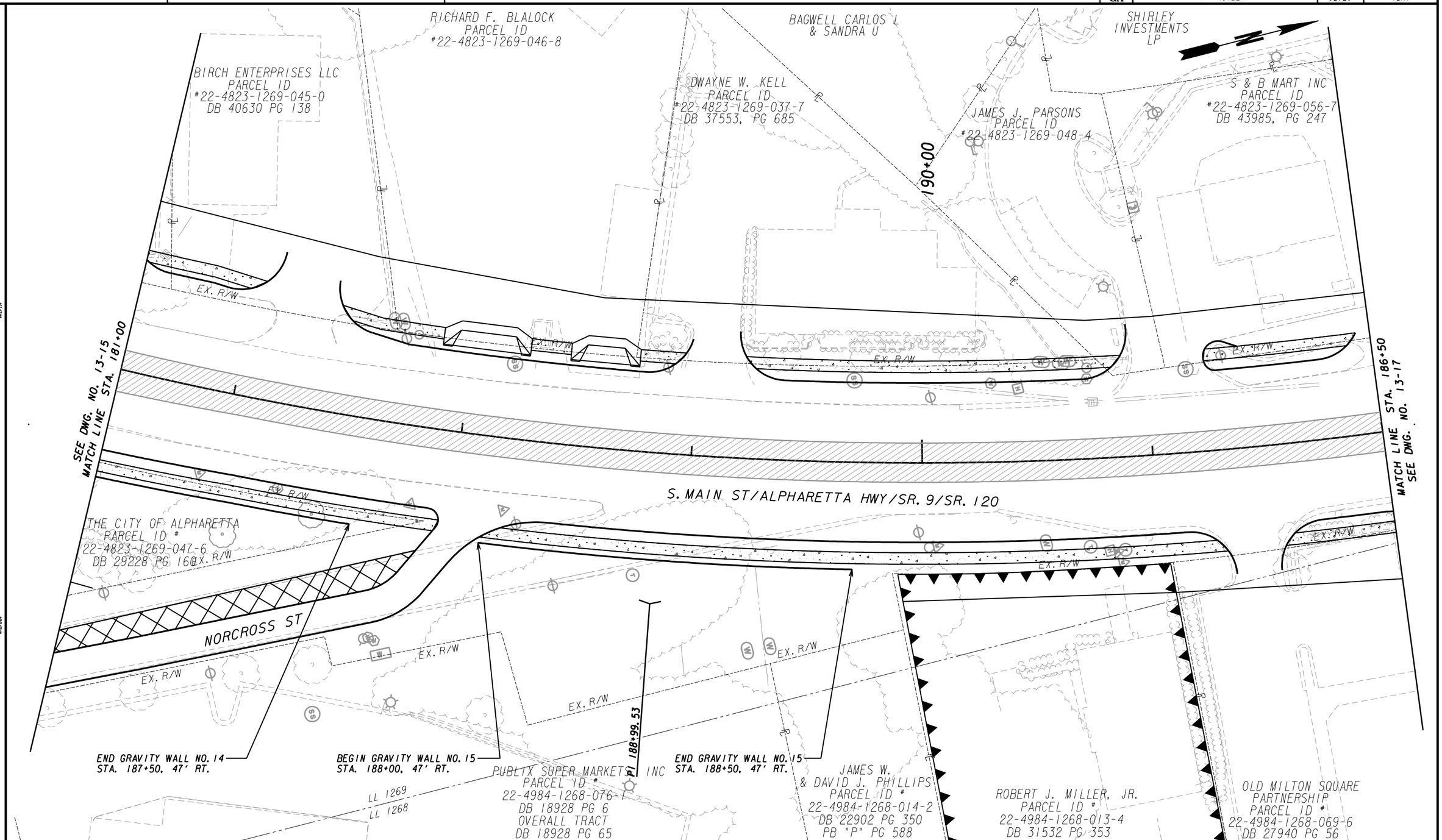

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
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SR. 9/SR. 120

DRAWING No.
13-16

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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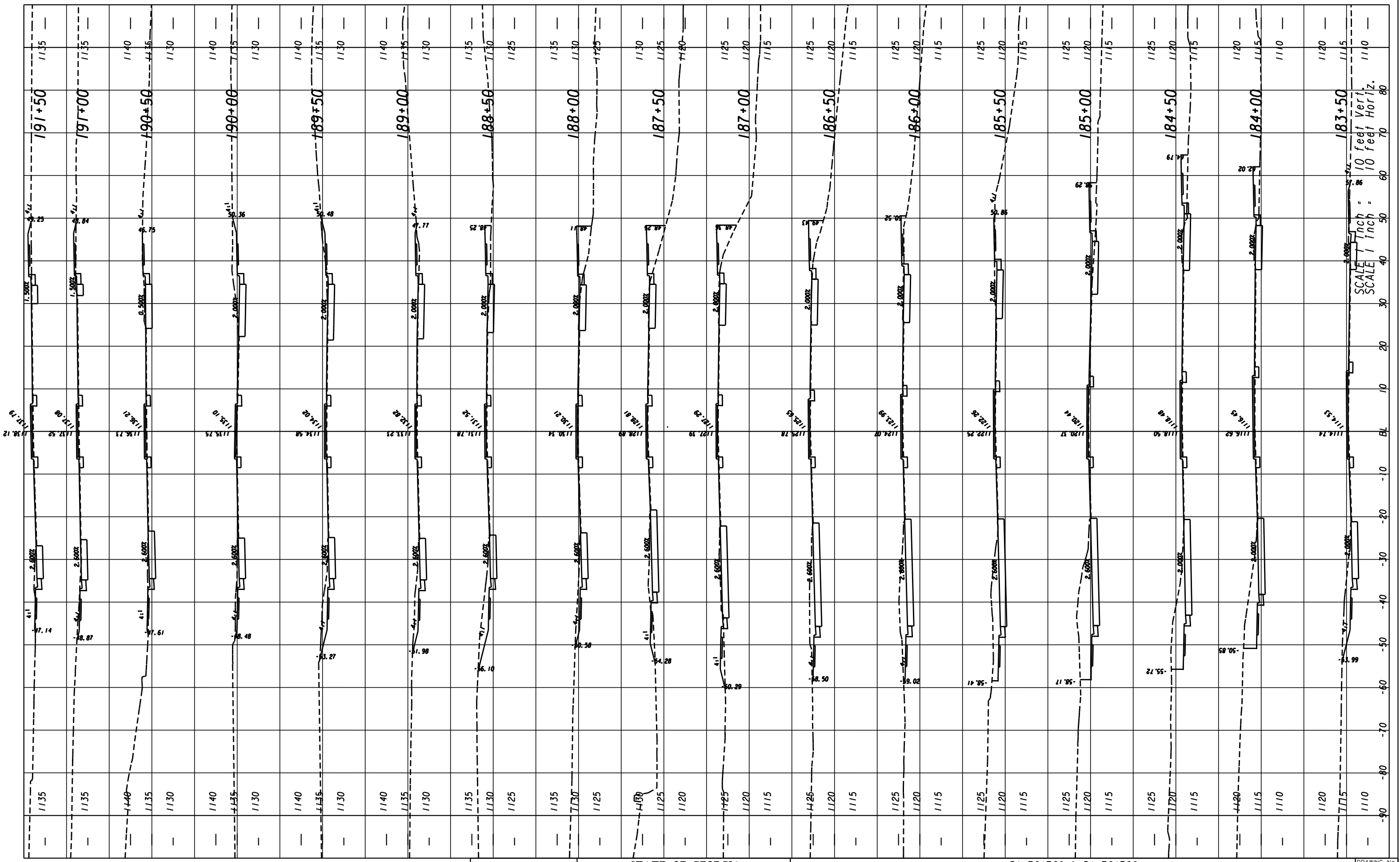

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-12

$DATE$
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PRF

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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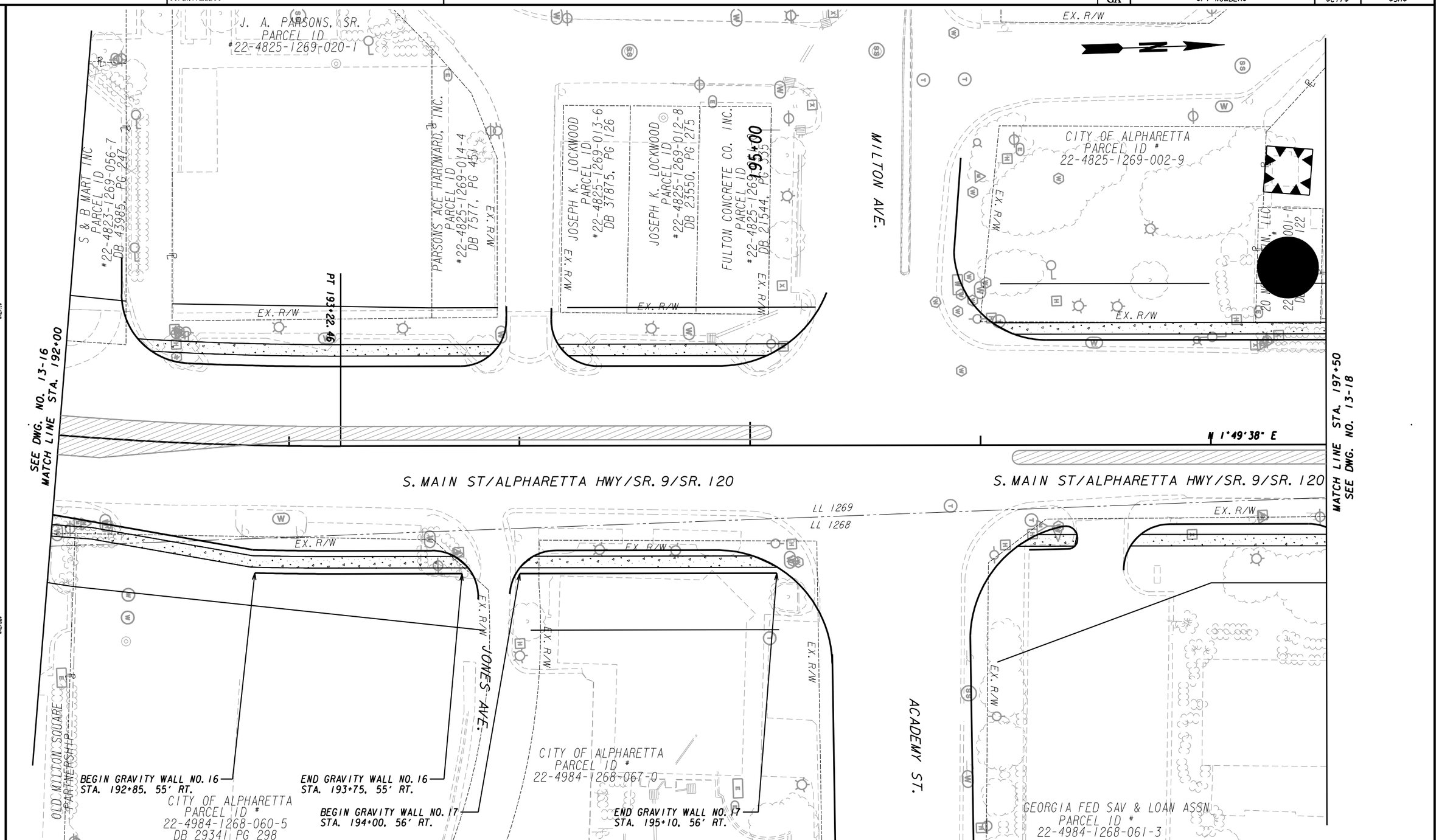

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
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EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

MAINLINE PLAN

S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120

DRAWING No.
13-17

1/5/2009 GPLM

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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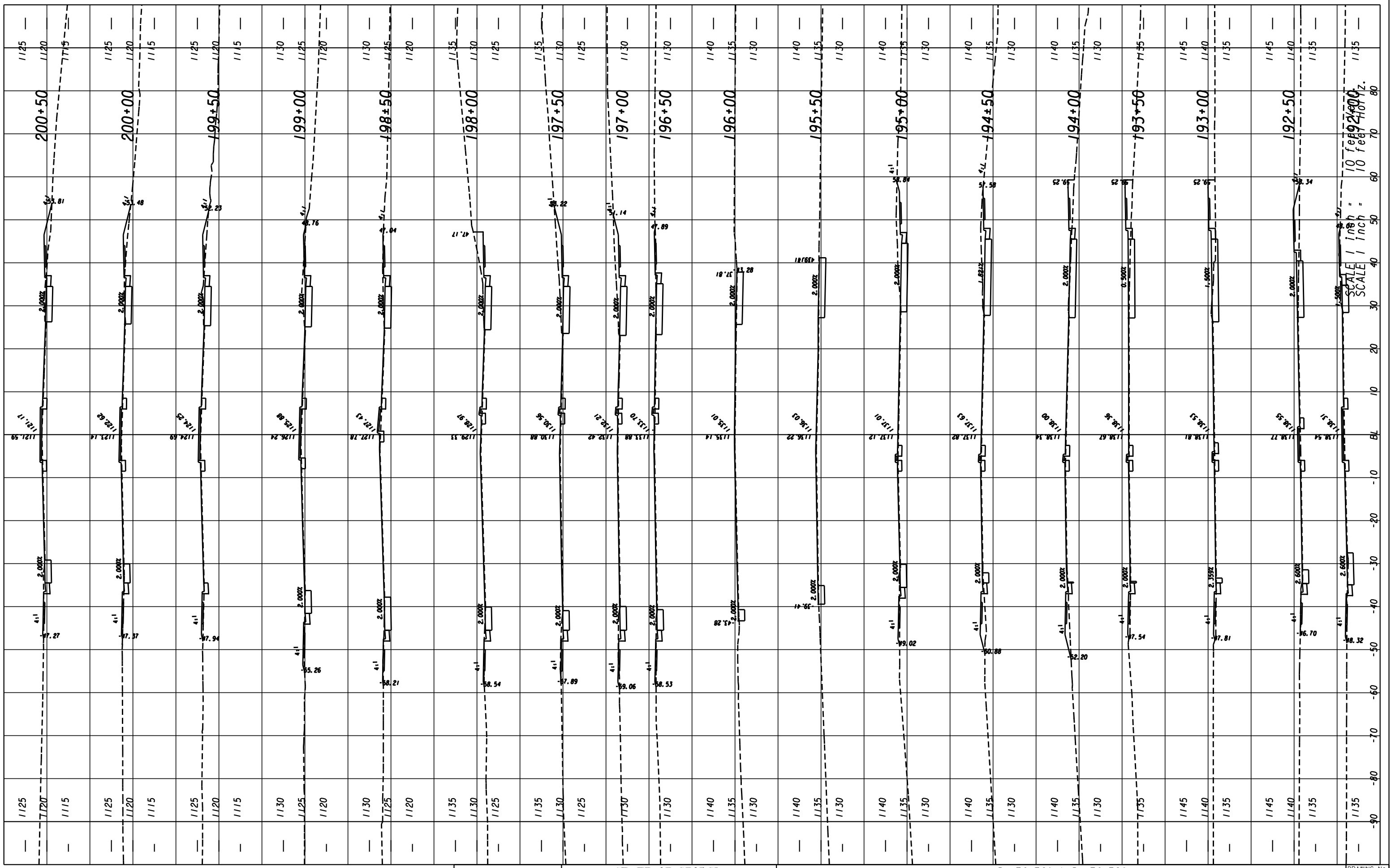

STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE OF CONSULTANT DESIGN	PI 721780 & PI 721790 PEMAS011401084 & PEMAS011401085 S.R. 9 - FULTON COUNTY	DRAWING NO. 23-13

$DATE$
DGN
PRF

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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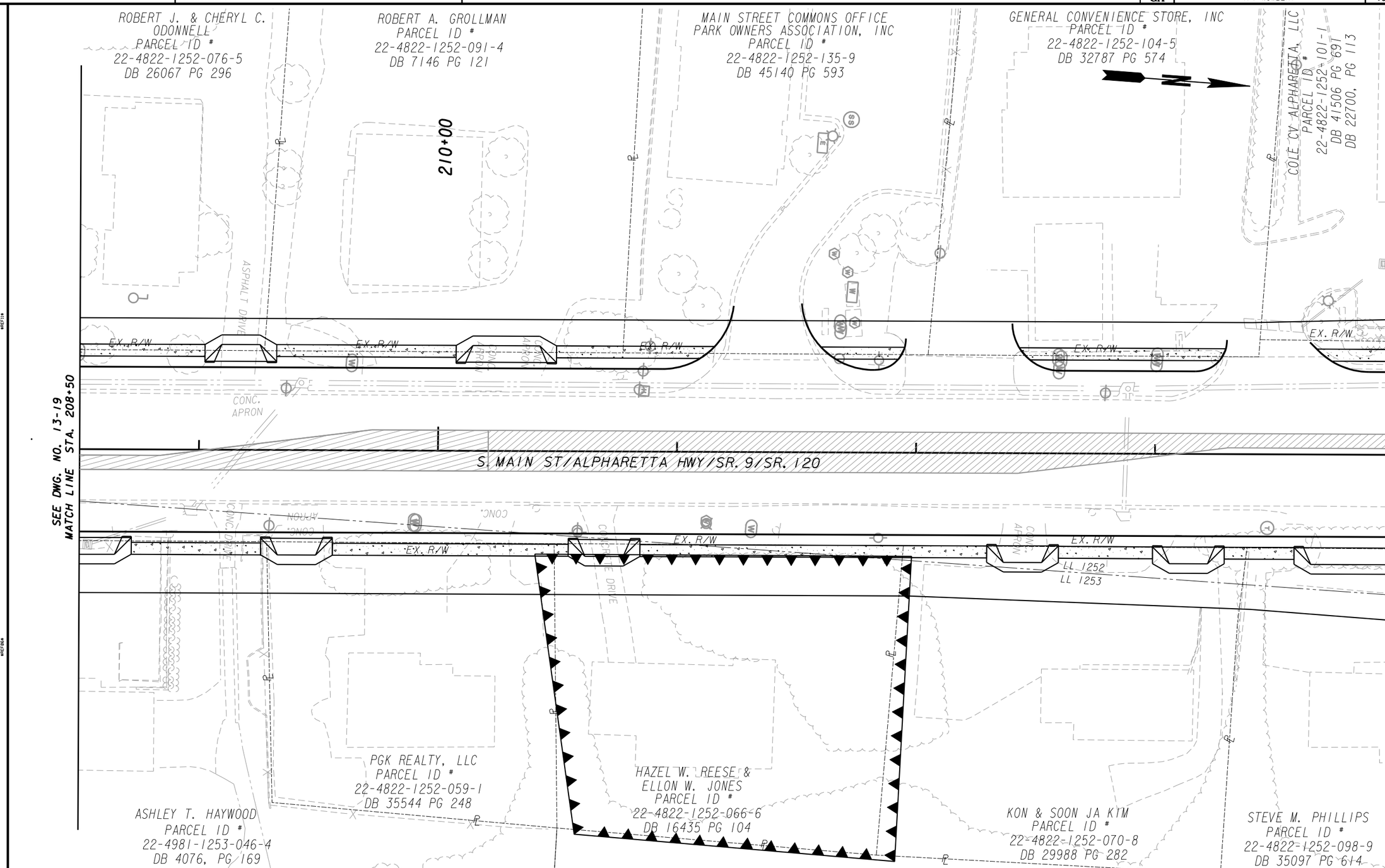

PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
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STATE OF GEORGIA
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SR. 9/SR. 120

DRAWING No.
13-20

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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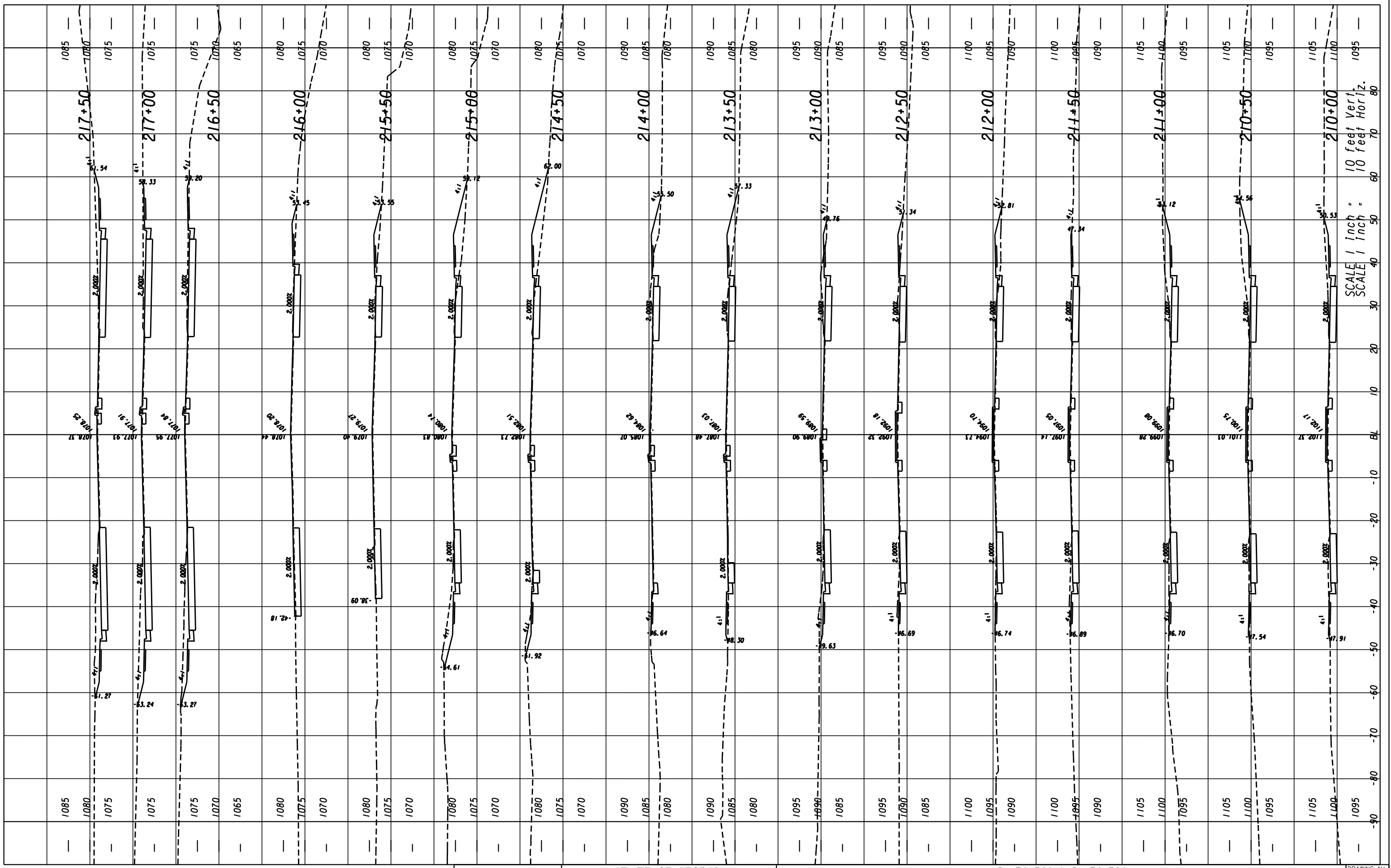

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STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
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PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING No.
23-15

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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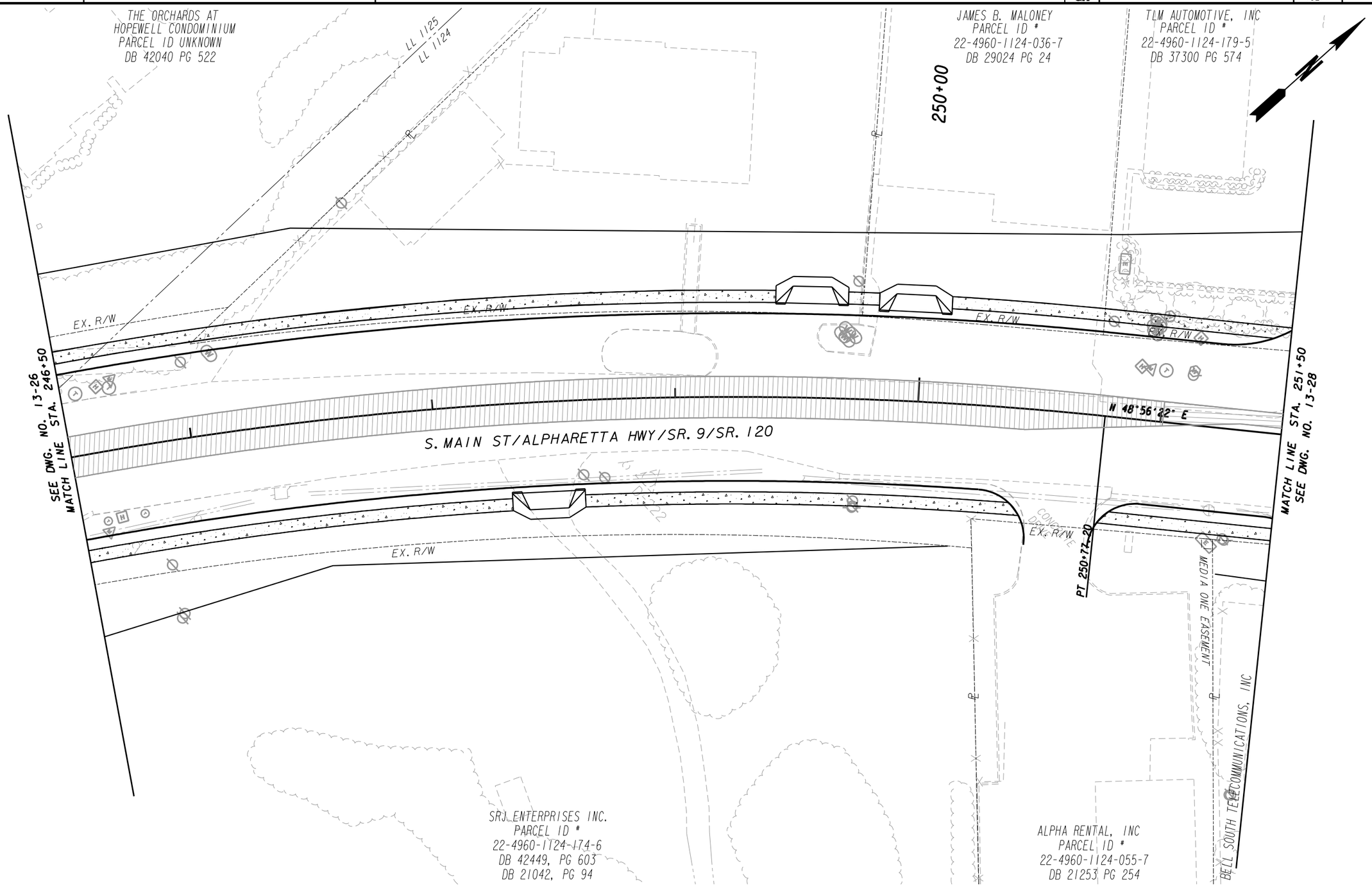

PROPERTY AND EXISTING R/W LINE
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DRAWING No. 13-27

1/5/2009 GPLN

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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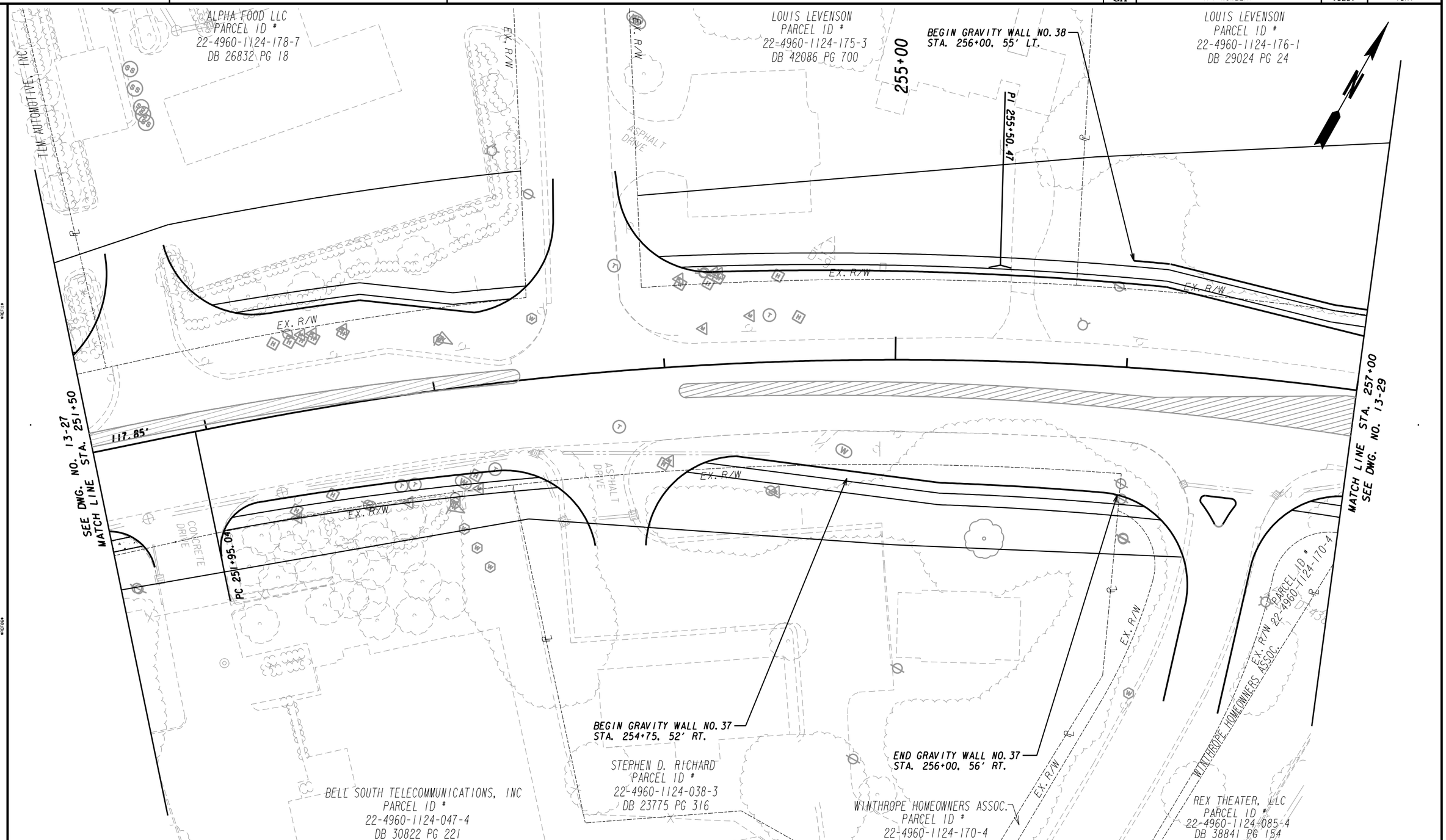

PROPERTY AND EXISTING R/W LINE
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REVISION DATES

STATE OF GEORGIA
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DRAWING No.
13-28

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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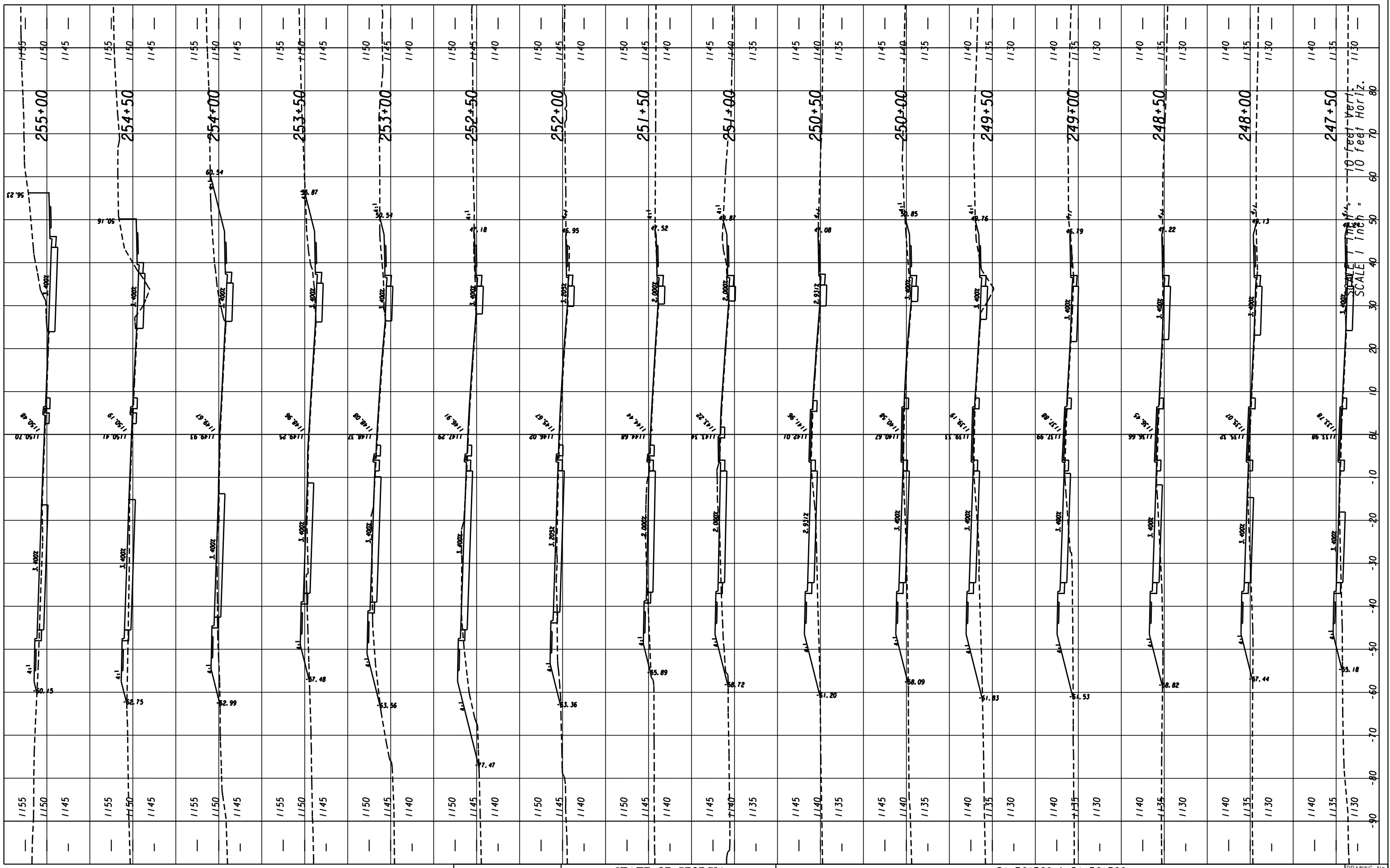

STATE OF GEORGIA
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PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-21

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DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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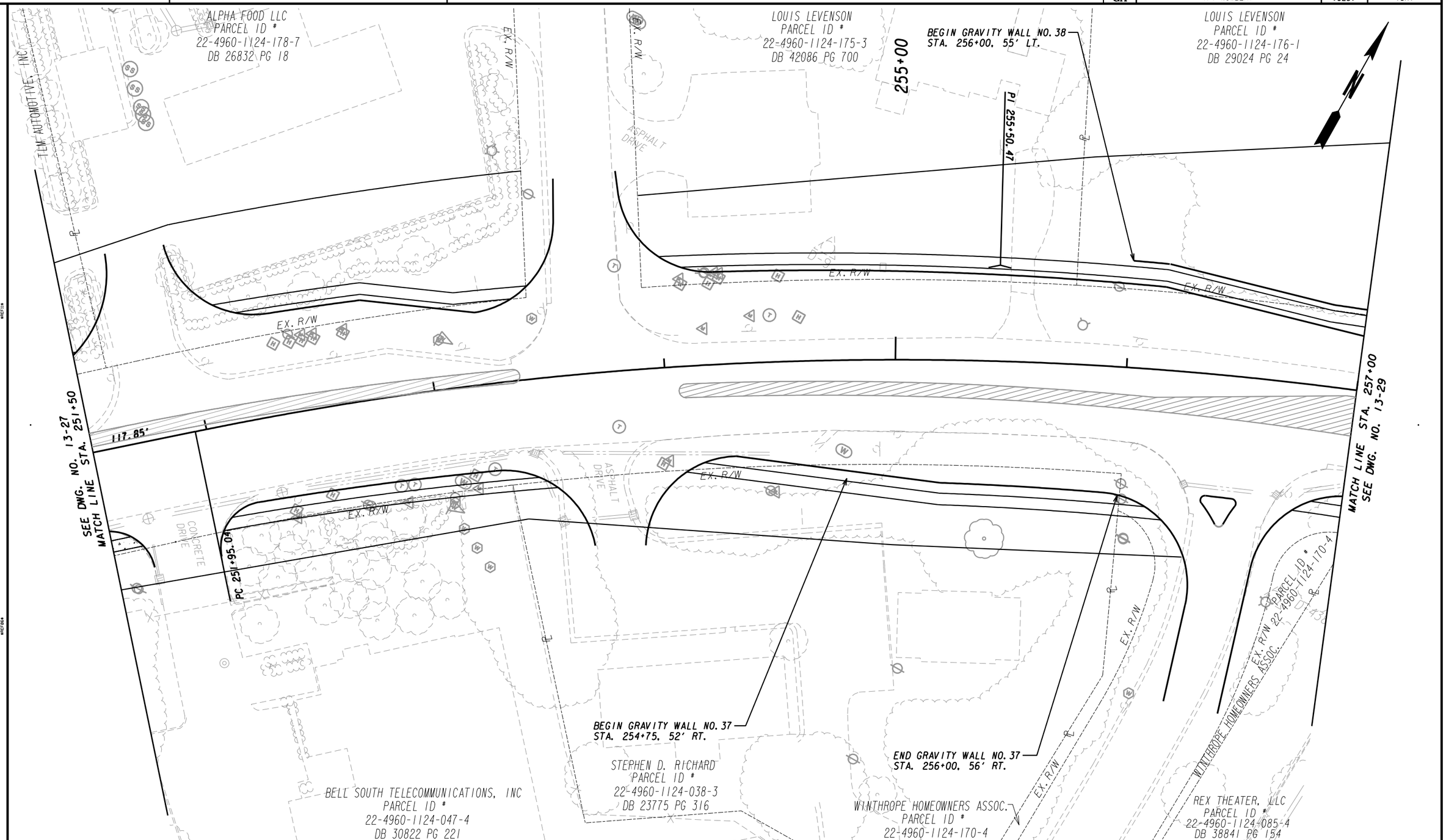

PROPERTY AND EXISTING R/W LINE
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CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

POND
Architects - Engineers - Planners
3500 Parkway Lane
Suite 600
Norcross, Ga. 30092
Phone 678-336-7740
Fax 678-336-7744
Web www.pondco.com
Project No.

SCALE IN FEET
0 20 40 80

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

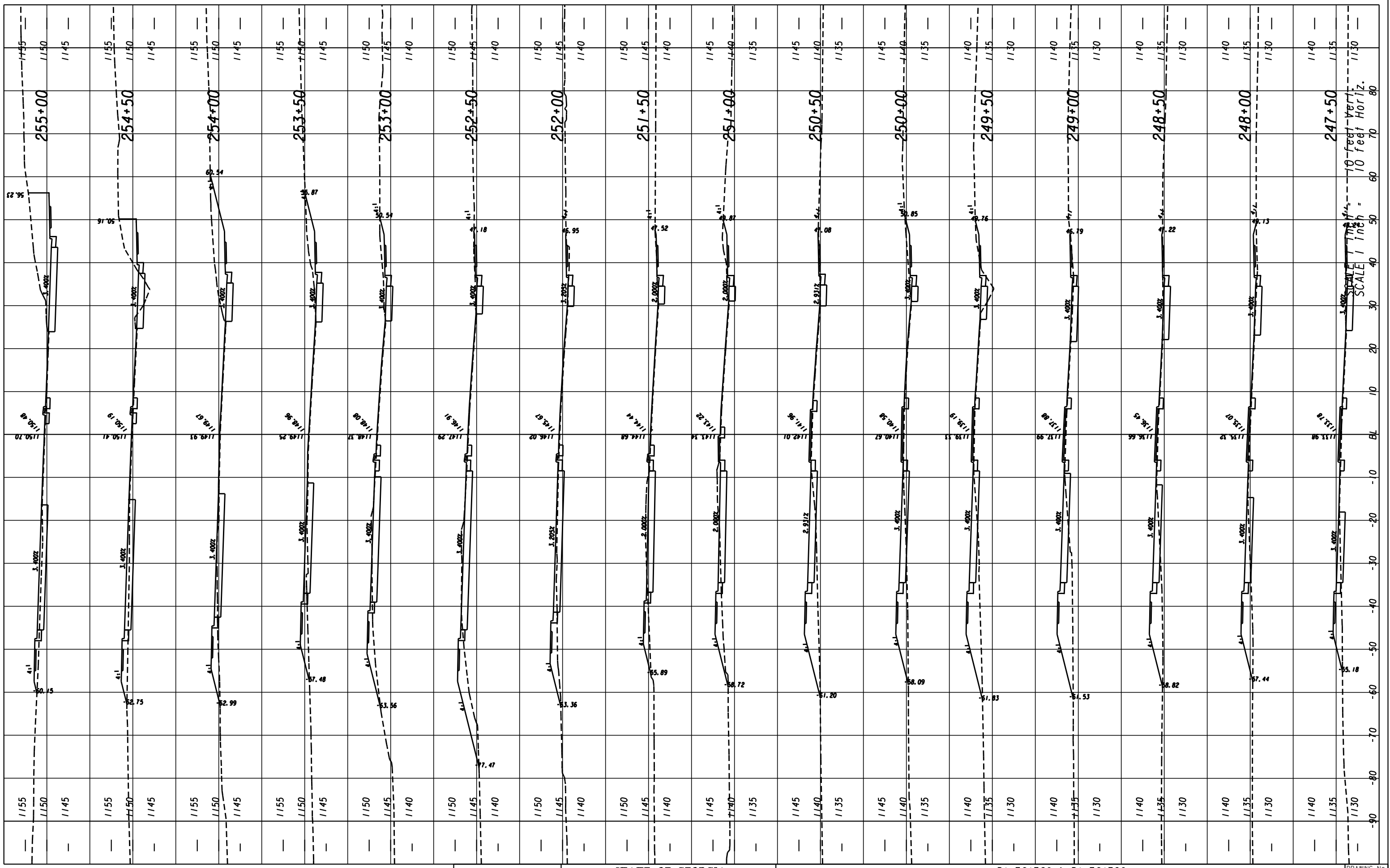
MAINLINE PLAN

S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120

DRAWING No.
13-28

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	GA.			



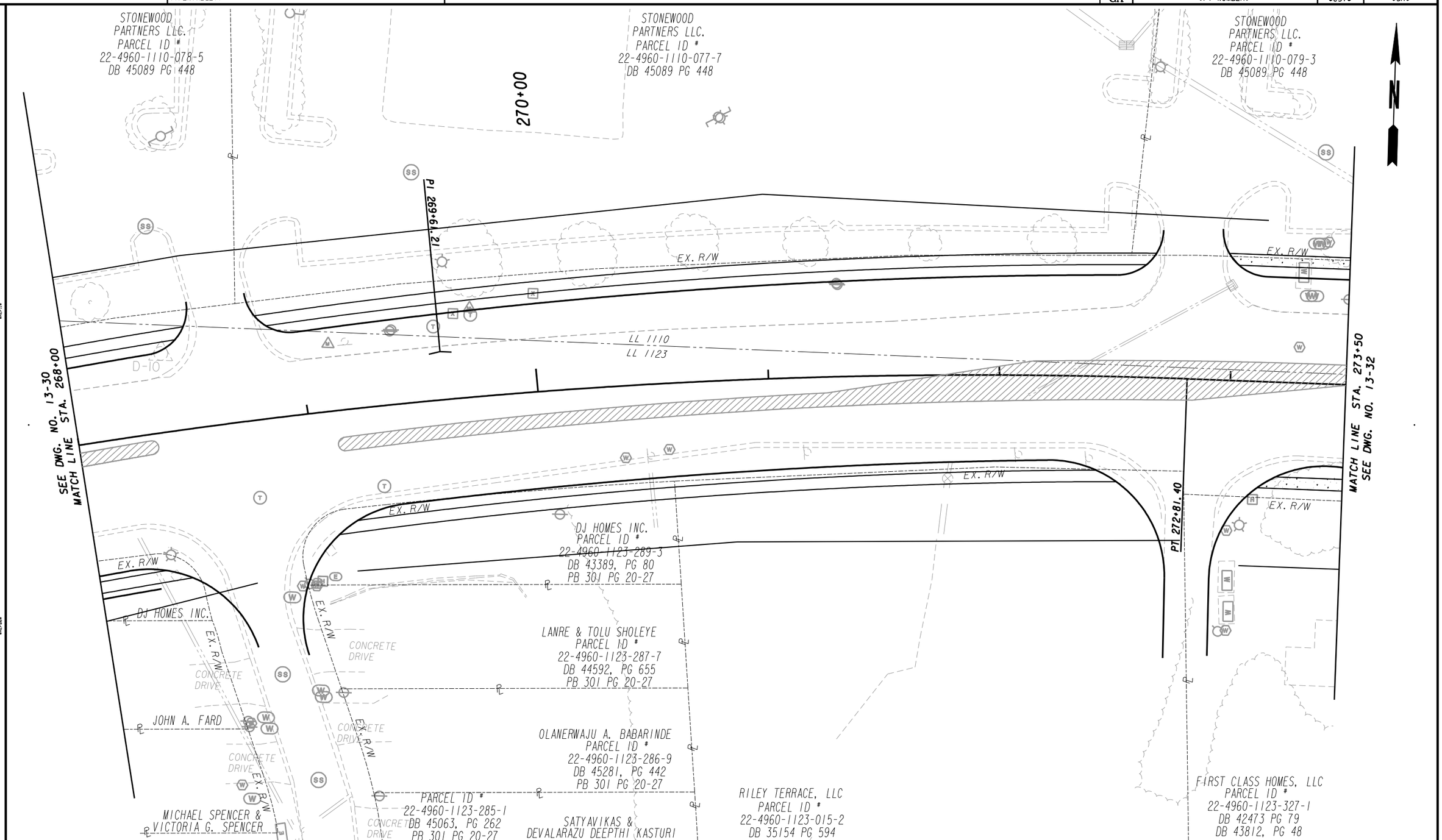
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-21

$DATE$
DGN
PRF

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	$PI NUMBER$	$C31$	SH



PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
REQ'D R/W & LIMIT OF ACCESS

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SCALE IN FEET
0 20 40 80

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

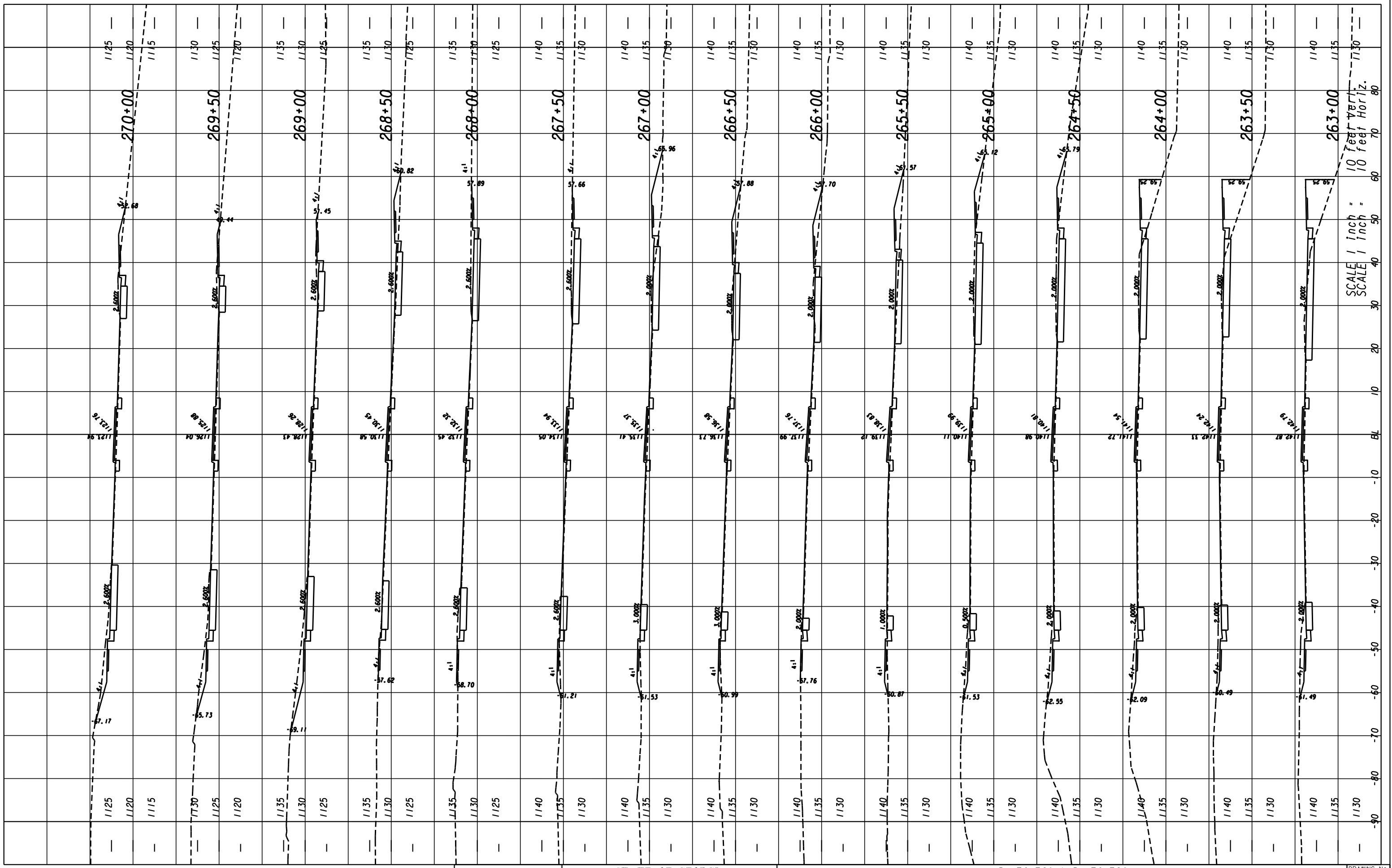
MAINLINE PLAN

S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120

DRAWING No. 13-31

1/5/2009 GPLM

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	GA.			



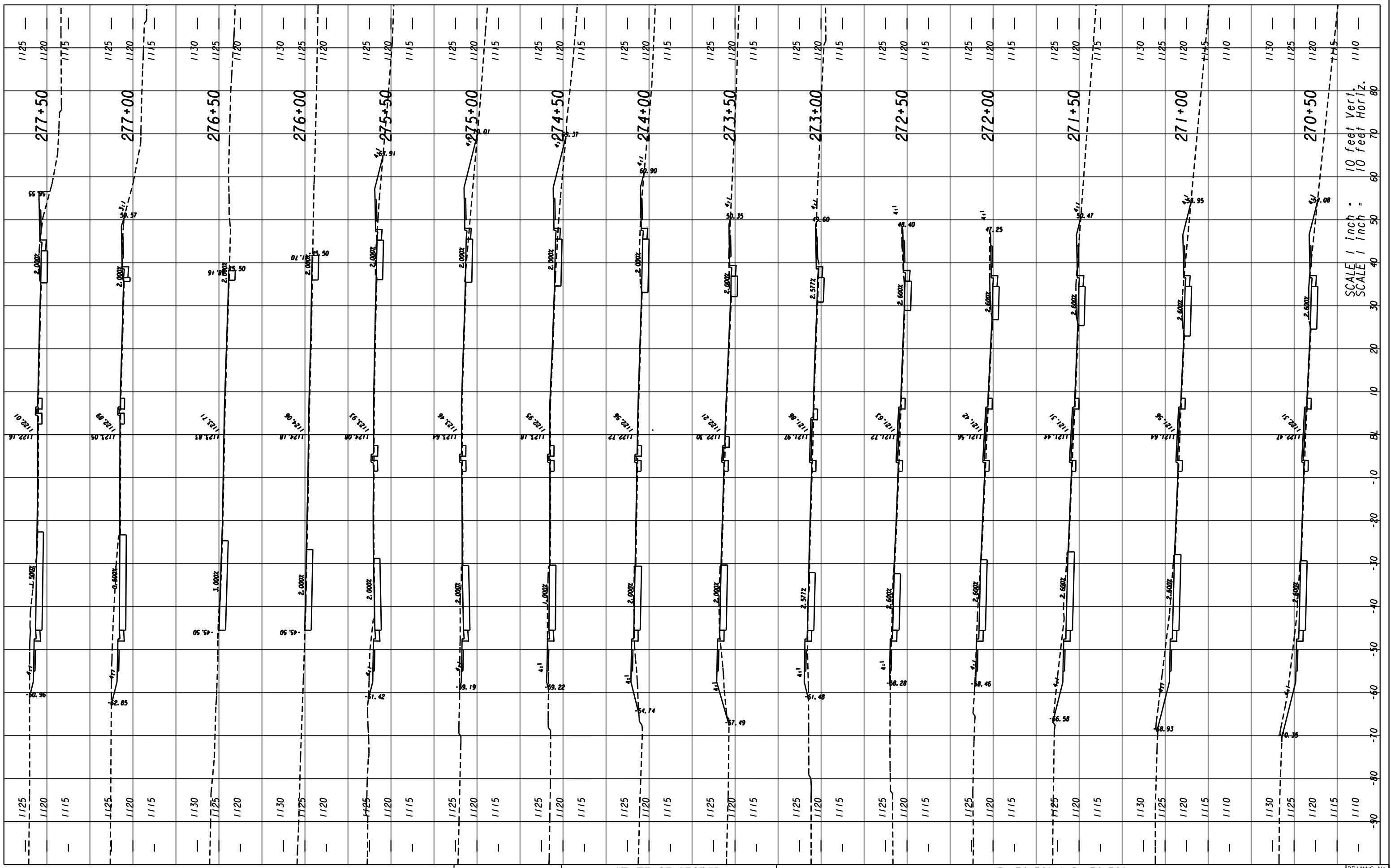
$DATE$
DGN
PRF

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-23

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	GA.			



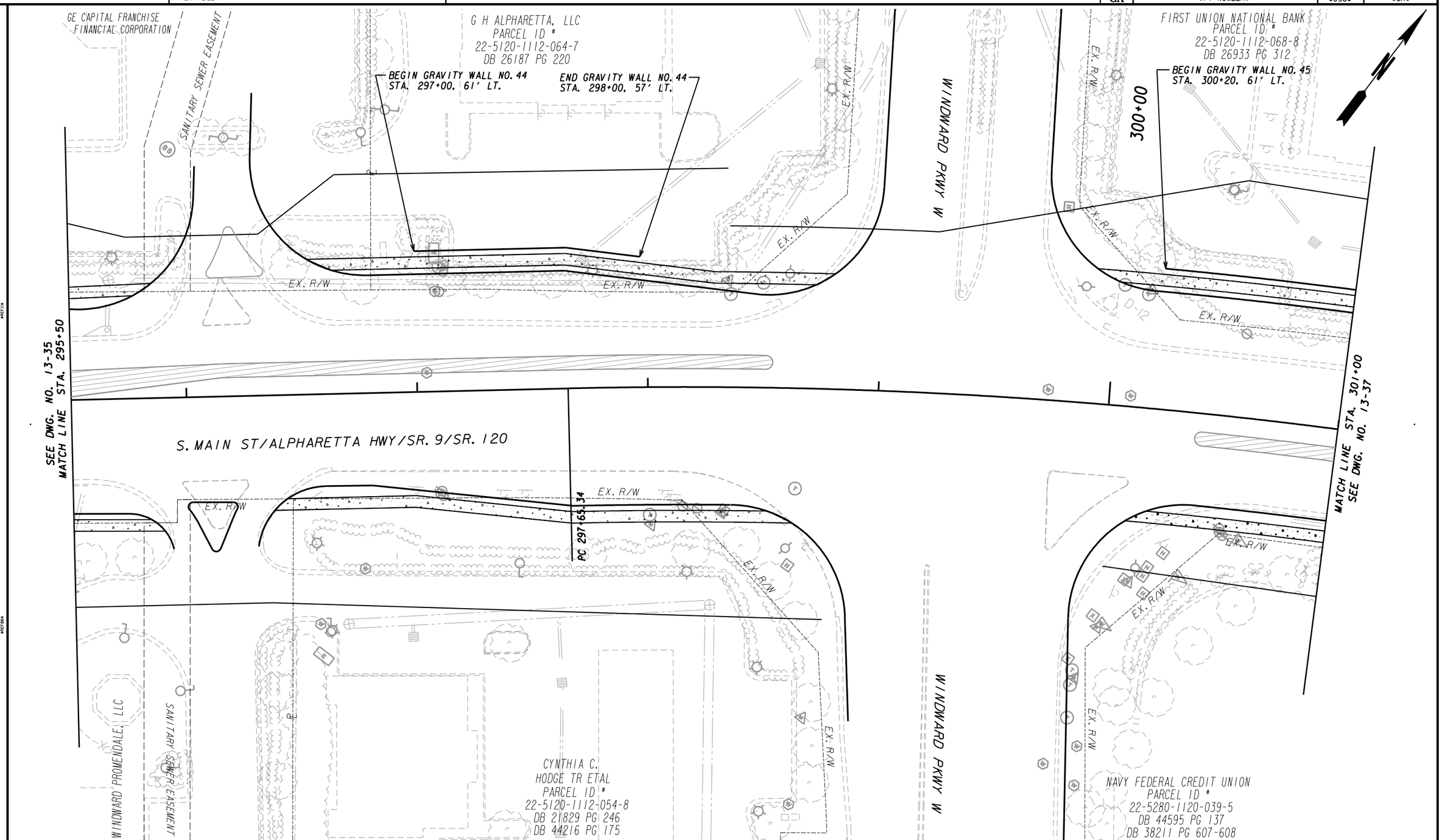
$DATE$
DGN
PRF

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING No.
23-24

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA	$PI NUMBER$	$C36$	SH



PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES

BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
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Project No.

SCALE IN FEET
0 20 40 80

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE:

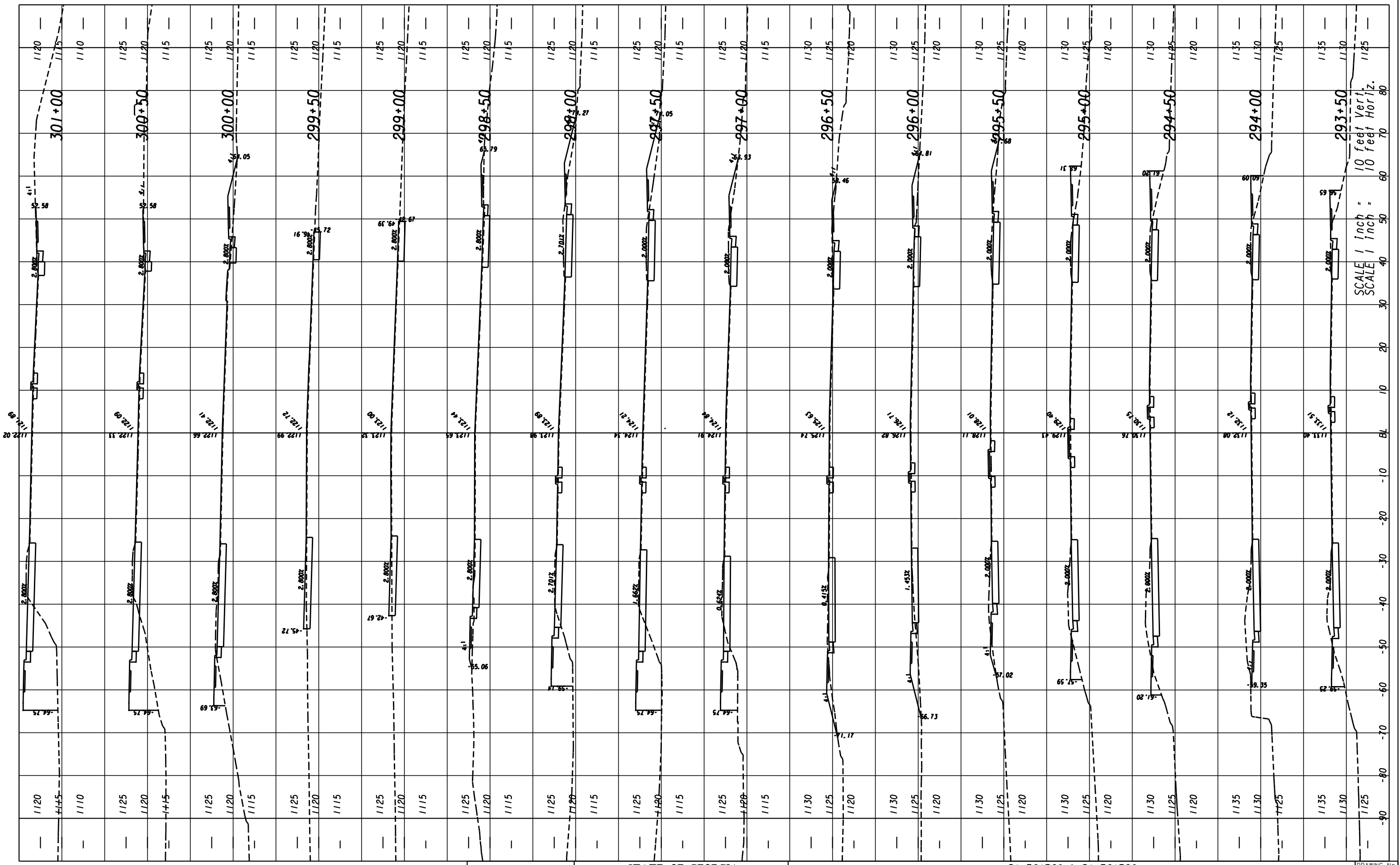
MAINLINE PLAN

S. MAIN ST/ALPHARETTA HWY
SR. 9/SR. 120

DRAWING No.
13-36

1/5/2009 GPLN

REVISION DATES	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
	GA.			



STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF CONSULTANT DESIGN

PI 721780 & PI 721790
PEMAS011401084 & PEMAS011401085
S.R. 9 - FULTON COUNTY

DRAWING NO.
23-27

$DATE$
DGN
PRF

Attachment 11e:

Historic Resources Issues July and August 2010

Emmanuel, Peter

From: Susan Thomas [sthomas@edwards-pitman.com]
Sent: Wednesday, September 01, 2010 12:56 PM
To: Phillips, Amber; Emmanuel, Peter
Cc: 'OsterlohR'; 'Kevin Skinner'; 'ghudson'; 'Linda Edwards'; 'dadair'
Subject: PI 721780 721790 SHPO meeting Bagely House

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

Grant, Kevin, and Chad met with the SHPO today for technical assistance regarding impacts to the historic Bagley House. They were able to explain the efforts to minimize harm to the property and presented other information which ultimately led to SHPO concurring with a determination of No Adverse Effect. This will allow the project to proceed with a Section 4(f) *de minimis* finding, since there will be ROW acquisition from the property, and avoid the need for Regular Section 4(f) Evaluation for this project. This is great news!

Susan L. Thomas, AICP
EDWARDS-PITMAN ENVIRONMENTAL, INC.
770.333.9484
www.edwards-pitman.com
GSA Schedule 899-1 Contract Holder

MEETING MINUTES

SUBJECT: STP00-0114-01(084)(085), Fulton County
PI Nos. 721780 and 721790
State Route (SR) 9 Widening and Reconstruction

MEETING DATE: August 9, 2010

TODAY'S DATE: August 20, 2010

PREPARED BY: Grant D. Hudson, Edwards-Pitman Environmental, Inc. (EPEI)

ATTENDEES: Chad Carlson, Georgia Department of Transportation (GDOT)
Sandy Lawrence, GDOT
Amber Perkins, GDOT
Peter Emmanuel GDOT
Ron Osterloh, Pond & Company, Inc.
Susan Thomas, EPEI
Grant Hudson, EPEI

LOCATION: GDOT – Office of Environmental Services

Meeting Purpose
The purpose of the meeting was to discuss and find a proper solution for the conflict between the current design concept and minimizing adverse impacts to the Bagley House, the Roberts House, the Harvey House, and the Darnell House. These properties were identified during the historic resources field survey and determined eligible for inclusion in the National Register of Historic Places in the Historic Resources Survey Report.

Environmental Issues
The proposed project would consist of the widening and reconstruction of SR 9 in Fulton County, Georgia, and include the reconfiguration of side roads, pedestrian improvements, and signal upgrades. The Roberts House, Harvey House, and the Darnell House all have contributing historic trees within their eligible boundaries which would be adversely impacted by the proposed project. Even though no permanent right-of-way would be taken from these properties, the impact to the trees critical root zones (CRZs) would eventually kill the trees resulting in an adverse effect for the Roberts House, Harvey House, and the Darnell House. Ron Osterloh of Pond & Company discussed some design alternatives which may be able to avoid impacting the trees' CRZs. Four trees in front of the Bagley House would also be lost due to project implementation. According to a Georgia Forestry Commission Arborist, these four trees are not 50 years old or older and are in poor health. Based on this it was determined that these trees do not contribute to the overall eligibility of the Bagley House and their loss would not result in an adverse effect. However; approximately 13 feet of the remaining front yard of the Bagley House would be lost due to project implementation. The current setback of the Bagley House from SR 9 is approximately 25 feet. The general consensus was that the loss of this setback would result

in a finding of adverse effect for the Bagley House. The required right-of-way could be reduced if the proposed right turn lane at the adjacent side street (Cumming Street) was eliminated. Ron stated that the City of Alpharetta would prefer this right turn lane be eliminated. Peter stated this may not be possible due to safety issues. If it is not possible to avoid taking right-of-way or easement from within the boundaries of the Bagley House, any adverse effect to the Bagley House would represent a Section 4(f) impact.

Also discussed was the question of Section 4(f) concerns in relation to the project. It was determined that if no work was being done within the eligible boundaries of the resources, then the loss of the contributing trees due to impacts to their CRZs outside of the eligible boundaries would not qualify as a Section 4(f) impact. Ron Osterloh will modify the construction limits accordingly. Ron stated he would be able to modify the plans such that no right-of-way from within the boundaries of the Roberts House, Harvey House, and Darnell House would be necessary. Easements will be reduced as much as feasible, if not entirely. The group agreed to seek technical assistance from the SHPO regarding impacts to the Bagley House.

Next Steps

Pond & Company will modify the construction limits to try to avoid the trees' CRZs and any required right-of-way and easements from the Roberts House, Harvey House, and Darnell House. Ron will minimize the right-of-way required from the front yard of the Bagley House as much as possible. A technical assistance meeting with the Georgia SHPO attended by Chad Carlson, Grant Hudson, and a Pond & Company Representative will be had to discuss the impacts to the identified resources especially the Bagley House.

If any additions, deletions, or corrections are necessary, please contact Grant D. Hudson at 770-333-9484 or ghudson@edwards-pitman.com. If no responses are received within three days, these meeting minutes will be considered final.

July 6, 2010

MEMORANDUM

TO: **Amber Phillips**
Peter Emmanuel
Kevin Skinner

FROM: **Susan Thomas** SLT

Subject: **PI Nos. 721780 & 721790 / SR 9 - Historic Resource Issues**

The EPEI and GDOT historians have been consulting with arborist Joe Burgess, GA Forestry Commission, to determine if any vegetation within the boundary of the historic resources qualify as contributing elements to the resources, and what effects may result from the proposed concept. The following summarizes their findings:

Bagely House

- The arborist recommended that the row of trees be removed as they are a safety hazard.
- GDOT historian concurs that the trees are not historic and do not contribute to the eligibility of the resource.
- No changes to the design are recommended at this location.
- No adverse effect is anticipated.

Roberts House

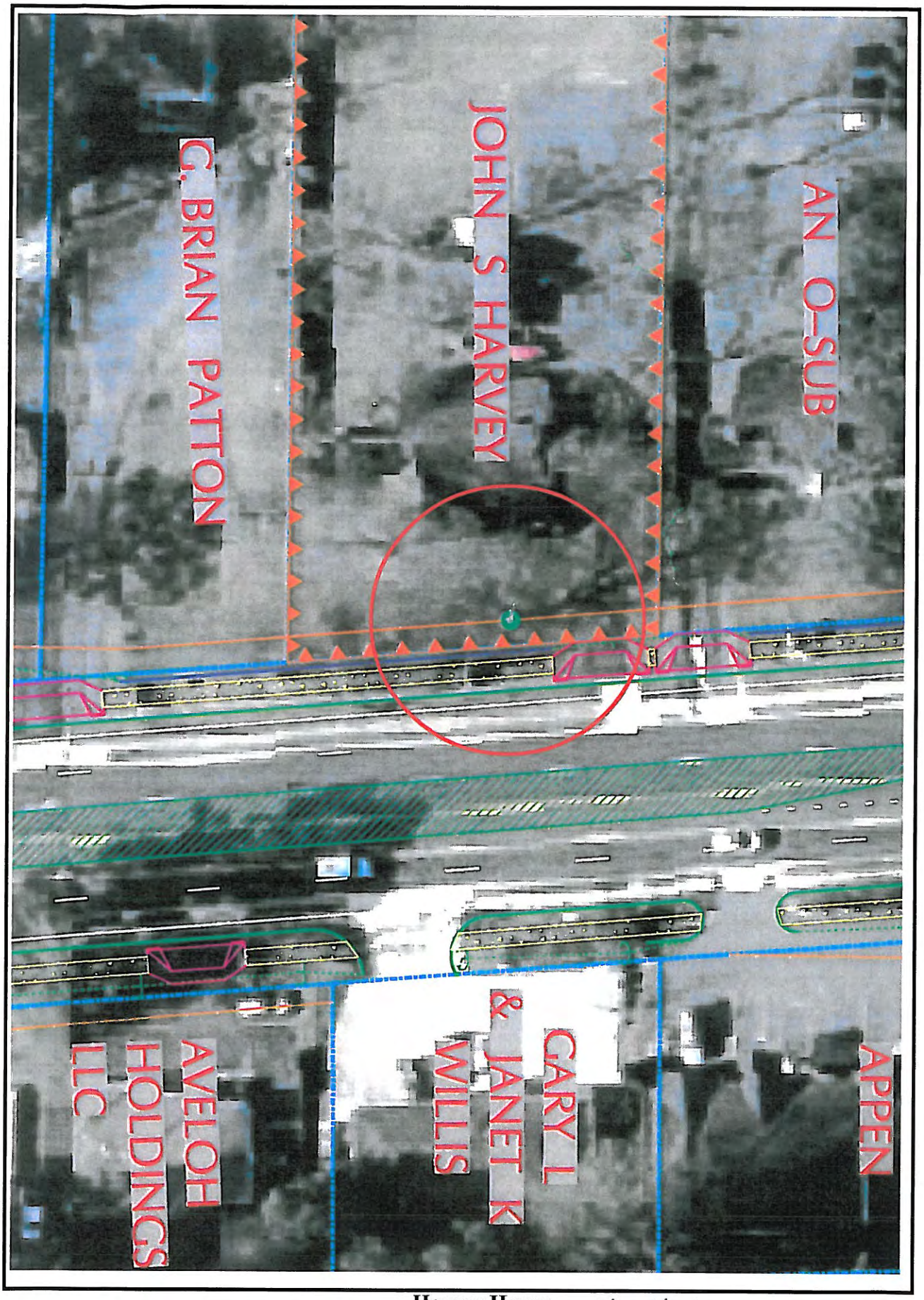
- GDOT historian recommends two trees on the corners of the property are contributing resources. The arborists concurs these trees are over 50 years of age. Critical root zones are delineated and provided to the designer. The current concept plan shows removal of these trees, which would be an adverse effect.
- EPEI recommends shifting the proposed improvements, or reducing the scope of the improvements so that the no more than 30 % of the critical root zone would be disturbed, which is general rule of thumb to prevent irreversible damage to the tree.

Harvey House

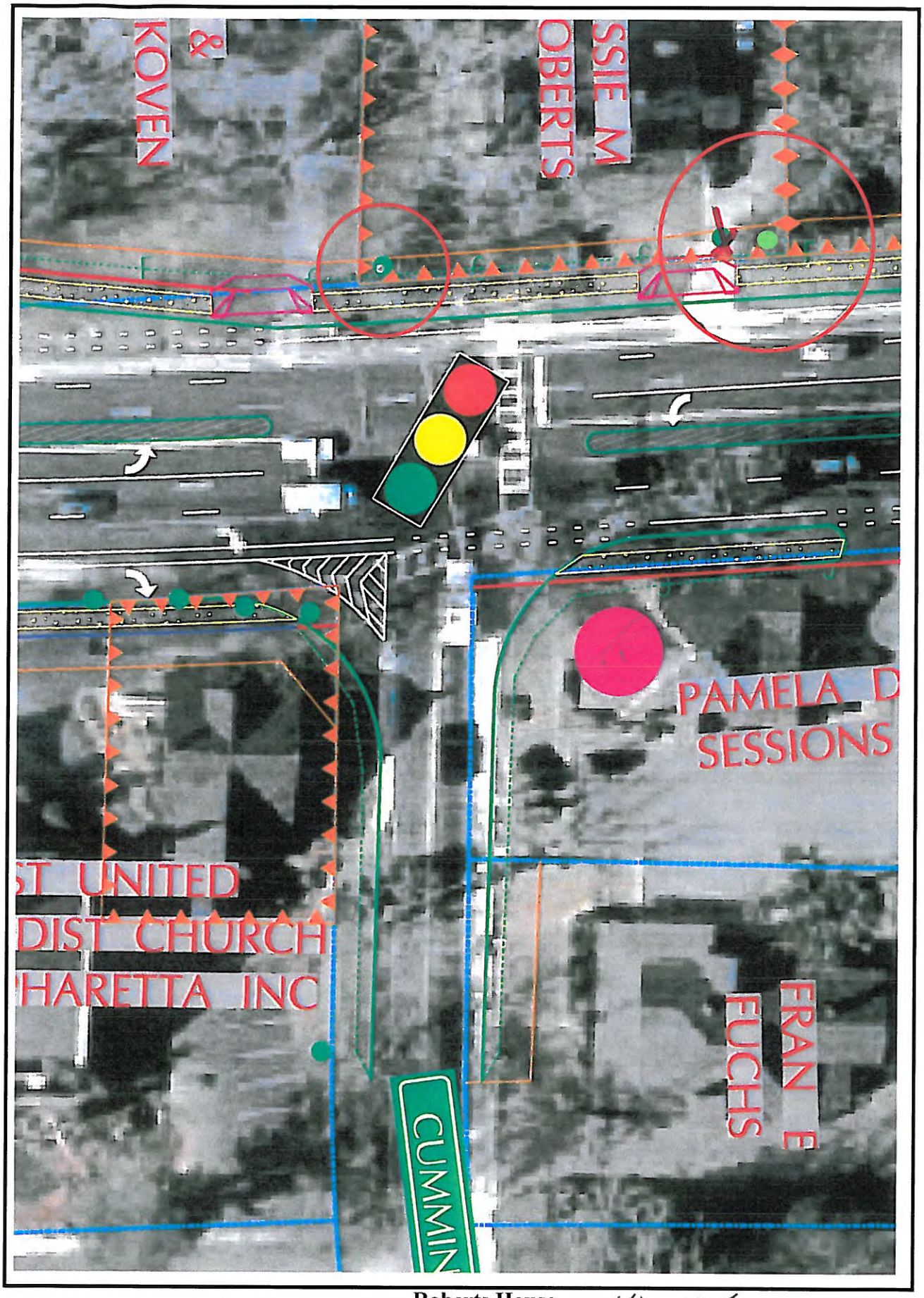
- GDOT historian recommended one tree as a contributing element. The arborists concurs that the tree is over 50 years of age. The proposed work within the critical root zone would damage the tree.
- EPEI recommends shifting the improvement, or reducing the scope of the improvements so that the no more than 30 % of the critical root zone would be disturbed, which is a general rule of thumb to prevent irreversible damage to the tree.

Darnell House

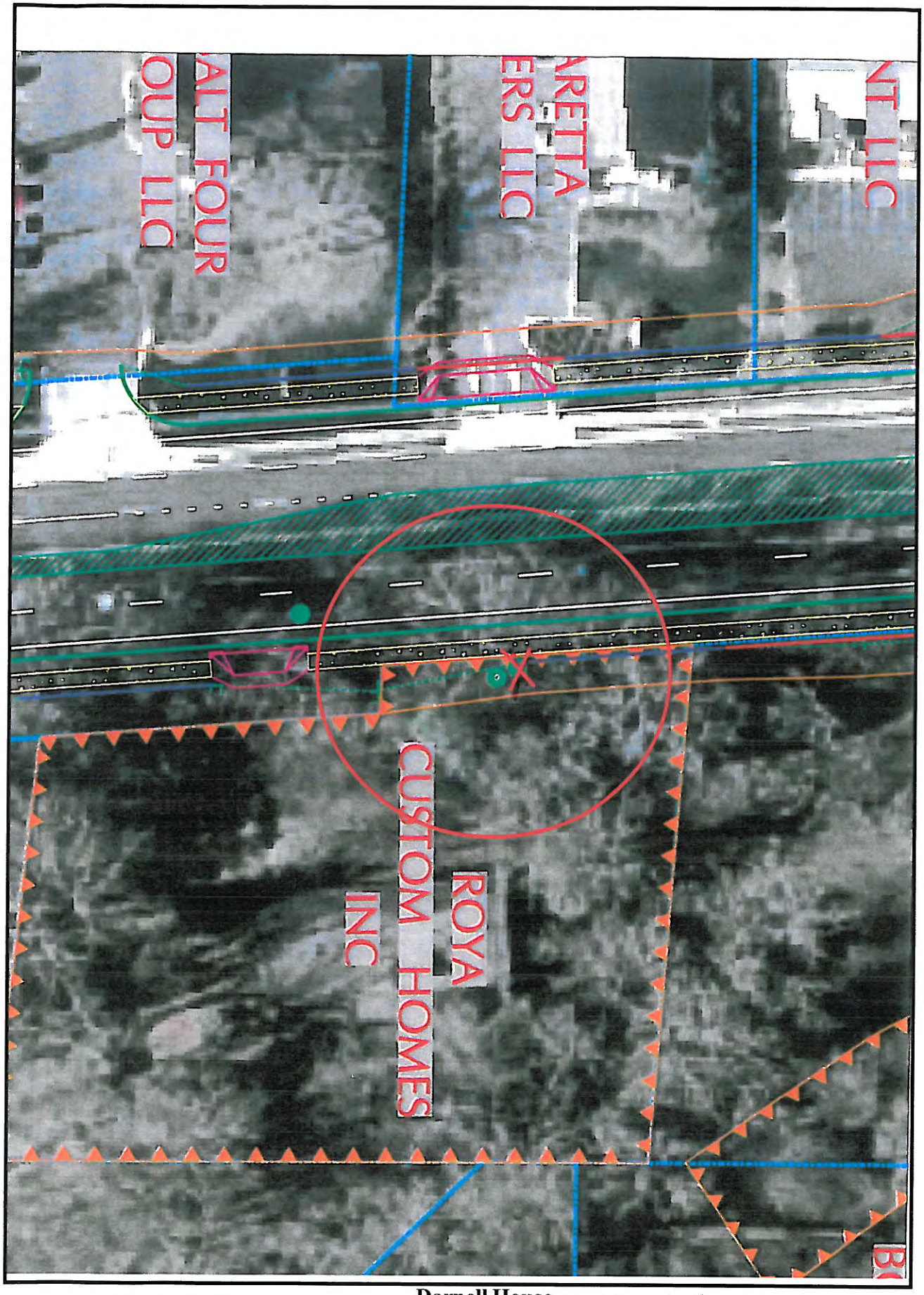
- There is one tree that is considered historic and contributing elements to the resource. However, the loss of this tree, as currently proposed, may not be enough to cause an adverse effect because evidently there is quite a bit of vegetation that would remain. The GDOT historian recommends that we provide more detail about how many trees would actually be lost by the proposed work in this area. A field visit with EPEI historian and design engineer is recommended.



Harvey House 1" = 40'



Roberts House 1" = 40'



Darnell House 1" = 40'

Attachment 12:

Benefit Cost Analysis

GDOT Benefit-Cost Calculator

enter information in green cells

Project Information

ID	721780
Description	S.R. 9/N. Main St from Academy St to Windward Pkwy

Cost Estimate

Date of estimate		9/24/10
PE cost	$	1,945,080
ROW cost	$	24,727,900
CST cost	$	10,355,922
Total	$	37,028,902

Traffic in 2032

Source of traffic data	HERD model
Without project (nobuild)	
Annual VMT	7,984,250
Annual VHT	845,000
Average speed (mph)	9
With project (build)	
Annual VMT	9,306,000
Annual VHT	572,000
Average speed (mph)	16

Parameters	Default	Override	Used
Analysis year	2035	2032	2032
Discount rate	7.0%		7.0%
Design life (years)	25		25
Fuel price ($/gallon)	3.22	2.71	2.71
Fuel economy (mpg)	18.03		18.03
Value of auto travel ($/hr)	13.75		13.75
Value of truck travel ($/hr)	72.65		72.65
Percent trucks	12%	4%	4%
Include GSP benefits	No	No	No

Costs		
Total cost	$	37,028,902
Annualized cost	**$**	**3,177,469**
Auto Delay Costs		
Nobuild	$	11,154,000
Build	$	7,550,400
Auto delay savings	**$**	**3,603,600**
Truck Delay Costs		
Nobuild	$	2,455,570
Build	$	1,662,232
Truck delay savings	**$**	**793,338**
Fuel Costs		
Nobuild	$	1,198,523
Build	$	1,396,932
Fuel cost savings	**$**	**(198,409)**
Change in GSP		NA
Auto delay cost adjustment		NA
Truck delay cost adjustment		NA
Fuel cost adjustment		NA
Total benefit adjustment		**NA**
Benefits in 2032	**$**	**4,198,529**
Benefit-Cost Ratio		**1.32**

Notes

Fuel price is based on avg. of gasoline & diesel price

GDOT Benefit-Cost Calculator

enter information in green cells

Project Information

ID	721790
Description	S.R. 9/S Main St from Upper Hembree Rd to Academy St

Cost Estimate

Date of estimate		9/24/10
PE cost	$	1,980,414
ROW cost	$	26,902,800
CST cost	$	9,016,184
Total	$	37,899,398

Traffic in 2032

Source of traffic data	HERDS model
Without project (nobuild)	
Annual VMT	16,735,500
Annual VHT	1,390,500
Average speed (mph)	12
With project (build)	
Annual VMT	15,659,250
Annual VHT	1,019,750
Average speed (mph)	15

Parameters	Default	Override	Used
Analysis year	2035	2032	2032
Discount rate	7.0%		7.0%
Design life (years)	25		25
Fuel price ($/gallon)	3.22	2.71	2.71
Fuel economy (mpg)	18.03		18.03
Value of auto travel ($/hr)	13.75		13.75
Value of truck travel ($/hr)	72.65		72.65
Percent trucks	12%	4%	4%
Include GSP benefits	No	No	No

Costs		
Total cost	$	37,899,398
Annualized cost	**$**	**3,252,167**
Auto Delay Costs		
Nobuild	$	18,354,600
Build	$	13,460,700
Auto delay savings	**$**	**4,893,900**
Truck Delay Costs		
Nobuild	$	4,040,793
Build	$	2,963,394
Truck delay savings	**$**	**1,077,400**
Fuel Costs		
Nobuild	$	2,512,181
Build	$	2,350,625
Fuel cost savings	**$**	**161,557**
Change in GSP		NA
Auto delay cost adjustment		NA
Truck delay cost adjustment		NA
Fuel cost adjustment		NA
Total benefit adjustment		**NA**
Benefits in 2032	**$**	**6,132,856**
Benefit-Cost Ratio		**1.89**

Notes

Fuel price is based on avg. of gasoline & diesel price

Attachment 13:

Signal Warrant Screening

POND
Architects ▪ Engineers ▪ Planners

Memorandum

To: Peter Emmanuel, Georgia Department of Transportation

From: Richard Fangmann, P.E., Pond & Company

Date: August 4, 2010

Subject: Signalization Needs at SR Intersections with Vaughn Drive and Canton Street
Widening and Reconstruction of SR 9/North Main Street and South Main Street
PEMAS011401084 and PEMAS011401085
PI No. 721780 and 721790

CC: Ron Osterloh, P.E., Pond & Company
Kevin Skinner,P.E., Pond & Company
Steve Bryan, P.E., PTOE, Long Engineering

Pond & Company has prepared a concept design and concept report for the widening and reconstruction of SR 9 in Alpharetta, Georgia (as referenced above). We recently received a question from the Georgia Department of Transportation (GDOT) regarding the need for signalization at the intersections of SR 9 at Vaughn Drive and Canton Street. In response to your question, we have discussed the traffic analysis results with Long Engineering, Inc., who performed the traffic analysis. They indicated that the current and projected side street traffic volumes for opening year are too low to meet the MUTCD signal warrant criteria, so a full signal warrant analysis was not performed at those intersections.

Pond & Company examined the approved design traffic volumes (AM and PM peak hours) for the subject intersections and compared the peak hour traffic volumes to the minimum traffic volume criteria for signal warrants in the Manual On Uniform Traffic Control Devices (MUTCD), by FHWA. The results of this evaluation are provided below.

Traffic Volumes Considered

The traffic volumes forecast for the Vaughn Drive and Canton Street intersections were approved by GDOT on March 17, 2010. These volumes are based on a one percent average growth rate applied to current year traffic and adjusted to balance traffic flows. A check of the subject intersections indicates that all side street movements were increased by at least one percent per year to achieve the design volumes. The forecast side street volumes are shown in Table 1.

Table 1: Peak Hour Traffic Volumes for Movements from Side Streets

Year	Canton Street				Vaughn Drive			
	Left Turn		Right Turn		Left Turn		Right Turn	
	AM	PM	AM	PM	AM	PM	AM	PM
2012	23	61	276	49	43	34	47	27
2032	28	75	337	59	53	41	56	33

Comparison to MUTCD Criteria

The side street traffic volumes were compared to the MUTCD traffic signal warrant criteria. The side street right turning volumes were not considered because in most cases, these movements can be accommodated by right turn lanes without the need for signalization. This is consistent with typical MUTCD signal warrant evaluation procedures. The Canton Road intersection, which experiences high right turning volumes, has separate left and right turning lanes included in the design.

The results of this evaluation are shown in Table 2 for years 2012 and 2032. Please note, the year 2012 evaluation is used for design, as the signal criteria must be met in opening year for inclusion in the design to avoid installation of signals prior to meeting volume criteria.

Table 2: Comparison of Opening Year 2012 Peak Hour Volume to MUTCD Signal Warrant Criteria

Warrant	Min. Side Street Vol. Criteria (vph)	2012 Results	
		Canton St.	Vaughn Dr.
1A - 8 Hr.Vol.	105	Not satisfied	Not satisfied
1B - 8 Hr. Vol.	53	Met in hrs. near PM peak - not full 8-hrs.	Not satisfied
1C - 8 Hr. Vol.	84 for A / 42 for B	Not satisfied	Not satisfied
2 - 4 Hr. Vol.	60	Met PM peak hr. only - not full 4-hrs.	Not satisfied
3 - Peak Hr. Vol.	75	Not satisfied	Not satisfied

Conclusion

This comparison of peak hour volumes to MUTCD criteria is not a full signal warrant analysis. However, it indicates that the side street volume would be too low to satisfy MUTCD signal criteria in the opening year 2012 at either the Canton Street or Vaughn Street intersections. Therefore, these intersections are recommended to remain unsignalized in the SR 9 design plans.

The Canton Road intersection has traffic volumes in year 2032 that may satisfy MUTCD signal warrant criteria prior to the design year. Therefore, it is recommended that this location be treated as a potential future signalized intersection and appropriate right-of-way be included to allow placement of signal poles if a signal is warranted in future years based on an evaluation of traffic volumes.

Please do not hesitate to call me if you have further questions or comments regarding this evaluation.

Attachment 14:

Conceptual Stage Study

D. O. T. 66

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

RECEIVED
SEP 1 2010
Office of Environmental Services

INTERDEPARTMENT CORRESPONDENCE

FILE STP-114-1(84) &(85) Fulton County **OFFICE:** R/W, Atlanta, GA

P.I. #: 721780 & 721790 **DATE:** 08/30/2010

FROM Howard P. Copeland, State Right-of-Way Administrator
Wates Keller, R/W Relocation Manager

TO Glenn Bowmen, State Environmental/Location Engineer
Attention: Amber Phillips

SUBJECT CONCEPTUAL STAGE STUDY

Attached is the requested Conceptual Stage Study for the above referenced project. If there are any questions, please contact LaWanda E. Owens at 404-347-0156.

WK/LEO

Primary PI # 721780
Add'l PI Nos. 721790
NEPA analyst Phillips
Recipient: Phillips
Copies: OH ___ Asst. OH ___
File: NEPA ___ A/N ___ Arch ___
Eco ___ Hist ___
ORIGINAL TO GEN. FILES

Conceptual Stage Study
SR9 / S.MAIN ST@UPPER HEMBREE RD
STP-114-1(84) & (85), P.I. 721780 & 721790
Fulton County, Georgia

CONCEPTUAL STAGE STUDY

The Georgia Department of Transportation will assist families or individuals in finding and relocating to decent, safe and sanitary housing which is adequate to meet their needs and within their financial means. Assistance will also be given to businesses, farm operators, and nonprofit organizations in relocating to other quarters. This assistance is provided to families, individuals, businesses, farms and nonprofit organizations in the form of moving expenses in order for them to relocate. In addition, owner or tenant occupants of residential housing being displaced will be provided financial assistance for increased costs they may encounter in buying or renting. Owner occupants may also be provided financial assistance for certain other incidental expenses such as closing costs and increased interest payments required in their purchase of a replacement home.

Project STP-114-1(84) & (85), Fulton County will displace approximately one (1) owner occupied single family residences and, one (1) vacant rental family residences. The foregoing information obtained from Fulton County Tax Assessor data was used in addition to personal field inspection by Right of Way personnel. U.S. Census Bureau information is attached to give a demographic overview of the area. Housing inventory was surveyed using market information from real estate agents, newspapers and the local housing Multiple Listing service (MLS). During this preliminary study, no contact was made with any of the displacees. This neighborhood is generally mixed residential and commercial in nature made up of mostly commercial properties. In our opinion there is an adequate supply of replacement housing available as shown in the attached Housing Inventory study.

Also located on the project are seven (7) commercial buildings. Displacement of the businesses will affect approximately thirty-eight (38) employees. Every effort will be made to assist the businesses in relocating within the same area, rather than relocating to other areas or closing entirely. There are seven (7) types of businesses to be displaced.

In the event there are no replacement sites available at the time of acquisition, or if relocation is not within their financial means, they (the businesses) may qualify for "in lieu of" payments. An "in lieu of" payment is defined as a payment to be made to a business that, (1) cannot be relocated without a substantial loss of its existing patronage, and (2) is not a part of a commercial enterprise having more than three (3) similar establishments not being acquired by the Department. "Existing Patronage" is the average net annual earnings or clientele of the business during the two taxable years immediately proceeding the taxable year in which the business is displaced. Any such payment determined will not be less than $1,000.00 or more than $20,000.00.

LAST RESORT HOUSING PRELIMINARY STUDY

The owner and tenant occupant displacees listed on the Last Resort Housing Displacee Inventory may possibly require the use of Last Resort Housing Procedures.

In the utilization of Last Resort Housing, five possibilities exist. These are: (1) moving the existing structure onto remaining land or other lots within the area; (2) utilization of available housing for rent or sale, and making supplementary payments in excess of $5,250.00 for tenant occupants, and making supplementary payments in excess of $22,500.00 for owner occupants; (3) purchasing existing housing, available for sale, and renting to the displacees at a rental amount comparable to their existing rent; (4) purchasing existing housing, available for sale, and deeding it to the displacee; and (5) constructing new housing on vacant lots in the area and relocating the displacees into them. Of these options, item number (2) appears to be the most feasible, although none of the others will be ruled out completely. In any event, each displacee's situation will be examined on an individual basis during the acquisition stage, and more specific solutions will be made at that time, based on known facts.

Based on the foregoing information, we can assure that all relocatees will be offered decent, safe, and sanitary housing, within their financial means, and a list of available and comparable housing furnished to all displacements attached with the notice to vacate as well as the notice of availability. Within a reasonable period of time prior to displacement, a comparable replacement dwelling will be available or provided for displaced individuals and families who are initial occupants or adequate replacement dwelling will be available or provided for subsequent occupants. The State Relocation Program is realistic and is adequate to provide orderly, timely, and efficient relocation of displaced persons.

DISPLACEE INVENTORY*

PROJECT: STP-114-1(85)Fulton Co. P.I. 721790 DATE: 08/2010 Pg 1 of 1

	ADDRESS	O-T	TYPE DIS-PLACEE SQ.FT. (HTD.)	AGE IMP	RENT or F.M.V. AMOUNT TTL/PTL ACQUISTN	TYPE OF NEIGH	TYPE OF BUS.	NO. OF EMP	EST. FINAN STAND
1	398 State Hwy 9 Alpharetta, GA	O	Res. 2,000	63yr	$137,600 PTL	Com.			N/A
2	380 South Main Alpharetta, GA	T	Com. 1,404	60yr	$1k-2k mo PTL	Com.	Furniture	3	Ongoing
3	334 South Main Alpharetta, GA	O	Res. 1,322	60Yr	$1,100 mo PTL	Com.	Rental House vacant		N/A
4	318 South Main Alpharetta, GA	O	Com. 2,010	3Yr	$2k-3k mo PTL	Com.	Car Lot Vacant		Vacant
5	280 Main Street Alpharetta	T	Com. 2,275	40Yr	$3k-4k mo PTL	Com.	Convenience Store	5	Ongoing
6	244 South Main Alpharetta, GA	T	Com. 12,200	47Yr	$20k-23k PTL	Com.	Banking	12	Ongoing
7	233 South Main Alpharetta, GA	T	Com. 1,995	41Yr	$3k-4k mo PTL	Com.	Financial	10	Ongoing

HOUSING INVENTORY*

PROJECT: STP-114-1(85)Fulton Co. P.I. 721790 DATE: 08/2010

NO.	ADDRESS	SQ.FT (HTD)	AGE IMP	NUM. RMS / BDRMS	DSS/ / PROJ. AREA	TYPE NEIG	ASKING PRICE/ STATUS	LISTING AGENCY/ AGENT
1	290 Waverly Hall Roswell, GA	2430	10	8 / 3	Yes / Yes	Res.	$199,900	ReMax Realty 678-938-4098
2	280 Greenmont Cir Alpharetta, GA	2062	22	8 / 3	Yes / Yes	Res.	$199,500	Keller Williams 770-663-7291
3	595 Saddle Creek Cir Roswell, GA	2232	32	8 / 3	Yes / Yes	Res.	$189,900	Southern REO Asso 770-642-9494
4	1422 Salem Drive Alpharetta, GA	2263	25	8 / 3	Yes / Yes	Res.	$175,000	ReMax Town & Coun 678-283-6765
5	50 Parkmont Drive Roswell, GA	1454	27	8 / 3	Yes / Yes	Res.	$1,245 Mon/rent	Coldwell Bankers 770-993-9200
6	700 Vista Leaf Ct Roswell, GA	1741	15	8 / 3	Yes / Yes	Res.	$1,350 Mon/rent	Keller Williams 678-287-4800
7	1000 Winthrope Chase Alpharetta, GA	1769	12	8 / 3	Yes / Yes	Res.	$1,395 Mon/rent	John Suarez Assoc 770-591-0799

Revised 11-04

*Table Contains Estimated Data

DISPLACEE INVENTORY*

PROJECT: STP-114-1(84)Fulton Co. P.I. 721780 DATE: 08/2010 Pg 1 of 1

	ADDRESS	O-T	TYPE DIS-PLACEE SQ.FT. (HTD.)	AGE IMP	RENT or F.M.V. AMOUNT TTL/PTL ACQUISTN	TYPE OF NEIGH	TYPE OF BUS.	NO. OF EMP	EST. FINAN STAND
1	20 N Main St Alpharetta, GA	T	Com. 1,800	60yr	$2k-3k mo PTL	Com.	Media Prod.	3	Ongoing
2	10 Cumming St Alpharetta, GA	T	Com. 2,316	99yr	$4k-5k mo PTL	Com.	Realty	5	Ongoing
3									
4									
5									
6									
7									

Revised 11-04

*Table Contains Estimated Data

State & County QuickFacts

Fulton County, Georgia

People QuickFacts	Fulton County	Georgia
Population, 2009 estimate	1,033,756	9,829,211
Population, percent change, April 1, 2000 to July 1, 2009	26.7%	20.1%
Population estimates base (April 1) 2000	815,827	8,186,781
Persons under 5 years old, percent, 2009	7.0%	7.6%
Persons under 18 years old, percent, 2009	24.2%	26.3%
Persons 65 years old and over, percent, 2009	7.9%	10.3%
Female persons, percent, 2009	50.7%	50.8%
White persons, percent, 2009 (a)	50.6%	65.0%
Black persons, percent, 2009 (a)	43.1%	30.2%
American Indian and Alaska Native persons, percent, 2009 (a)	0.4%	0.4%
Asian persons, percent, 2009 (a)	4.4%	3.0%
Native Hawaiian and Other Pacific Islander, percent, 2009 (a)	0.1%	0.1%
Persons reporting two or more races, percent, 2009	1.4%	1.3%
Persons of Hispanic or Latino origin, percent, 2009 (b)	8.7%	8.3%
White persons not Hispanic, percent, 2009	42.9%	57.5%
Living in same house in 1995 and 2000, pct 5 yrs old & over	42.8%	49.2%
Foreign born persons, percent, 2000	9.6%	7.1%
Language other than English spoken at home, pct age 5+, 2000	13.3%	9.9%
High school graduates, percent of persons age 25+, 2000	84.0%	78.6%
Bachelor's degree or higher, pct of persons age 25+, 2000	41.4%	24.3%
Persons with a disability, age 5+, 2000	137,102	1,456,812
Mean travel time to work (minutes), workers age 16+, 2000	29.1	27.7
Housing units, 2009	445,029	4,062,400
Homeownership rate, 2000	52.0%	67.5%
Housing units in multi-unit structures, percent, 2000	46.0%	20.8%
Median value of owner-occupied housing units, 2000	$180,700	$111,200
Households, 2000	321,242	3,006,369
Persons per household, 2000	2.44	2.65
Median household income, 2008	$62,682	$50,834
Per capita money income, 1999	$30,003	$21,154
Persons below poverty level, percent, 2008	14.9%	14.7%

Business QuickFacts	Fulton County	Georgia
Private nonfarm establishments, 2007	33,871	231,810[1]
Private nonfarm employment, 2007	738,134	3,648,418[1]
Private nonfarm employment, percent change 2000-2007	-4.0%	4.7%[1]
Nonemployer establishments, 2007	81,673	738,158
Total number of firms, 2002	85,681	674,521
Black-owned firms, percent, 2002	17.6%	13.4%
American Indian and Alaska Native owned firms, percent, 2002	0.6%	0.7%
Asian-owned firms, percent, 2002	4.0%	4.0%

Native Hawaiian and Other Pacific Islander owned firms, percent, 2002	F	0.0%
Hispanic-owned firms, percent, 2002	2.5%	2.7%
Women-owned firms, percent, 2002	31.7%	29.1%
Manufacturers shipments, 2002 ($1000)	11,973,516	126,156,636
Wholesale trade sales, 2002 ($1000)	84,705,048	201,091,040
Retail sales, 2002 ($1000)	11,149,163	90,098,578
Retail sales per capita, 2002	$13,638	$10,551
Accommodation and foodservices sales, 2002 ($1000)	3,328,579	12,740,423
Building permits, 2009	1,529	18,228
Federal spending, 2008	12,698,536	74,164,642[1]
Geography QuickFacts	**Fulton County**	**Georgia**
Land area, 2000 (square miles)	528.66	57,906.14
Persons per square mile, 2000	1,542.5	141.4
FIPS Code	121	13
Metropolitan or Micropolitan Statistical Area	Atlanta-Sandy Springs-Marietta, GA Metro Area	

1: Includes data not distributed by county.

(a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information
F: Fewer than 100 firms
FN: Footnote on this item for this area in place of data
NA: Not available
S: Suppressed; does not meet publication standards
X: Not applicable
Z: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, Census of Population and Housing, Small Area Income and Poverty Estimates, State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report
Last Revised: Monday, 16-Aug-2010 09:10:25 EDT

Attachment 15:

SR 9 VE Implementation Report

Pond & Company

Memo

To: Peter Emmanuel, Georgia Department of Transportation, Office of Program Delivery

From: Kevin Skinner, P.E.

CC:

Date: 10/15/2010

Re: VE Implementation for PI 721780

The public input from the two Public Information Open House's held February 16,2010 and May 18, 2010 has been collected and reviewed. Given the choice of the two options, the public preference is clearly for a standard median with more openings, rather than a skinny 8 foot median with fewer openings.

Since the VE implementation report qualified this change based on public approval, which was not given, alternative G-1 has not been implemented.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: STP00-0114-01(084) Fulton
P.I. No.: 721780
SR 9/North Main Street Widening

OFFICE: Engineering Services

DATE: December 8, 2009

FROM: Ronald E. Wishon, Project Review Engineer REW

TO: Bobby K. Hilliard, PE, State Program Delivery Engineer
Attn.: Peter Emmanuel

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

The VE Study for the above project was held October 5-9, 2009. Responses were received on December 3, 2009. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
A-1/C-1	Use 14 ft shared lane instead of separate 4 ft bike lane	$450,000	No	The City of Alpharetta LCI study indicates a preference for separated and designated bike lanes wherever there is curb and gutter. This is a 45 mph corridor and tractor trailers using a shared lane as proposed by the VE Study create a safety concern for cyclists. According to GDOT's Bicycle and Pedestrian Coordinator, multi-use paths don't work well in urban areas where the paths cross more than a few driveways and side streets. Given the urban nature of the corridor and the safety benefits and concerns, on-street bike lanes are the better long term option for the area.
A-2	Convert Permanent Easement to Temporary Easement	$488,000	Yes	At the discretion of the ROW Office, this will be done as the ROW acquisition process proceeds.

A-3	Shift alignment slightly to the west around Sta. 269+00	$780,000	No	The VE Team assumed two residences in the vicinity of Sta. 269+00 Rt. would be total takes. Despite the fact that the construction limits are very close to the residences, there will not be displacements in this area. There is no need to shift the alignment at this location.
F-1	Use 8" x 24" TP 2 concrete curb and gutter instead of 8" x 30" concrete curb and gutter throughout the project	$74,000	Yes	This will be done.
G-1	Reduce median width from 17 ft to 8 ft from Sta. 219+00 to Sta. 240+00, Sta. 257+00 to Sta. 273+00 and Sta. 279+50 to Sta. 288+90	$314,000	Yes	This will be done, pending approval by the public at the PIOH. Narrowing the median will eliminate the possibility of future median opening.

The Office of Engineering Services concurs with the Project Manager's responses.

Approved: _____ **Date:** 12/9/09
Gerald M. Ross, PE, Chief Engineer

REW/LLM
Attachments
c: Ben Buchan
Mike Haithcock/Peter Emmanuel
Mickey McGee
Ken Werho
Lisa Myers
Matt Sanders

VE Team: Ted Crabtree
Aghdas Ghazi
Robert Murphy
Sonya Sikes
Eugene Hopkins

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE PEMAS011401084, P.I. 721780, Fulton County **OFFICE** Program Delivery

DATE December 2, 2009

FROM Bobby K. Hilliard, P.E., State Program Delivery Engineer

TO Ron Wishon, Office of Engineering Services
ATTN: Lisa Myers/Matt Sanders

SUBJECT VE Study Recommendation Responses

Attached is the response to the VE Study Recommendations for your further handling for approval in accordance with the Plan Development Process (PDP).

If there are any questions, please contact Peter Emmanuel at (404) 631-1158.

BKH:MAH:pbe

Attachment

Value Engineering Study Recommendations Responses:

Project No. STP00-0114-01(084), Fulton County
PI 721780 – SR 9 from Academy St. to Windward Parkway
Initial Responses to GDOT: 12/03/09
Prepared by: Kevin Skinner & Peter Emmanuel

Subject: This is a response to the VE Study five recommendations for this project.

Recommendation A-1:
1. Change Bike Lanes to Shared Use.
Implementation: No, too many safety concerns. Not in line with City LCI.

Response: Currently, the ARC's 2007 BikePed plan require bike lanes along the SR 9 corridor, however, it does not specify whether to use the full 4' striped lanes, or a 14' shared use lane. However, the general public believed a bike lane to be a separated lane not shared use with a motorized vehicle. Having a designated or separated bike lane is a safety issue aimed at protecting/decreasing the numbers of vehicular encroachment on a bicyclist on bike route roadway. For the shared use lanes recommendation, the 2' paving savings would be in addition to the 2' right of way reduction. Although a shared use lane should be looked at for feasibility, however, common sense and the public perception makes it clear that on a 35 mph to 45 mph roadway, tractor trailers using the 14' shared use lane will most likely not yield for bicyclists without a warning device; this is a clear safety concern. A thorough review of the City of Alpharetta LCI study page 27-30 indicates preference for separated and designated bike lanes wherever there is curb and gutter, and a shared use lane where there is no curb and gutter but paved shoulders. This project proposes an urban typical section with curb and gutter. A thorough assessment and study will have to be made by the City of Alpharetta, GDOT's Office of Planning Bike/Ped Coordinator and the ARC to determine the feasibility and benefit of using Shared Use Lane versus separated Bike Lane on an urban section with curb and gutter – this is beyond the scope of work for this project.

Recommendation A-2:
2. Convert permanent easements to temporary easements.
Implementation: Yes, but only at the discretion of the Office of R/W during R/W acq.

Response: At this initial concept stage of the project, this recommendation violates the Office of R/W standard practices and procedures stated in the March 13, 1998 Memo that states "due to continuing problems with the use of Temporary Easements on our projects, by this memo, Temporary Easements are not to be used in the future during the initial project design, except for driveways, fences, and detours. In rural areas, acquisition, that typically would be an easement, should be designated as Required Right of Way and negotiated to Permanent or Temporary Easements, if necessary. In urban areas, easements should be designated as Permanent and negotiated to Temporary Easements, if necessary. The APPROVAL of the Right of Way Administrator, the Assistant

Right of Way Administrator of Acquisition and the appropriate Design Office is REQUIRED to convert areas to Temporary Easements." As stated in the memo, the recommendation can be looked at for feasibility during the R/W acquisition process, not at the initial project design. This project R/W is in FY 2014 and CST is in FY 2018, a long time from now. Moreover, the conversion from permanent easements to temporary easements (or vice versa) is a cost effective tool useful for the Office of R/W during negotiation/acquisition of land/property and has little bearing on the design and environmental process. The R/W cost estimate that shows permanent easements was generated by the Office of R/W. However, the feasibility and implementation of this recommendation will be evaluated during the acquisition of R/W.

Recommendation A-3:

3. Shift Road to Avoid Total Takes.

Implementation: No, the best alignment is already proposed.

Response: This recommendation involves the shifting of the alignment slightly to the west around station 269+00 to avoid total takes. Despite the construction limits coming very close to 2 residences, the concept deliverable does not show displacements at station 269+00 RT. A gravity wall is proposed in this area to avoid impacts to these residences. The R/W cost estimate does not include cost for total takes at this area. The best possible information available (the completed database) has being used to determine the best alignment suitable for the area around station 269+00, and have being confirmed in CAiCE and on the supplemental black and white plan views that these 2 parcels are not total takes.

Recommendation F-1:

4. Use 24" C&G vs. 30" C&G.

Implementation: Yes, if it does not require design variance, and the unit cost of 24" gutter width remains less than 30".

Response: This recommendation involves using 8"x24", TP 2 concrete curb and gutter instead of 8"x30", TP 2. While this would provide a sizable cost reduction, consideration should be made for adjacent sections of SR 9. A 30" curb and gutter is in place south of Upper Hembree Road, and at least one of the widening projects to the north has an approved concept showing 30" curb and gutter. Maintaining a uniform curb and gutter along SR 9 does have some worth, but is difficult to quantify. Reducing the gutter width by 6" (30" minus 24") is not likely to cause gutter spread issues, since a bike lane is provided. If the variance from the Georgia Standard is allowed, it is worth the effort for such a cost savings – provided that the unit cost of 8"x24" gutter width ($14.51) remains less than 8"x30" gutter width ($16.27) during the design life of the project.

Recommendation G-1:

5. Reduce median to 8'.

Implementation: Yes, if the Public wants it.

Response: This recommendation will decrease the 17' median width at station 219+00 to 240+00, 257+00 to 273+00, 279+50 to 288+90 to a maximum proposed width of 8'. This will save a large amount of money. However, the recommendation limits the possibility of future median openings within this station ranges. The distance between median openings at this area is 2700 feet. If there are no long term needs for a median opening in this area, and the PIOH does not result in a clear public desire for an opening, the recommendation becomes even more justified. There are other benefits to a wide raised median (such as landscape-tree planting) even if median openings are not present, although the case is weaker. The lack of need for a median opening will be addressed during the PIOH so that this recommendation can be implemented.

Attachments:

City of Alpharetta LCI study page 27-30

Bike Lane Issues Email Correspondence

Right of Way Memo 98-4

2.5 *Bicycling Conditions*

Objective: Increase connectivity of bicycle transportation in and around the Study Area

Recommendation: On-Street Facilities and Treatments

Every roadway in downtown Alpharetta is already an on-street bicycle facility, as bicycles are vehicles according to Georgia Law, and none of the roads in the Study Area prohibit bicycles by categorical or specific exclusion. This is not the same as saying that they are accommodating to bicycles, however. High traffic volumes on some of the roadways through downtown and the narrow width of others can induce anxiety in cyclists, and only a select few will overcome their anxiety and assert their rights and privileges as vehicles on a public roadway.

Improvements can be made to roadways that make them more bicycle-friendly. These range from traffic calming measures (to reduce the speeds of motor vehicles of the roadway) to installation of bicycle facilities such as bicycle lanes or paved shoulders. Shared lane symbols and warning devices that remind motorists to be alert for cyclists can also be deployed in areas where the roadway cross section is constrained and geometric alterations are infeasible.

Traffic Calming

Traffic calming measures such as curb extensions, bulb-outs, and speed tables can be very effective in reducing the speeds of motor vehicles on roadways, which makes it less stressful for cyclists. Some of these methods have been described in the section on intersections above. It is important, however, that any traffic calming treatments be carefully designed so as not to impede movement by bicycles along those streets, and leave a clear passage aligned with the area where bicyclists are expected to ride.

Bicycle Lanes

Designated bike lanes should also be considered on roadways where sufficient space is available. The AASHTO *Bike Guide* recommends that designated bike lanes be at least four feet wide, or that the lane stripe be at least five feet from the face of curb in curb-and-gutter cross sections. Research has found that bicyclists experience less stress when provided with at least three feet of shoulder space;[13] accordingly, many communities have striped off shoulders wherever they can provide three feet or more, but have only designated those that meet the AASHTO recommendations (some communities have gone further and designated those roads with shoulders

[13] Landis, B., Vattikutti and Ottenberg,, "Real Time Human Perceptions: toward a Bicycle Level of Service," *Transportation Research Record 1578*, TRB, National Research Council, Washington D.C., 1997.

between three and four feet wide, but that is dependent upon the judgment of the local engineering staff).

Of course, finding room for bicycle lanes also depends on engineering judgment with regard to the minimum width of travel lanes on Alpharetta's roadways. As discussed in the Roadway section above, research indicates that lane widths can be reduced to less than 12 feet without impacting either capacity or safety. If Alpharetta pursues this strategy, a 28-foot wide two-lane, undivided road such as Mayfield Road could be reconfigured from having 14-foot lanes to having 11-foot lanes and three foot shoulders, or depending on the judgment of local engineers, 10-foot lanes and four foot bicycle lanes. If the City wishes to develop a comprehensive network of shoulders and bicycle lanes (which have relatively low construction costs compared to off-street facilities), the City would need to establish what minimum lane widths are reasonable in the judgment of its engineering staff. Once such decisions are made, a data collection effort could reveal opportunities for more on-street bicycle facilities.

Paved Shoulders

For roadway cross sections which do not include curb-and-gutter, but are not wide enough to accommodate re-striping for bicycle lanes, it may be possible to construct new paved shoulders. Ideally, new shoulders should allow for a full four-foot bicycle lane. The constraints of individual corridors (available right-of-way, roadside drainage, etc.), however, may dictate different widths for each corridor. The guidelines described for bicycle lane widths apply here as well: shoulders should be at least three feet wide and travel lanes may be reduced according to the judgment of the City's engineering department.

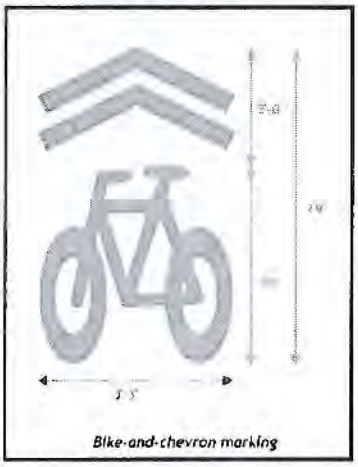


Figure 13
Bike-and-Chevron Symbol

Shared Lane Symbols

For situations where it has been determined to be infeasible to provide a facility (i.e., a bicycle lane or shoulder) for the preferential use of bicyclists, it may be worth considering the use of the shared lane symbol sometimes referred to as the "bike-and-chevron," or "corporal bike" marking (Figure 13) on the roadway surface. This treatment is currently experimental, but has been included in *Notice of Proposed Amendment* to the *MUTCD*, meaning that it is highly likely to become a standard treatment in the 2009 edition. The City may wish to use this symbol to encourage safe passing of bicyclists by motorists on roadways that are too narrow for bike lanes and construction of shoulders is infeasible. The shared lane symbol is intended to assist bicyclists with lateral positioning in lanes that are too narrow to safely accommodate motorists and

bicyclists travelling side by side and also to alert motorists of the position bicyclists are likely to occupy within the roadway. Research has indicated that this treatment is understandable to both motorists and cyclists alike[14], and that it can have an added benefit of reducing the occurrence of bicyclists riding on the sidewalk and against traffic.[15]

Activated Warnings

Another treatment to increase safety for bicyclists riding in the roadway is to deploy detection devices that are linked to flashers affixed to warning signs (such as SHARE THE ROAD, or WATCH FOR BIKES ON BRIDGE), that will flash only when bicycles are detected in the specific zone. As was discussed in the Midblock Crossing section above, real-time activated warnings have been found to gain higher response rates from motorists than both static warnings (signs alone) and continuously flashing warnings. These could be used on very constrained sections of an otherwise accommodating route. For example, certain roadways may have sufficient pavement width for bicycle lanes or new paved shoulders, but become significantly narrower on bridges over SR 400. In these cases, detectors placed in the bicycle lane or shoulder on approaches to the bridge could be activated to begin flashing when a bicyclist passes and be timed to turn off after the amount of time it would take a typical cyclist to cross the bridge. Studies have found inductive loop detectors to be very effective at detecting the presence of most bicycles, with the exception of those which are almost entirely (both wheels and the frame) made of carbon fiber. If the City experiences a high volume of carbon-fiber bicycles at such locations, other technologies such as video and microwave are also effective.

Recommendation: Off-Street Facilities/Shared Use Pathways

There are two strategies that can be recommended with regard to improving the network of off-street bicycling facilities and shared use pathways in downtown Alpharetta, and each takes advantage of existing opportunities. First, the City could improve the wide sidewalks identified in the *Existing Conditions* report to function as shared use paths. Second, the City could develop new pathway connections where land use allows. Each of these strategies is discussed in detail below.

Improve Wide Sidewalks into Pathways

The eight-foot sidewalks identified in the *Existing Conditions* report have the potential to serve as pathways — and provide substantial connectivity into downtown — if important improvements are made to bring them up to AASHTO Guidelines for shared use paths, as described in the *Guide for Development of Bicycle Facilities*. While each potential pathway segment will need to be examined closely, block-by-block, to

[14]San Francisco Department of Planning and Traffic & Alta Planning+Design, *San Francisco's Shared Lane Pavement Markings: Improving Bicycle Safety*, FINAL REPORT, February 2004.
[15]Florida Department of Transportation and UNC-HSRC, *Evaluation of the Shared Lane Arrow*, December, 1999.

determine which specific improvements will need to be made, there are some general improvements that can be named and should be considered for all of them. These improvements include:

- Providing curb ramps that are the same width as the pathway;
- Designing appropriate radii at curves and turns;
- Retrofitting to keep appropriate cross-slopes at driveway crossings;
- Installing appropriate signage and pavement markings to warn and direct pathway users;
- Maximizing visibility between path users and motorists; and,
- Widening the pathways wherever possible.

Each of these recommendations is discussed in detail below. It should also be noted that if improved to function as paths, these facilities will be of a type known as "sidepaths," meaning a shared use path located immediately adjacent to a roadway. The AASHTO *Guide* points out that on sidepaths, *"some operational problems are likely to occur,"* and continues to identify additional problems[16] These operational problems should be considered carefully at the outset of the design process and steps should be taken to minimize the risks associated with these problems. **It must be clear that the conversion of these sidewalks into functional pathways is not just a simple matter of designating them as pathways.**

Full Width Curb Ramps

It was noted during the existing conditions phase of this project that many of the eight-foot sidewalks in Alpharetta constrict into narrower ramps when they come to intersections with cross-streets (Figure 14). If these sidewalks are to be improved into being shared use pathways, these ramps will need to be reconstructed.

Figure 14
Sidewalk-to-Ramp width inconsistency along Haynes Bridge Road

The AASHTO *Bike Guide* states, *"Ramps for curbs at intersections should be at least the same width as the shared use path."* This is for a number of reasons. The most important is to allow safe passing of pathway users travelling in opposite directions. Sidewalk ramps are constructed to meet the requirements of the Americans with Disabilities Act (ADA), which intends to accommodate the passage of one wheelchair at a time, and so can sometimes be as narrow as 36". Shared use pathways are subject to ADA

[16] AASHTO, *Guide for the Development of Bicycle Facilities*, 1999, p. 33.

Emmanuel, Peter

Subject: SR 9 projects, PI 721780 & 721790, Fulton County, VE Study Recommendations Responses Documentation

From: Rushing, Byron
Sent: Tuesday, October 27, 2009 10:57 AM
To: Emmanuel, Peter; 'Kevin Skinner'
Cc: Hilliard, Bobby
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Peter and Kevin, after having reviewed the concept report, local plans, and discussed the situation with folks I'm still of the firm opinion that on-street bicycle lanes will be the most beneficial facility for this project. Multi-Use Paths and sidepaths simply don't work well in urban areas where they will cross more than a few driveways and cross streets – each of those crossings is an additional hazard for cyclists, especially those traveling opposite the adjacent traffic flow. Bike lanes better serve the needs of a downtown community, are in line with the recommendations of the area's LCI plan, and will be safer for cyclists in busy areas. Ultimately given the urban nature of the corridor and the safety benefits or concerns, on-street bike lanes will be the better long-term option for the area.

The two plans that I checked were the ARC's 2007 BikePed plan (which calls for paved shoulders or bike lanes along the length of SR 9) and Alpharetta's LCI plan (which recommends bike lanes on any roads with available space and does not include SR 9 in a list of roads needing an MUP facility). Please refer to the AASHTO "Guide for the Development of Bicycle Facilities" for design guidelines. Pages 22-32 have good information on bicycle lane design and Figures 7 and 11 are good illustrations of bicycle lane stripping at intersections and turn lanes – dashing the bike lane stripping approaching intersections is a particularly important element.

--

Byron Rushing
State Bicycle & Pedestrian Coordinator
Georgia Department of Transportation
404-631-1778 phone
404-631-1957 fax
brushing@dot.ga.gov

From: Graves, Eric [mailto:egraves@alpharetta.ga.us]
Sent: Friday, October 23, 2009 4:08 PM
To: Emmanuel, Peter
Cc: Sewczwicz, Peter; Drinkard, James
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Peter:

When we discussed the identified value engineering options, we can tentatively agree to both. One concern was that if Roswell or Milton end up providing marked bike lanes, Alpharetta would want to be in concert with those efforts.

Also, as discussed previously, Alpharetta will want to closely coordinate the typical section through the historic Alpharetta core (between Marietta Street to Church Street). This section will require a special typical to recognize the downtown core activities with augmented pedestrian facilities, streetscape amenities, and addressing parking needs.

We will work to develop typical section options for the Preliminary Engineering effort.

Best regards,

Eric

From: Rushing, Byron
Sent: Monday, October 19, 2009 4:41 PM
To: Emmanuel, Peter
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Peter, this corridor is also on the ARC 2007 bike/ped plan that is much more current that the Fulton County plan. I asked the ARC staff if they had a facility recommendation for SR 9 in Alpharetta and they said their plan generally called for on-street bike lanes in any downtown urban area with many driveway cuts. They said they considered sidepaths to be supplemental to on-street improvements:

32 While sidepaths appear to many to be appropriate bicycle facility alternatives, crash statistics and operational challenges from across the United States and around the world provide ample warning that, in many settings, they are not (see AASHTO Guide for the Development of Bicycle Facilities, pp.33-35). Preliminary corridor-specific design is needed for each to determine their feasibility from an operational/safety standpoint. For more information on the design requirements of sidepaths see Petritsch, T.A., B.W. Landis, H.F. Huang, and S. Challa, "Sidepath Safety Model: Bicycle Sidepath Design Factors Affecting Crash Rates." Presented at the 85th Annual Meeting of the Transportation Research Board, Washington, DC, January 26, 2006. Accepted for publication in Transportation Research Record: Journal of the Transportation Research Board.

--

Byron Rushing
State Bicycle & Pedestrian Coordinator
Georgia Department of Transportation
404-631-1778 phone
404-631-1957 fax
brushing@dot.ga.gov

From: Slaughter, Ernest [mailto:Ernest.Slaughter@fultoncountyga.gov]
Sent: Monday, October 19, 2009 4:27 PM
To: Emmanuel, Peter; Howlader, Abul
Cc: Rushing, Byron
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Peter,

The referenced projects are not located in unincorporated Fulton County. They are located within a city limits. Whatever that jurisdiction opts to do as it relates to their proposed project, is not a decision the County wishes to weigh in on, however; the decision to change the bike width seems attainable.

Ernest Slaughter
Deputy Director Transportation
Fulton County Department of Public Works
Office:404-612-8325
Cell:404-983-7993
Fax:404-893-6231
email: Ernest.Slaughter@FultonCountyGa.Gov

From: Emmanuel, Peter [mailto:pemmanuel@dot.ga.gov]
Sent: Monday, October 19, 2009 10:08 AM
To: Slaughter, Ernest; Howlader, Abul
Cc: Rushing, Byron
Subject: FW: SR 9, PI 721780 & 721790, Fulton County
Importance: High

Ernest & Abul,

Please read the below emails and the attachments, and tell me your opinion on the removal of separated bike lanes from the projects for a multipurpose pad (sidewalk extension from 5' to 8' or 10'). Please note that the bike lane provision is on the 1995 Fulton County Bike and Ped Plan page 17. Your expeditious handling of this request will be appreciated.

Thank you.

Peter B. Emmanuel
Project Manager
Office of Program Delivery
GA. Department of Transportation
One Georgia Center, 25th Floor, Cube 2548
600 West Peachtree St NW
Atlanta, GA 30308
Office: 404-631-1158
Mobile: 404-354-4111 (BlackBerry)
Fax: 404-631-1588
Email: pemmanuel@dot.ga.gov

"The only thing that interferes with my education is my learning…Albert Einstein"
"I do not reject any influences provided that it is pure, fresh, and healthy…Bela Bartok"

From: Emmanuel, Peter
Sent: Monday, October 19, 2009 10:49 AM
To: 'Graves, Eric'; Sewczwicz, Peter
Cc: Haithcock, Michael; Hilliard, Bobby; Rushing, Byron
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Eric,

Thank you for your prompt response. I know this is too early in the week, but have you had the chance to discuss my request with the department you listed in your email below. Please keep in mind that the request is about the removal of separated bike lanes from the projects for a multipurpose pad (sidewalk extension from 5' to 8' or 10'). Also note that the bike lane provision is on the 1995 Fulton County Bike and Ped Plan page 17. Your expeditious handling of this request will be appreciated. Please let me know when you've reached a decision. Thanks.

Peter B. Emmanuel
Project Manager
Office of Program Delivery
GA. Department of Transportation
One Georgia Center, 25th Floor, Cube 2548
600 West Peachtree St NW
Atlanta, GA 30308
Office: 404-631-1158
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Email: pemmanuel@dot.ga.gov

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"I do not reject any influences provided that it is pure, fresh, and healthy…Bela Bartok"

From: Graves, Eric [mailto:egraves@alpharetta.ga.us]
Sent: Friday, October 16, 2009 12:46 PM

To: Emmanuel, Peter; Sewczwicz, Peter
Cc: Haithcock, Michael; Hilliard, Bobby
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Emmanuel:

I've reviewed the options and don't personally have any specific concerns. **HOWEVER...** I need to discuss the matter with our community development department and City Administration. We should be able to meet next week and have formal comments to you shortly thereof.

Best regards,

Eric Graves, P.E.
City of Alpharetta
Senior Engineer-Traffic
1790 Hembree Road
Alpharetta, Georgia 30009

678.297.6200 x 1218
678.297.6201 - FAX

From: Emmanuel, Peter [mailto:pemmanuel@dot.ga.gov]
Sent: Thursday, October 15, 2009 1:52 PM
To: Graves, Eric; Sewczwicz, Peter
Cc: Haithcock, Michael; Hilliard, Bobby
Subject: SR 9, PI 721780 & 721790, Fulton County
Importance: High

Eric & Pete,

The subject projects VE Study was concluded on October 9, 2009, and although, I have not receive the official recommendations yet, the following recommendation was noted at the conclusion of the VE Study:

1. On P.I.# 721780 (SR 9/North Main Street from Academy Street to Windward Parkway)
    a. Recommendation A-1: Reduce project footprint by changing bike lanes to shared use lanes. This would reduce the required R/W and materials for paving, saving the Department $450,000.00 dollars. Please see the attachment "SR9 Proposed & Alternate Typical Section.pdf" to see the result of this suggestion. On P.I.# 721790, the same recommendations of getting rid of the bike lane and using a multi-use trail was suggested.
    Question: This recommendation will eliminate the proposed 4 feet bike lane within the pavement and instead, increased the width of the proposed 5 feet sidewalk to 10 feet sidewalk turning it into a multi-use path. Is your City in favor of the multi-use path instead of the separated bike lane? Moreover, the 10 feet wide multi-use path will reduce R/W width by 4 feet, however for the sake of space/room for utilities company, an 8 feet wide multi-use path would seem appropriate because of the limited space for utilities in the shoulder. The SR 9 widening project P.I.# 121690 concept report was approved with an 8 feet wide multi-use path instead of a 10 feet wide (please see the attachment "Project 121690 Approved Concept Report Typical Section.pdf"). What is your City take on this issues?
    b. Recommendation G-1: Reduce Median Width from 17 feet to 8 feet between Mayfield Road and Canton Street. This would reduce R/W and materials costs, savings the Department $314,000.00 dollars. Please see the attachment "SR9 Proposed & Alternate Typical Section.pdf" to see the result of this suggestion.
    Question: This recommendation is within your City LCI area, are you in favor of reducing the median width from 17' (currently proposed) to 8' from Mayfield Road to Canton street. If it is reduced, the R/W cost and footprint would be lessened, but this would leave less median space for plantings (as desired in your City LCI study). What is your City take on this issues?

Please advise on the above questions no later than Friday, October 16, 2009 COB. Your response and answer will allow my consultant & I to address the VE Study Recommendations and Implementations, so that the Concept Report can be updated and turn in for Management review and approval. Your expeditious assistance will be appreciated.

Thank you.

Peter B. Emmanuel
Project Manager
Office of Program Delivery
GA. Department of Transportation
One Georgia Center, 25th Floor, Cube 2548
600 West Peachtree St NW
Atlanta, GA 30308
Office: 404-631-1158
Mobile: 404-354-4111 (BlackBerry)
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Email: pemmanuel@dot.ga.gov

"The only thing that interferes with my education is my learning…Albert Einstein"
"I do not reject any influences provided that it is pure, fresh, and healthy…Bela Bartok"

Return to me

CC Asst's -
Group Leaders
Des Engineers I, II, III.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE RIGHT OF WAY MEMO 98-4 OFFICE Atlanta, GA

DATE March 13, 1998

FROM David P. Meshberger, Right of Way Administrator

TO See Distribution

SUBJECT **Use of Temporary Easements**

Due to continuing problems with the use of Temporary Easements on our projects, by this memo, Temporary Easements are **NOT** to be used in the future during the initial project design, except for driveways, fences, and detours.

In rural areas, acquisition, that typically would be an easement, should be designated as Required Right of Way and negotiated to Permanent or Temporary Easements, if necessary.

In urban areas, easements should be designated as Permanent and negotiated to Temporary Easements, if necessary.

The **APPROVAL** of the Right of Way Administrator, the Assistant Right of Way Administrator of Acquisition and the appropriate Design Office is **REQUIRED** to convert areas to Temporary Easements.

If there are any questions, please contact Bobby Risper at 404-656-3849 or Harvey Booker at 404-656-3886.

DPM:SCM:HPB:BLR:app

Right of Way Memo 98-4
March 13, 1998

DISTRIBUTION: David Meshberger, Steve Manley, Terry McCollister, Tom Lemaster, Harvey Booker, Bob Bell, Glen Warren, Yvonia Parham, Paul Bryan, Phil Conner, Ronnie Lewis, Dean Williamson, Steve Crawford, Dan Howard, Barry Baynes, Bobby Risper, Bill Saunders; Jim Kennerly; Joe Palladi; Gainesville: Hugh Tyner, Laland Owens, Freddie Law, Harris Wilbanks Neal Watkins; Tennille: Mike Thomas, David Griffith, John McCarty, Larry Graham, Bobby Brantley; Thomaston: Joe Street, Joe Leoni, Terry Miller, Ronny Stubbs, Nancy Jones; Tifton: David Crim, Joe Sheffield, Terry Dunn, Frankie Cottle, Darrell Osborne; Jesup: Craig Brack, Anthony Collins, Karon Ivery, Willie Deloach, Earnest Green; Cartersville: Charles Law, Jim Hullett, Tom Gissy, Jimmy Townsend, Denver Poole; Metro: Mitch Fowler, Danny Godwin, Don Brown, Smoky Butler, Patricia Fitch, Tommy Phillips, Ricky Ford, Gloria Borders.

PRECONSTRUCTION STATUS REPORT FOR PI:721780-,721790-

SR 9/N MAIN ST FM ACADEMY ST TO WINDWARD PKWY

PROJ ID :	721780-					**MGMT LET DATE :**	
COUNTY :	Fulton					**MGMT ROW DATE :**	
LENGTH (MI) :	1.97	**MPO:**	Atlanta TMA	**PRIORITY CODE:**		**BASELINE LET DATE:**	
PROJ NO.:	STP00-0114-01(084)	**TIP #:**	FN-067A	**DOT DIST:**	7	**SCHED LET DATE :**	
PROJ MGR:	Emmanuel, Peter B.	**MODEL YR :**	2030	**CONG. DIST:**	6	**WHO LETS?:**	GDOT Let
AOHD Initials:	MAH	**TYPE WORK:**	Widening	**BIKE:**	Y	**LET WITH :**	
OFFICE :	Program Delivery	**CONCEPT:**	ADD 4U(MED 20)	**MEASURE:**	E		
CONSULTANT:	Turnkey Consultant, (Contract with GDOT)	**PROG TYPE:**	Reconstruction/Rehabilitation	**NEEDS SCORE:**	06		
SPONSOR :	GDOT	**Prov. for ITS:**	N	**BRIDGE SUFF:**			
DESIGN FIRM:	Pond & Company	**BOND PROJ :**					

BASE START	BASE FINISH	LATE START	LATE FINISH	TASKS	ACTUAL START	ACTUAL FINISH	%
			6/16/2010	Concept Development	8/12/2007		75
				Concept Meeting	3/20/2009	3/20/2009	100
				PM Submit Concept Report	9/16/2009	9/16/2009	100
		12/18/2009	12/31/2009	Receive Preconstruction Concept Approval			0
		12/31/2009	**12/31/2009**	**Management Concept Approval Complete**			**0**
			12/29/2009	Value Engineering Study	9/18/2009		82
		1/15/2010	1/15/2010	Public Information Open House Held			0
		1/1/2010	6/16/2011	**Environmental Approval**			0
		2/18/2011	4/14/2011	Pub Hear Held/Comm Resp (EA/FONSI, GEPA)			0
		2/5/2010	2/25/2010	Mapping			0
		3/1/2010	4/2/2010	Field Surveys/SDE			0
		4/6/2010	**1/11/2011**	**Preliminary Plans**			0

PROGRAMMED FUNDS

Activity	Approved	Proposed	Cost	Fund	Status	Date Auth
PE	2007	2007	925,080.00	Q23	AUTHORIZED	3/18/1993
PE	1993	1993	1,520,000.00	Q24	AUTHORIZED	3/18/1993
ROW	LR	2014	9,659,642.70	L240	PRECST	
CST	LR	2018	14,818,380.20	L240	PRECST	

PE Cost Est Amt:		Date:	
PE Cost Est Amt:		Date:	
ROW Cost Est Amt:	5,622,000.00	Date:	2/21/2006
CST Cost Est Amt:	8,664,000.00	Date:	1/3/2007

STIP AMOUNTS

Activity	Cost	Fund
PE		Q24
PE		Q23
ROW	0.00	L240
CST	0.00	L240

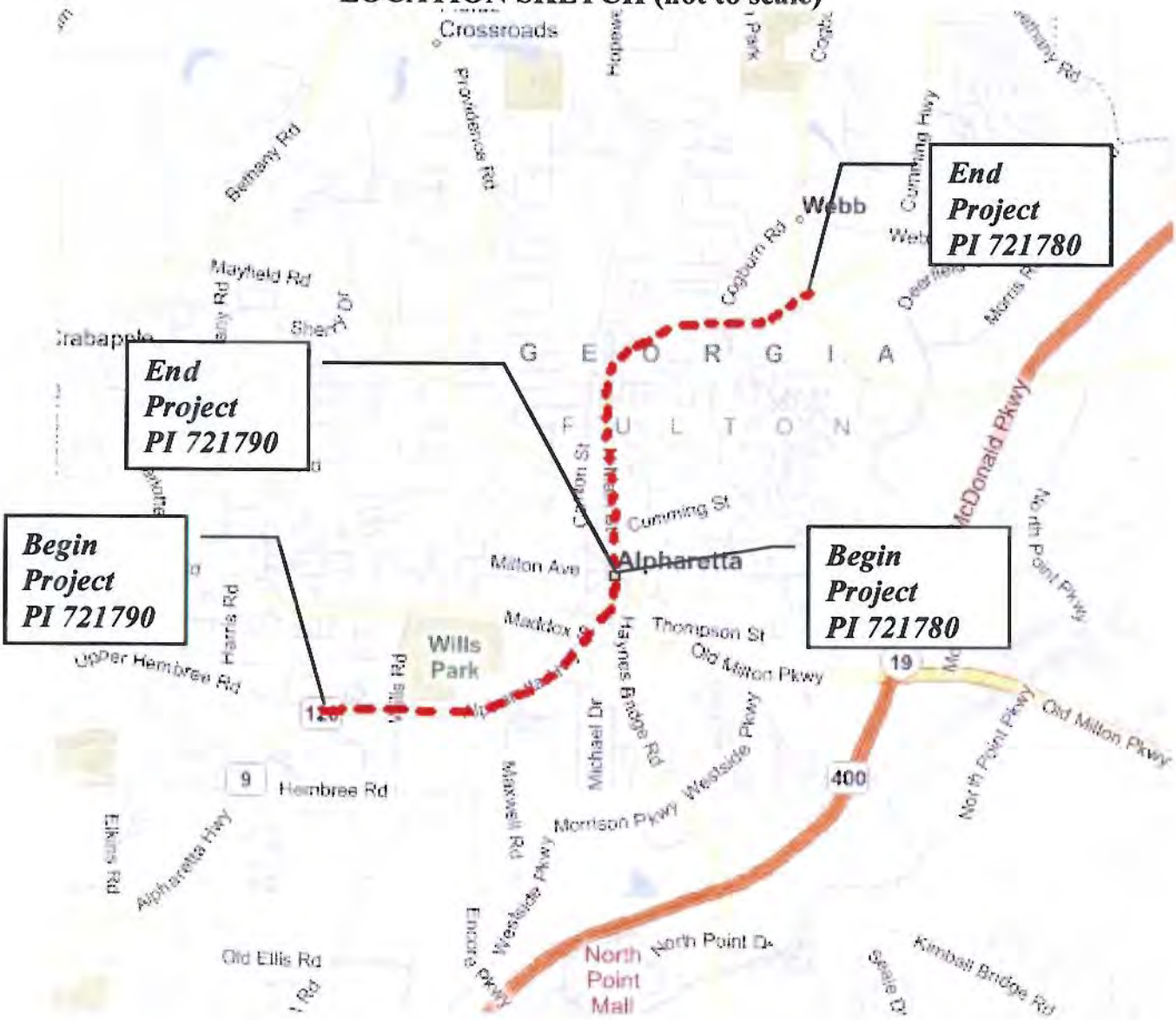
PDD:	LEFT IN LR RW & CST @ 11/20 MTG! 11/27/95
Bridge:	NO BRIDGE REQUIRED
Design:	PROJECT IN CONCEPT/ENVIR PHASE ONLY
EIS:	EA/NoSchedule/Phillips(updated 3-3-08)
LGPA:	PMA SGN ALPHARETTA DO PE 3-16-06
Planning:	SR 9/N Main St. from Academy St. to Windward Pkwy. is on the Fulton Co Bike/Ped Plan (1995) pg 17
Prog. Develop:	PE in 2007 was added at the request of Chief Eng
Programming:	PE/PR2=5-24-93|#1 2-06|#2 5-07
Traffic Op:	SM:SEND PLANS FOR PFPR REVIEW WHEN READY 9-15-06
Utility:	CC: NEED PPLANS 02/08;OPD SUE:Tk4,Ct19
EMG:	RECST/REHAB(WIDENING);FLY 6474/06;FLOWN 3-22-06;PE BY LOCAL

District Comments

NOTES: Logical Termini?
1) Pond's Database is under review by Location Office
2) Draft Concept Report Submitted on September 16, 2009 & Routed for Review.
3) Concept Team Meeting Held October 6, 2009.
4) VE Study Held October 5 - 9, 2009.
5) Incorporating Recommendations from Concept Team MeetingVE Study to revise Concept Report.
6) Preparing for PIOH once Concept Report is Approved
7) Tier #1, Score #42, B/C Ratio of 3.79, Delay Reduction of 1,092 hrs.
8) Logical Termini issues required MGMT Decision
9) Pond must submit Draft EA prior to contract exp 12/31/09.

Prel. Parcel CT:	110	**Total Parcel in ROW System:**	1	**Cond. Filed:**	0	**Acquired by:**	DOT	***DEEDS CT:***	0
Under Review:	0	**Options - Pending:**	0	**Relocations:**	0	**Acquisition MGR:**			
Released:	0	**Condemnations- Pend:**	0	**Acquired:**	0	**R/W Cert Date:**			

LOCATION SKETCH (not to scale)



Project Numbers: STP00-0114-01(084), PI 721780
STP00-0114-01(085), PI 721790

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE: STP00-0114-01(085) Fulton
P.I. No.: 721790
SR 9/Main Street Widening

OFFICE: Engineering Services

DATE: December 8, 2009

FROM: Ronald E. Wishon, Project Review Engineer REW

TO: Bobby K. Hilliard, PE, State Program Delivery Engineer
Attn.: Peter Emmanuel

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

The VE Study for the above project was held October 5-9, 2009. Responses were received on December 3, 2009. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
A-6	Reduce footprint/width of typical section by removing the bike lanes from the pavement and using wider sidewalks as multi-use trails	$2,516,000	No	This is a 45 mph corridor and tractor trailers using a shared lane as proposed by the VE Study create a safety concern for cyclists. According to GDOT's Bicycle and Pedestrian Coordinator, multi-use paths don't work well in urban areas where the paths cross more than a few driveways and side streets. Given the urban nature of the corridor and the safety benefits and concerns, on-street bike lanes are the better long term option for the area. There would also be additional maintenance cost associated with the wider multi-use trails, and wider trails would mean that utilities would be located under the trails.

A-10	Use 10 ft right turn lane instead of 11 ft turn lane	$648,505	No	Narrowing the width of the right turn lane could cause turning trucks to encroach into the opposing traffic lane. While this corridor currently has 4% trucks, there are high volumes for right turns along the corridor.
B-11	Break out Grading Complete into more items	$1,805,865	Yes	As design progresses, this will be done.
C-1	Change the GAB to asphalt base	(-$27,271) Cost increase	Yes	This will be done, pending approval from OMR.
G-2	Use 24" curb and gutter instead of 30"	$643,030	Yes	This will be done.
K-2	Approach City of Alpharetta about donating project office space	$75,000	Yes	This will be done.

The Office of Engineering Services concurs with the Project Manager's responses.

Approved: Gerald M. Ross **Date:** 12/8/09
Gerald M. Ross, PE, Chief Engineer

REW/LLM
Attachments
c: Ben Buchan
Mike Haithcock/Peter Emmanuel
Mickey McGee
Ken Werho
Lisa Myers
Matt Sanders

VE Team: Nebiat Abraham
Daniel Gethi
Jason Mobley
David Moyer
Hiral Patel

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE PEMAS011401085, P.I. 721790, Fulton County **OFFICE** Program Delivery

DATE December 2, 2009

FROM Bobby K. Hilliard, P.E., State Program Delivery Engineer

TO Ron Wishon, Office of Engineering Services
ATTN: Lisa Myers/Matt Sanders

SUBJECT VE Study Recommendation Responses

Attached is the response to the VE Study Recommendations for your further handling for approval in accordance with the Plan Development Process (PDP).

If there are any questions, please contact Peter Emmanuel at (404) 631-1158.

BKH:MAH:pbe

Attachment

Value Engineering Study Recommendations Responses:

Project No. STP00-0114-01(085), Fulton County
PI 721790 – S.R. 9 from Upper Hembree Rd. to Academy St.
Initial Responses to GDOT: 12/03/09
Prepared by: Kevin Skinner & Peter Emmanuel

Subject: This is a response to the VE Study six recommendations for this project.

Recommendation A-6:

1. Reduce foot print/reduce width of typical section

Implementation: No, it does not agree with the County/City Bike & Ped Plan.

Response: This recommendation suggest the reduction of the proposed R/W footprint of 93' to 84' by removing the bike lanes from the pavement, using wide asphalt sidewalks as multi-use trails in lieu of sidewalks and separate bicycle lanes. In short, the recommendation keeps the 12' shoulders (provide an 8' wide asphalt multi-use path, and convert the other 5' sidewalk to asphalt), but drops the 4' bike lanes in each direction, and reduces the curb and gutter from 30" to 24". While this recommendation has some merits, Fulton County/City of Alpharetta Bike/Ped Plan calls for bike lanes on each side of the road not on one side only as suggested by the VE Study. If a Multi-Use Path is put on both side of the road it will increase the project cost overtime (during the life cycle) due to maintenance cost associated with utilities buried under shoulders, and eliminate any potential savings. However, since the idea of converting on street bike lanes into multi-use path seems to give bicyclist more separation from vehicular traffic, and added safety; Byron Rushing, the State Bike/Ped Coordinator, weighing in on the recommendation. See the attachment. The 30" to 24" alternate curb and gutter recommendation is addressed in more detail in Recommendation G-2.

It should be noted that while the dimension drawn on the VE Study typical section do add up, the 3' setback from the back of curb that is required for multi-use paths is not met and would require a variance.

Recommendation A-10:

2. Use 10' Right Turn Lane

Implementation: No, because of safety risk.

Response: This recommendation involves the reduction of the proposed 11' right turn lane to 10' right turn lane. This suggestion is very risky for safety reason. It has not been proven that truck traffic using a 10' turn lane will not encroach into the other lane traffic, especially when making a right turn. Moreover, the Department's Design Policy and AASHTO's Green Book suggest and recommend a minimum of 11' width for right turn lane of urban arterial roadway. Although, the VE study shows how even a 1' reduction can reduce the project cost by a moderate amount, the luring danger (sideswipe type of accident) to motorist is not worth the combined cost savings of less asphalt and graded aggregate base. Nonetheless, 10' right turn lane would require a design variance

and change to the Department's design policy, if pursued. Also, given the large amount of traffic along the project corridor and the existing 4% of truck traffic, it may not bold well to pursue the 10' right turn lane especially on high volume right turns. Further evaluation with the City of Alpharetta's Traffic Engineer and the Department's Traffic Engineer may be needed, if pursued.

Recommendation B-11:

3. Itemize Grading Complete

Implementation: Yes

Response: This recommendation suggests the itemization of Grading Complete into more calculate able items such as earthwork, clearing and grubbing, etc. The cost estimate line item for grading complete was given as $2M, and when it is cut into the actual earthwork volumes, the earthwork is much less expensive. As the design advances and more exact limits and earthwork volumes are calculated, separating "grading complete" into "unclassified excavation", "borrow excavation", and "clearing and grubbing" will reduce the construction cost estimate as suggested.

Recommendation C-1:

4. Use Asphalt Base instead of GAB

Implementation: Yes, if OMR recommends.

Response: This recommendation suggests the use of asphalt base instead of GAB throughout the project or in a selected area. While this recommendation is not a certain way to save money, it does provide a quicker way to construct some areas. We are in agreement that some of the benefits of the asphalt base are hard to quantify, although they are numerous. Without a completed detailed staging plan, the actual time savings cannot be firmly calculated. This alternate base will be discussed with the Department's office of Materials & Research (OMR) during the final Pavement Design process to determine whether to specify asphalt base, or possibly allow the option to the contractor.

Recommendation G-2:

5. Use 24" Curb and Gutter

Implementation: Yes, if it does not require design variance, and the unit cost of 24" gutter width remain less than 30".

Response: This recommendation involves using 8"x24", TP 2 concrete curb and gutter instead of 8"x30", TP 2 throughout the project. While this would provide a sizable cost reduction, consideration should be made for adjacent sections of SR 9. A 30" curb and gutter is in place immediately to the South, and at least one of the widening projects to the north has an approved concept showing 30" curb and gutter. Maintaining a uniform curb and gutter along SR 9 does have some worth, but is difficult to quantify. Reducing the gutter width by 6" (30" minus 24") is not likely to cause gutter spread issues, since a bike lane is provided. If the variance from the Georgia Standard is allowed, it is worth the effort for such a cost savings – provided that the unit cost of 8"x24" gutter width ($14.51) remains less than 8"x30" gutter width ($16.27) during the design life of the project.

Recommendation K-2:

6. Use Alpharetta Office Space

Implementation: Yes

Response: This recommendation suggests that the Department approach the City of Alpharetta about donating the use of office space for the project office. The City of Alpharetta has been extremely eager to get this project moving, as noted by their attempted $1,000,000 donation to GDOT, and it is quite possible that the City would be willing to provide field office space to the contractor free of charge. In addition, almost any building space would likely be of better quality than a portable trailer.

Attachments:

Bike Lane Issues Email Correspondence

Department's Design Policy Manual Page 6-4, 6-6, 6-7

2004 AASHTO's Green Book Page 472 – 473 Recommendation

Emmanuel, Peter

Subject: SR 9 projects, PI 721780 & 721790, Fulton County, VE Study Recommendations Responses Documentation

From: Rushing, Byron
Sent: Tuesday, October 27, 2009 10:57 AM
To: Emmanuel, Peter; 'Kevin Skinner'
Cc: Hilliard, Bobby
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Peter and Kevin, after having reviewed the concept report, local plans, and discussed the situation with folks I'm still of the firm opinion that on-street bicycle lanes will be the most beneficial facility for this project. Multi-Use Paths and sidepaths simply don't work well in urban areas where they will cross more than a few driveways and cross streets – each of those crossings is an additional hazard for cyclists, especially those traveling opposite the adjacent traffic flow. Bike lanes better serve the needs of a downtown community, are in line with the recommendations of the area's LCI plan, and will be safer for cyclists in busy areas. Ultimately given the urban nature of the corridor and the safety benefits or concerns, on-street bike lanes will be the better long-term option for the area.

The two plans that I checked were the ARC's 2007 BikePed plan (which calls for paved shoulders or bike lanes along the length of SR 9) and Alpharetta's LCI plan (which recommends bike lanes on any roads with available space and does not include SR 9 in a list of roads needing an MUP facility). Please refer to the AASHTO "Guide for the Development of Bicycle Facilities" for design guidelines. Pages 22-32 have good information on bicycle lane design and Figures 7 and 11 are good illustrations of bicycle lane stripping at intersections and turn lanes – dashing the bike lane stripping approaching intersections is a particularly important element.

--

Byron Rushing
State Bicycle & Pedestrian Coordinator
Georgia Department of Transportation
404-631-1778 phone
404-631-1957 fax
brushing@dot.ga.gov

From: Graves, Eric [mailto:egraves@alpharetta.ga.us]
Sent: Friday, October 23, 2009 4:08 PM
To: Emmanuel, Peter
Cc: Sewczwicz, Peter; Drinkard, James
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Peter:

When we discussed the identified value engineering options, we can tentatively agree to both. One concern was that if Roswell or Milton end up providing marked bike lanes, Alpharetta would want to be in concert with those efforts.

Also, as discussed previously, Alpharetta will want to closely coordinate the typical section through the historic Alpharetta core (between Marietta Street to Church Street). This section will require a special typical to recognize the downtown core activities with augmented pedestrian facilities, streetscape amenities, and addressing parking needs.

We will work to develop typical section options for the Preliminary Engineering effort.

Best regards,

Eric

From: Rushing, Byron
Sent: Monday, October 19, 2009 4:41 PM
To: Emmanuel, Peter
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Peter, this corridor is also on the ARC 2007 bike/ped plan that is much more current that the Fulton County plan. I asked the ARC staff if they had a facility recommendation for SR 9 in Alpharetta and they said their plan generally called for on-street bike lanes in any downtown urban area with many driveway cuts. They said they considered sidepaths to be supplemental to on-street improvements:

32 While sidepaths appear to many to be appropriate bicycle facility alternatives, crash statistics and operational challenges from across the United States and around the world provide ample warning that, in many settings, they are not (see AASHTO Guide for the Development of Bicycle Facilities, pp.33-35). Preliminary corridor-specific design is needed for each to determine their feasibility from an operational/safety standpoint. For more information on the design requirements of sidepaths see Petritsch, T.A., B.W. Landis, H.F. Huang, and S. Challa, "Sidepath Safety Model: Bicycle Sidepath Design Factors Affecting Crash Rates." Presented at the 85th Annual Meeting of the Transportation Research Board, Washington, DC, January 26, 2006. Accepted for publication in Transportation Research Record: Journal of the Transportation Research Board.

--
Byron Rushing
State Bicycle & Pedestrian Coordinator
Georgia Department of Transportation
404-631-1778 phone
404-631-1957 fax
brushing@dot.ga.gov

From: Slaughter, Ernest [mailto:Ernest.Slaughter@fultoncountyga.gov]
Sent: Monday, October 19, 2009 4:27 PM
To: Emmanuel, Peter; Howlader, Abul
Cc: Rushing, Byron
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Peter,

The referenced projects are not located in unincorporated Fulton County. They are located within a city limits. Whatever that jurisdiction opts to do as it relates to their proposed project, is not a decision the County wishes to weigh in on, however; the decision to change the bike width seems attainable.

Ernest Slaughter
Deputy Director Transportation
Fulton County Department of Public Works
Office:404-612-8325
Cell:404-983-7993
Fax:404-893-6231
email: Ernest.Slaughter@FultonCountyGa.Gov

From: Emmanuel, Peter [mailto:pemmanuel@dot.ga.gov]
Sent: Monday, October 19, 2009 10:08 AM
To: Slaughter, Ernest; Howlader, Abul
Cc: Rushing, Byron
Subject: FW: SR 9, PI 721780 & 721790, Fulton County
Importance: High

Ernest & Abul,

Please read the below emails and the attachments, and tell me your opinion on the removal of separated bike lanes from the projects for a multipurpose pad (sidewalk extension from 5' to 8' or 10'). Please note that the bike lane provision is on the 1995 Fulton County Bike and Ped Plan page 17. Your expeditious handling of this request will be appreciated.

Thank you.

Peter B. Emmanuel
Project Manager
Office of Program Delivery
GA. Department of Transportation
One Georgia Center, 25th Floor, Cube 2548
600 West Peachtree St NW
Atlanta, GA 30308
Office: 404-631-1158
Mobile: 404-354-4111 (BlackBerry)
Fax: 404-631-1588
Email: pemmanuel@dot.ga.gov

"The only thing that interferes with my education is my learning…Albert Einstein"
"I do not reject any influences provided that it is pure, fresh, and healthy…Bela Bartok"

From: Emmanuel, Peter
Sent: Monday, October 19, 2009 10:49 AM
To: 'Graves, Eric'; Sewczwicz, Peter
Cc: Haithcock, Michael; Hilliard, Bobby; Rushing, Byron
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Eric,

Thank you for your prompt response. I know this is too early in the week, but have you had the chance to discuss my request with the department you listed in your email below. Please keep in mind that the request is about the removal of separated bike lanes from the projects for a multipurpose pad (sidewalk extension from 5' to 8' or 10'). Also note that the bike lane provision is on the 1995 Fulton County Bike and Ped Plan page 17. Your expeditious handling of this request will be appreciated. Please let me know when you've reached a decision. Thanks.

Peter B. Emmanuel
Project Manager
Office of Program Delivery
GA. Department of Transportation
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600 West Peachtree St NW
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Email: pemmanuel@dot.ga.gov

"The only thing that interferes with my education is my learning…Albert Einstein"
"I do not reject any influences provided that it is pure, fresh, and healthy…Bela Bartok"

From: Graves, Eric [mailto:egraves@alpharetta.ga.us]
Sent: Friday, October 16, 2009 12:46 PM

To: Emmanuel, Peter; Sewczwicz, Peter
Cc: Haithcock, Michael; Hilliard, Bobby
Subject: RE: SR 9, PI 721780 & 721790, Fulton County

Emmanuel:

I've reviewed the options and don't personally have any specific concerns. **HOWEVER...** I need to discuss the matter with our community development department and City Administration. We should be able to meet next week and have formal comments to you shortly thereof.

Best regards,

Eric Graves, P.E.
City of Alpharetta
Senior Engineer-Traffic
1790 Hembree Road
Alpharetta, Georgia 30009

678.297.6200 x 1218
678.297.6201 - FAX

From: Emmanuel, Peter [mailto:pemmanuel@dot.ga.gov]
Sent: Thursday, October 15, 2009 1:52 PM
To: Graves, Eric; Sewczwicz, Peter
Cc: Haithcock, Michael; Hilliard, Bobby
Subject: SR 9, PI 721780 & 721790, Fulton County
Importance: High

Eric & Pete,

The subject projects VE Study was concluded on October 9, 2009, and although, I have not receive the official recommendations yet, the following recommendation was noted at the conclusion of the VE Study:

1. On P.I.# 721780 (SR 9/North Main Street from Academy Street to Windward Parkway)
    a. Recommendation A-1: Reduce project footprint by changing bike lanes to shared use lanes. This would reduce the required R/W and materials for paving, saving the Department $450,000.00 dollars. Please see the attachment "SR9 Proposed & Alternate Typical Section.pdf" to see the result of this suggestion. On P.I.# 721790, the same recommendations of getting rid of the bike lane and using a multi-use trail was suggested.
    Question: This recommendation will eliminate the proposed 4 feet bike lane within the pavement and instead, increased the width of the proposed 5 feet sidewalk to 10 feet sidewalk turning it into a multi-use path. Is your City in favor of the multi-use path instead of the separated bike lane? Moreover, the 10 feet wide multi-use path will reduce R/W width by 4 feet, however for the sake of space/room for utilities company, an 8 feet wide multi-use path would seem appropriate because of the limited space for utilities in the shoulder. The SR 9 widening project P.I.# 121690 concept report was approved with an 8 feet wide multi-use path instead of a 10 feet wide (please see the attachment "Project 121690 Approved Concept Report Typical Section.pdf"). What is your City take on this issues?
    b. Recommendation G-1: Reduce Median Width from 17 feet to 8 feet between Mayfield Road and Canton Street. This would reduce R/W and materials costs, savings the Department $314,000.00 dollars. Please see the attachment "SR9 Proposed & Alternate Typical Section.pdf" to see the result of this suggestion.
    Question: This recommendation is within your City LCI area, are you in favor of reducing the median width from 17' (currently proposed) to 8' from Mayfield Road to Canton street. If it is reduced, the R/W cost and footprint would be lessened, but this would leave less median space for plantings (as desired in your City LCI study). What is your City take on this issues?

Please advise on the above questions no later than Friday, October 16, 2009 COB. Your response and answer will allow my consultant & I to address the VE Study Recommendations and Implementations, so that the Concept Report can be updated and turn in for Management review and approval. Your expeditious assistance will be appreciated.

Thank you.

Peter B. Emmanuel
Project Manager
Office of Program Delivery
GA. Department of Transportation
One Georgia Center, 25th Floor, Cube 2548
600 West Peachtree St NW
Atlanta, GA 30308
Office: 404-631-1158
Mobile: 404-354-4111 (BlackBerry)
Fax: 404-631-1588
Email: pemmanuel@dot.ga.gov

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"I do not reject any influences provided that it is pure, fresh, and healthy ...Bela Bartok"

Table 6.3. GDOT Design Standards for Arterial Roadways

Item No.	Item	Rural				Urban[1]	
		Two-Lane		Four-Lane			
1	Design Speed (mph)[2]	45	55	55	65	45	55
2	Level of Service	B	B	B	B	C[3]	C[3]
3	Number of Travel Lanes	2	2	4	4	2 min-4 typ.	2 min-4 typ.
4	Width of Travel Lanes	12-ft.	12-ft.	12-ft.	12-ft.	12-ft.	12-ft.
5	Overall Width of Shoulders[11]						
	Outside	10-ft.	10-ft.	10-ft.	10-ft.	n/a	n/a
	Median[4]	n/a	n/a	6-ft.	6-ft.	6-ft.	6-ft.
6	Width of Paved Shoulders						
	Outside	6.5-ft.	6.5-ft.	6.5-ft.	6.5-ft.	n/a	n/a
	Median[4]	n/a	n/a	2-ft.	2-ft.	2-ft.	2-ft.
7	Width of Median (ft)						
	Depressed	n/a	n/a	32-44-ft.	32-44-ft.	n/a	n/a
	Raised	n/a	n/a	24-ft.	24-ft.	Turn Lane[5] plus 8-12-ft.	Turn Lane[5] plus 8-12-ft.
	Flush	n/a	n/a	n/a.	n/a	14-ft.	n/a
8	Sidewalks						
	Width of Sidewalk	n/a	n/a	n/a	n/a	5-ft.	5-ft.
	Sidewalk Offset from Curb	n/a	n/a	n/a	n/a	6-ft.	6-ft.
9	Width of Bike Lane[6]	n/a	n/a	n/a	n/a	4-ft.	4-ft.
10	Fore Slope – Ratio	4:1	4:1	4:1	4:1	2:1 max.	4:1
11	Back Slope – Ratio	2:1 max.	2:1 max.	2:1 max.	2:1 max.	2:1 max.	2:1 max.
12	Pavement Cross Slope	0.02-ft./ft.	0.02-ft./ft.	0.02-ft./ft.	0.02-ft./ft.	0.02-ft./ft.	0.02-ft./ft.
13	Stopping Sight Distance[7]	360-ft.	495-ft.	495-ft.	645-ft.	360-ft.	495-ft.
14	Maximum Superelevation	0.06-ft./ft.	0.06-ft./ft.	0.06-ft./ft.	0.08-ft./ft.	0.04-ft./ft.	0.06-ft./ft.
15	Minimum Radius						
	Without Superelevation (+ .02) [8]	4,680-ft.	6,820-ft.	6,820-ft.	9,510-ft.	4,040-ft.	6,820-ft.
	Without Superelevation (- .02) [8]	6,480-ft.	9,410-ft.	9,410-ft.	12,900-ft.	5,930-ft.	9,410-ft.
16	Minimum Radius (With Superelev.)	643-ft.	1,060-ft.	1,060-ft.	1,480-ft.	711-ft.	1,060-ft.
17	Maximum Grade (%)						
	Level	4%	3%	3%	3%	7%	6%
	Rolling	5%	4%	4%	4%	8%	7%
	Mountainous	7%	6%	6%	5%	10%	9%
18	Minimum Vertical Clearance (ft)[9]	16.75-17.5	16.75-17.5	16.75-17.5	16.75-17.5	14.5	14.5
19	Clear Zone	See Note (10)	See Note (10)	See Note (10)	See Note (10)	See Note (10)	See Note (10)

Notes: [1] Applies to curbed sections only unless stated otherwise. Use rural standards for uncurbed sections.
[2] See current AASHTO Green Book, Chapter 7, Design Speed. Also see notes 6, 7, and 8 below for design speeds not shown
[3] LOS D is permissible in heavily developed areas.
[4] Applies to uncurbed sections.
[5] GDOT prefers the use of 24-ft. raised median if there are minimal impacts associated with a wider median.
[6] Values shown are for the given design speed. For other design speeds, refer to current AASHTO *Green Book*, Chapter 3.
[7] Values shown are for the given design speed. For other design speeds, see current AASHTO *Green Book*, Chapter 3.
[8] Values shown are for the given design speed. For other design speeds, see **Chapter 4** of this Manual.
[9] Minimum values are for vehicular clearances. Please refer to GDOT *Bridge and Structures Policy Manual* for further information, clearances at other facilities and limitations.
[10] For clear zone distances, refer to the current edition of the AASHTO Roadside Design Guide, Chapter 3.
[11] Shoulder widths less than the minimum recommended by AASHTO shall require a Design Exception.

As previously noted, the Concept Development Phase will set the approved values and typical sections to be used. Should any proposed value be less than AASHTO Design Standards, a design exception will be required. Refer to the GDOT *Plan Development Process*[3] for further guidance on completing design exceptions. On Federally funded projects, the typical section is subject to Federal Highway Administration (FHWA) approval.

6.2.1. Lane Widths

GDOT's standard for lane widths is 12-ft., except as noted in **Table 6.5.** The values presented in **Table 6.5.** represent typical values used by GDOT and are not a complete list of all lane and shoulder widths used.

Table 6.5. Typical Lane and Shoulder Widths[(1)]

Lane Type	Lane Width (ft)	Inside Shoulder (ft) No Curb and Gutter		Outside Shoulder (ft) No Curb and Gutter		Outside Shoulder With Curb and Gutter (ft)
		Overall[(2)]	Paved	Overall[(2)]	Paved	
Arterial or Collector	12	6	2	10	6.5	16
Urban Type A	11					16
Urban Type B	12					
Local Roads (if ADT<400, refer to AASHTO *Green Book*)	12					
Shared Bike Routes	14					
Designated Bike Routes	4					
Channelized Turn Lane	16 (min.)					
HOV	14					
Two Way Left Turn Lane (TWLTL)	14					
TWLTL with provision for future 20-ft.raised median	14	*See special details for other roadway dimensions*				
One-Way Roadway, Single Lane	16					
One-Way Roadway, Multilane	12					
Loop Ramp						
Free Flow Ramps						
Single Lane Entrance/Exit Ramps	16	6	4	12	10	
Multi Lane Entrance/Exit Ramps	12	6	4	12	10	
Interstates & Freeways	12	Refer to the current AASHTO publication, *A Policy on Design Standards -- Interstate System*[4]				

(1) The need for additional widening shall be determined in accordance with AASHTO recommendations.
(2) Overall shoulder width does not include additional width required for the installation of barrier.

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[3] GDOT. *Plan Development Process*. 2006
The current version of this document is available on the GDOT Repository for Online Access to Documentation and Standards (R-O-A-D-S) web page at:
http://www.dot.ga.gov/doingbusiness/PoliciesManuals/roads/Pages/OtherResources.aspx

[4] AASHTO. *A Policy on Design Standards---Interstate System, 5th Edition*. 2005

In applying these lane width guidelines, two applications are defined; the confined, restricted right-of-way urban area, "Urban Area Type A" and the less confined "Urban Area Type B". Generally, no single defining criteria, such as speed limit or functional classification, determines lane widths. Instead, a combination of characteristics define the applicable areas.

The characteristics below are representative of and define urban area types, and, in turn, determine the minimum allowable lane width:

Urban Area Type A

- speed limit 35 mph or less
- curb and sidewalk
- central business district (CBD) / historic districts / overlay streetscape
- zoning /corridor continuity characteristics
- building face to curb typically less than 10-ft.
- low percentage of trucks
- lane widths may be reduced to no less than 11-ft.

Urban Area Type B

- speed limit greater than 35 mph but not greater than 45 mph
- curb and sidewalk
- less confined, less urbanized area, generally automobile dependent, numerous driveways
- building face to curb typically less than 10-ft.
- lane widths shall be 12-ft.; design variances will be required for lane width reductions

The standard pavement cross-slope adopted by GDOT for travel lanes is 2% (0.020 ft/ft). Roadways with three or more lanes should break the cross-slope between lane 2 and lane 3 from 2% to 3% (lanes are numbered from inside to outside).

6.2.2. Shoulders

All interstate ramp shoulders should be a full-depth, full-width paved shoulder. The standard shoulder cross-slope for total shoulder width and paved shoulder width adopted by the GDOT applies to all roadway classifications. As noted in the opening paragraphs of this Section, this can vary depending on project specifics. For instance, on some projects the paved shoulder cross-slope matches the roadway cross-slope.

On four-lane divided highways, the cross-slope on the median shoulder in tangent section is controlled by the cross-over crown restrictions described in **Section 6.4** of this Manual. Similarly, the outside shoulder cross-slopes (the convex side of the curve) on superelevated roadways will be controlled by the cross-over crown restrictions. As a result, the slope will depend on the superelevation rate.

On superelevated roadways, the inside shoulder will maintain its normal crown slope for superelevation rates equal to or less than the normal shoulder slope. For superelevation rates greater than the normal shoulder rate, the inside shoulder slope is the same as the superelevation rate of the roadway. For additional discussion of the superelevation, refer to **Chapter 4. Elements of Design, Section 4.5.**

guidance applicable to both rural and urban arterials is presented in the section on "Superelevated Cross Sections" in the earlier discussion of rural arterials in this chapter.

	Metric						US Customary						
	Maximum grade (%) for specified design speed (km/h)						Maximum grade (%) for specified design speed (mph)						
Type of terrain	50	60	70	80	90	100	30	35	40	45	50	55	60
Level	8	7	6	6	5	5	8	7	7	6	6	5	5
Rolling	9	8	7	7	6	6	9	8	8	7	7	6	6
Mountainous	11	10	9	9	8	8	11	10	10	9	9	8	8

Exhibit 7-10. Maximum Grades for Urban Arterials

Cross Slope

Sufficient cross slope for adequate pavement drainage is important on urban arterials. The typical problems related to splashing and hydroplaning are compounded by heavy traffic volumes and curbed sections, especially for high speeds. Cross slopes should range from 1.5 to 3 percent; the lower portion of this range is appropriate where drainage flow is across a single lane and higher values are appropriate where flow is across several lanes. Even higher cross-slope rates may be used for parking lanes. The overall cross section should provide a smooth appearance without sharp breaks. Because urban arterials are often curbed, it is necessary to provide for longitudinal as well as cross-slope drainage. The use of higher cross-slope rates also reduces flow on the roadway and ponding of water due to pavement irregularities and rutting. The section on "Cross Slopes" in Chapter 4 provides additional guidance.

Vertical Clearances

New or reconstructed structures should provide 4.9-m [16-ft] vertical clearance over the entire roadway width. Existing structures that provide clearance of 4.3 m [14 ft], if allowed by local statute, may be retained. In highly urbanized areas, a minimum clearance of 4.3 m [14 ft] may be provided if there is an alternate route with 4.9-m [16-ft] clearance. Structures should provide additional clearance for future resurfacing of the underpassing road.

Lane Widths

Lane widths may vary from 3.0 to 3.6 m [10 to 12 ft]. Lane widths of 3.0 m [10 ft] may be used in highly restricted areas having little or no truck traffic. Lane widths of 3.3 m [11 ft] are used quite extensively for urban arterial street designs. The 3.6-m [12-ft] lane widths are most desirable and should be used, where practical, on higher speed, free-flowing, principal arterials.

Under interrupted-flow operating conditions at low speeds (70 km/h [45 mph] or less), narrower lane widths are normally adequate and have some advantages. For example, reduced lane widths allow more lanes to be provided in areas with restricted right-of-way and allow shorter pedestrian crossing times because of reduced crossing distances. Arterials with reduced lane widths are also more economical to construct. A 3.3-m [11-ft] lane width is adequate for through lanes, continuous two-way left-turn lanes, and lanes adjacent to a painted median. Left-turn and combination lanes used for parking during off-peak hours and for traffic during peak hours may be 3.0 m [10 ft] in width. If provision for bicyclists is to be made, see the AASHTO *Guide for the Development of Bicycle Facilities* (**6**).

If substantial truck traffic is anticipated, additional lane width may be desirable. The widths needed for all lanes and intersection design controls should be evaluated collectively. For instance, a wider right-hand lane that provides for right turns without encroachment on adjacent lanes may be attained by providing a narrower left-turn lane. Local practice and experience regarding lane widths should also be evaluated.

Curbs and Shoulders

Shoulders are desirable on any highway, and urban arterials are no exception. Where four lanes are warranted, shoulders are desirable. They contribute to enhanced safety by affording maneuver room and providing space for immobilized vehicles. They offer a measure of safety to the occasional pedestrian in sparsely developed areas where sidewalks are not appropriate and provide space for bicyclists where allowed by law. They also serve as speed-change lanes for vehicles turning into driveways and provide storage space for plowed snow.

Despite the many advantages of shoulders on arterial streets, their use is generally limited due to restricted right-of-way and the necessity of using the available right-of-way for traffic lanes. Where the abutting property is used for commercial purposes or consists of high-density residential development, a shoulder, if provided, is subject to such heavy use in serving local traffic that the pavement strength of the shoulder must be about the same as that for the travel lanes. In urban and suburban areas, the outside edges of shoulders are often curbed and a closed drainage system provided to minimize the amount of right-of-way needed. In addition, curbs are often appropriate in heavily developed areas as a means of controlling access.

In those instances where sufficient right-of-way exists to consider shoulders, refer to the discussion on shoulders in the rural arterial section of this chapter for guidance. Where provision of shoulders is not practical, and curbs are to be used, refer to the section on "Curb Placement" in Chapter 4.

Number of Lanes

The number of lanes varies, depending on traffic demand and availability of the right-of-way, but the normal range for urban arterial streets is four to eight lanes in both directions of travel combined. A capacity analysis should be performed to determine the proper number of

PRECONSTRUCTION STATUS REPORT FOR PI:721780-,721790-

SR 9/S MAIN ST FM UPPER HEMBREE RD TO ACADEMY ST

PROJ ID :	721790-					MGMT LET DATE :	
COUNTY :	Fulton					MGMT ROW DATE :	
LENGTH (MI) :	1.70	MPO:	Atlanta TMA	PRIORITY CODE:		BASELINE LET DATE:	
PROJ NO.:	STP00-0114-01(085)	TIP #:	FN-067B	DOT DIST:	7	SCHED LET DATE :	
PROJ MGR:	Emmanuel, Peter B.	MODEL YR :	2030	CONG. DIST:	6	WHO LETS?:	GDOT Let
AOHD Initials:	MAH	TYPE WORK:	Widening	BIKE:	Y	LET WITH :	
OFFICE :	Program Delivery	CONCEPT:	ADD 4U(MED 20)	MEASURE:	E		
CONSULTANT:	Turnkey Consultant, (Contract with GDOT)	PROG TYPE:	Reconstruction/Rehabilitation	NEEDS SCORE:	07		
SPONSOR :	GDOT	Prov. for ITS:	N	BRIDGE SUFF:			
DESIGN FIRM:	Pond & Company	BOND PROJ :					

BASE START	BASE FINISH	LATE START	LATE FINISH	TASKS	ACTUAL START	ACTUAL FINISH	%
			12/31/2009	Concept Development	9/15/2008		75
				Concept Meeting	3/20/2009	3/20/2009	100
				PM Submit Concept Report	9/16/2009	9/16/2009	100
		12/18/2009	12/31/2009	Receive Preconstruction Concept Approval			0
		12/31/2009	**12/31/2009**	**Management Concept Approval Complete**			0
			12/29/2009	Value Engineering Study	9/18/2009		82
		1/15/2010	1/15/2010	Public Information Open House Held			0
		1/1/2010	6/16/2011	**Environmental Approval**			0
		2/18/2011	4/14/2011	Pub Hear Held/Comm Resp (EA/FONSI, GEPA)			0
		2/5/2010	2/25/2010	Mapping			0
		3/1/2010	4/2/2010	Field Surveys/SDE			0
		4/6/2010	**1/11/2011**	**Preliminary Plans**			0

PROGRAMMED FUNDS

Activity	Approved	Proposed	Cost	Fund	Status	Date Auth
PE	2007	2007	960,413.77	L230	AUTHORIZED	3/18/1993
PE	1993	1993	1,520,000.00	Q23	AUTHORIZED	3/18/1993
ROW	LR	2015	7,034,415.22	L240	PRECST	
CST	LR	2018	12,485,477.31	L240	PRECST	

PE Cost Est Amt:		Date:	
PE Cost Est Amt:		Date:	
ROW Cost Est Amt:	3,342,000.00	Date:	11/25/2003
CST Cost Est Amt:	7,300,000.00	Date:	1/3/2007

STIP AMOUNTS

Activity	Cost	Fund
PE		Q23
PE		L230
ROW	0.00	L240
CST	0.00	L240

PDD:	ARC LR RW & CST. 6/23/94
Bridge:	NO BRIDGE REQUIRED
Design:	PROJECT CONCEPT/ENVIR PHASE ONLY
EIS:	EA-4F|NoSchedule|Phillips|0.08.09
LGPA:	PMA SGN ALPHARETTA DO PE 3-16-06.
Planning:	SR 9/S Main St. from Upper Hembree Rd. to Academy St. is on the Fulton Co Bike/Ped Plan (1995) pg 17
Prog. Develop:	PE in 2007 was added at the request of Chief Eng
Programming:	PE/PR2=5-24-93|#1 2-06|#2 5-07
Traffic Op:	SM:SEND PLANS FOR PFPR REVIEW WHEN READY 9-15-06
Utility:	CC: NEED PPLANS 12/04;OPD SUE:Tk4,Ct19
EMG:	RECST/REHAB (WIDENING); C-M/S/D; FLY 6509/06 FOR MAPPING

District Comments

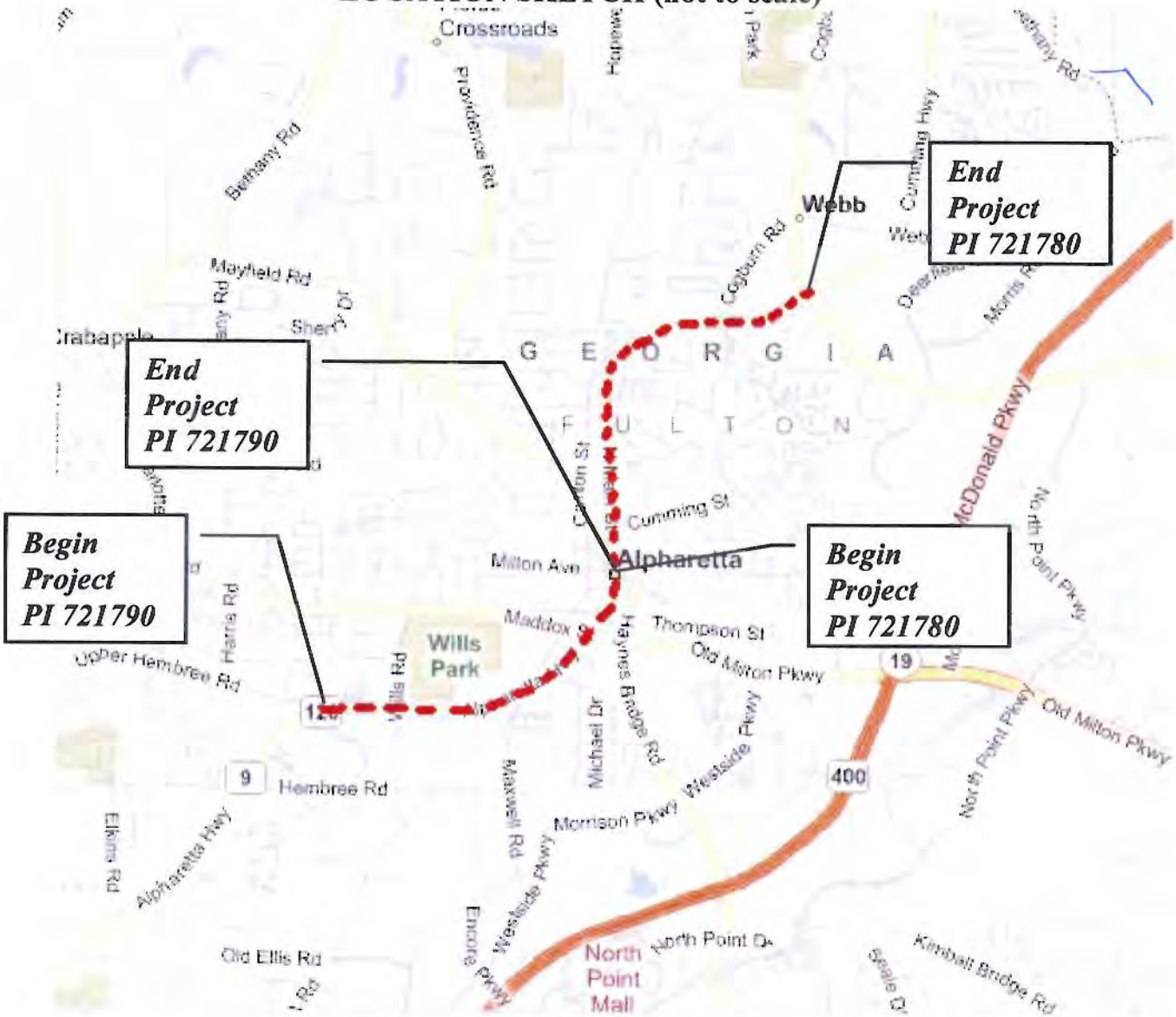
Reassigned to OPD from District#7

NOTES:

1) Draft Concept Report Submitted on September 16, 2009 & Routed for Review.
2) Concept Team Meeting Held on October 6, 2009.
3) VE Study Held October 5 - 9, 2009.
4) Incorporating Recommendations from Concept Team MeetingVE Study to revise Concept Report.
5) Preparing for PIOH once Concept Report is Approved
6) Tier #1, Score #45, B/C ratio 7.02, Delay reduction of 1,483 hrs
7) Pond & Co. must submit Draft EA prior to contract expire 12/31/09.

Prel. Parcel CT:	160	**Total Parcel in ROW System:**		**Cond. Filed:**		**Acquired by:**	DOT	***DEEDS CT:***
Under Review:		**Options - Pending:**		**Relocations:**		**Acquisition MGR:**		
Released:		**Condemnations- Pend:**		**Acquired:**		**R/W Cert Date:**		

LOCATION SKETCH (not to scale)



Project Numbers: STP00-0114-01(084), PI 721780
STP00-0114-01(085), PI 721790

Attachment 16:

Conforming Plan’s Network Schematics showing Thru Lanes

Emmanuel, Peter

From: Mertz, Kaycee
Sent: Friday, October 08, 2010 11:49 AM
To: Emmanuel, Peter
Subject: RE: SR 9, Fulton County, PI# 721780- & 721790- Conformity Plan's Network Schematics showing Thru lanes
Attachments: SR 9 2030 Network Schematic.pdf

Peter – Please see the attached conforming network schematic. The 2030 network for the Atlanta region shows 2 lanes in each direction on SR 9/Alpharetta Road from Upper Hembree Road to Windward Parkway/Cogburn Road. Please let me know if you need any additional information.

(Note that this network file codes SR 9 south of Rucker Road as SR 120)

Thanks,

Kaycee Mertz
Georgia Department of Transportation
Office of Planning
600 West Peachtree Street
Atlanta, Georgia 30308
(404) 347-0245

From: Emmanuel, Peter
Sent: Friday, October 08, 2010 10:11 AM
To: Mertz, Kaycee
Subject: SR 9, Fulton County, PI# 721780- & 721790- Conformity Plan's Network Schematics showing Thru lanes
Importance: High

Good Morning Kaycee – I'm in the process of submitting the Final Concept Report for this project, and as part of the PDP requirement, because the project is located in an Ozone Non-attainment area, I need to include the "Conforming plan's network schematics showing thru lanes. (Note: This attachment is required for non-attainment areas only)". Please could you email me electronically the network schematics for the project by Friday, October 15th COB. Sorry for the late notice. If you need additional information from me, please let me know. I look forward to hearing or reading from you soon. Thank you.

Peter B. Emmanuel
Project Manager, 404-631-1158
GDOT's Office of Program Delivery

FN-067A — SR 9 (NORTH MAIN STREET / CUMMING HIGHWAY)

721780- — FROM ACADEMY STREET TO WINDWARD PARKWAY

Long Range

Jurisdiction: Fulton (North)
Sponsor: GDOT
Service Type: General Purpose Roadway Capacity

Existing	Planned	Length (mi.)
2	4	1.97

Network Year: 2030
Open Year: 2030
Analysis: In the Region's Air Quality Conformity Analysis

	Status	Year	Fund Type	Federal	State	Local	Bonds	Total
PE	AUTH	2007	STP - Statewide Flexible (GDOT)	$0,000	$0,000	$0,000	$0,000	$0,000
PE	AUTH	AUTH	STP - Statewide Flexible (GDOT)	$0,000	$0,000	$0,000	$0,000	$0,000
ROW		LR 2021-2030	General Federal Aid - 2014-2030	$4,497,600	$1,124,400	$0,000	$0,000	$5,622,000
CST		LR 2021-2030	General Federal Aid - 2014-2030	$8,321,280	$2,080,320	$0,000	$0,000	$10,401,600
				$12,818,880	$3,204,720	$0,000	$0,000	$16,023,600

FN-067B — SR 9 (SOUTH MAIN STREET)

721790- — FROM UPPER HEMBREE ROAD TO ACADEMY STREET

Programmed

Jurisdiction: Fulton (North)
Sponsor: GDOT
Service Type: General Purpose Roadway Capacity

Existing	Planned	Length (mi.)
2	4	1.7

Network Year: 2030
Open Year: 2030
Analysis: In the Region's Air Quality Conformity Analysis

	Status	Year	Fund Type	Federal	State	Local	Bonds	Total
PE	AUTH	2007	STP - Statewide Flexible (GDOT)	$0,000	$0,000	$0,000	$0,000	$0,000
ROW		LR 2021-2030	General Federal Aid - 2014-2030	$2,673,600	$668,400	$0,000	$0,000	$3,342,000
CST		LR 2021-2030	General Federal Aid - 2014-2030	$7,180,800	$1,795,200	$0,000	$0,000	$8,976,000
				$9,854,400	$2,463,600	$0,000	$0,000	$12,318,000

FN-095 — GRIMES BRIDGE ROAD

770900- — AT BIG CREEK / VICKERY CREEK

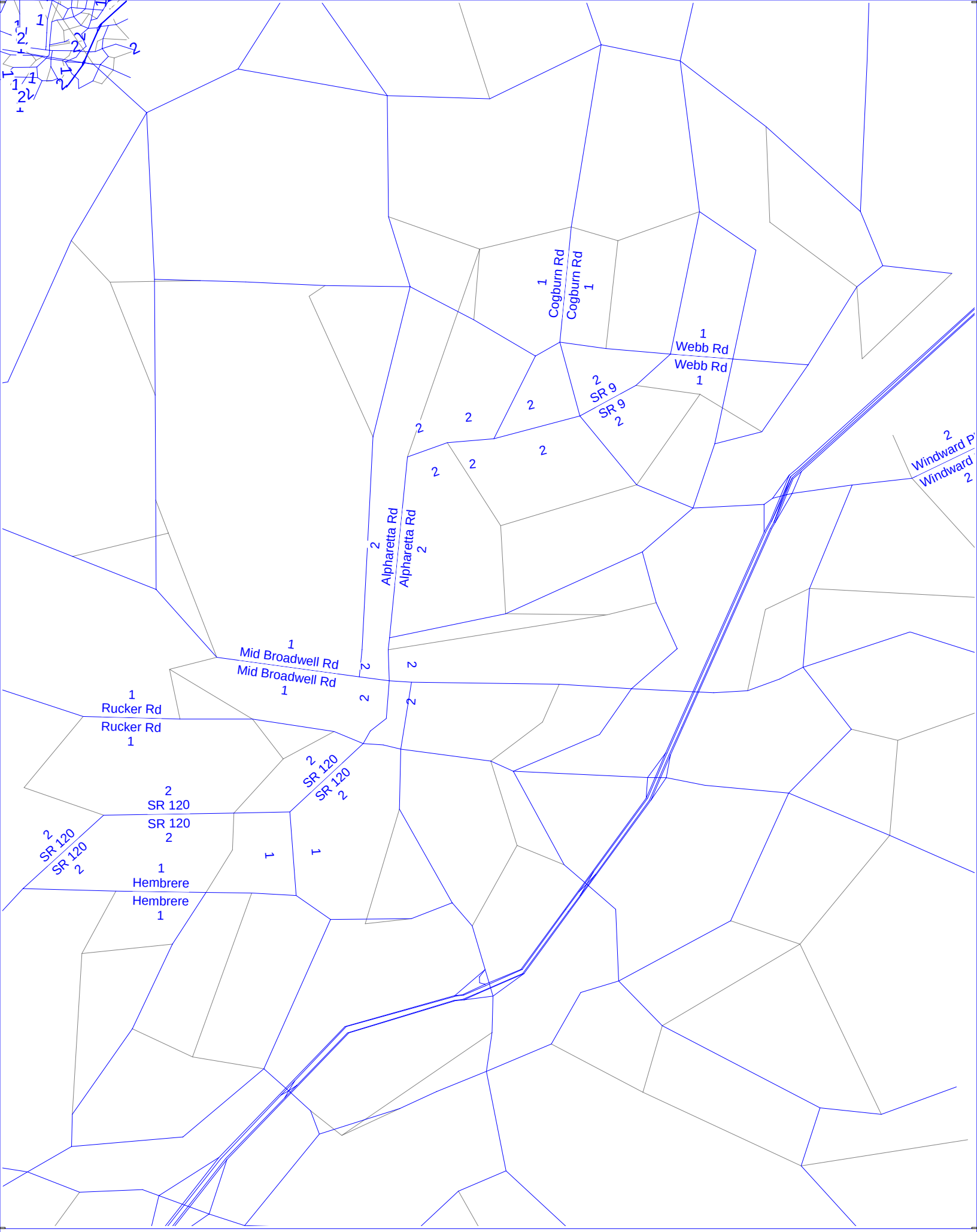
Programmed

Jurisdiction: Fulton (North)
Sponsor: City of Roswell
Service Type: Bridge Upgrade

Existing	Planned	Length (mi.)
2	2	N/A

Network Year: 2010
Open Year: 2008
Analysis: Exempt from Air Quality Analysis (40 CFR 93)

	Status	Year	Fund Type	Federal	State	Local	Bonds	Total
PE	AUTH	AUTH	Bridge (Off-System)	$0,000	$0,000	$0,000	$0,000	$0,000
ROW	AUTH	AUTH	Local Jurisdiction/Municipality Funds	$0,000	$0,000	$0,000	$0,000	$0,000
CST		2008	Bridge (Off-System)	$3,059,200	$764,800	$0,000	$0,000	$3,824,000
				$3,059,200	$764,800	$0,000	$0,000	$3,824,000



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