ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 0009724

OFFICE Design Policy & Support

Clayton County
GDOT District 7 - Metro Atlanta
I-675 SB @ SR 138 *Quick Project*

DATE January 30, 2013

FROM Kim Phillips for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT **APPROVED CONCEPT REPORT**

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

Attachment

DISTRIBUTION:

Bobby Hilliard, Program Control Administrator
Genetha Rice-Singleton, State Program Delivery Engineer
Glenn Bowman, State Environmental Administrator
Cindy VanDyke, State Transportation Planning Administrator
Kathy Zahul, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Jeff Baker, State Utilities Engineer
Ken Thompson, Statewide Location Bureau Chief
Tamaya Huff, State Pedestrian and Bicycle Coordinator
Rachel Brown, District Engineer
Scott Lee, District Preconstruction Engineer
Jonathan Walker, District Utilities Engineer
Sue Anne Decker, Project Manager
BOARD MEMBER - 13th Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT

Project Type:	Operational	P.I. Number:	0009724
GDOT District:	7	County:	CLAYTON
Federal Route Number:	I-675	State Route Number:	138
Project Number:	N/A		

Project Description

The operational improvement proposes to add two additional 500 feet turn lanes to the I-675 southbound off-ramp at its intersection with SR 138 in Clayton County. The existing configuration consists of 24' wide ramp with one left turn and one right turn lane. Heavy turning movement from the ramp and heavy eastbound through traffic on SR 138 result in high intersection delays and long queues. The final configuration consists of dual left and dual right turn lanes onto SR 138 which result in reduction of delay and queue length.

Submitted for approval:

ARCADIS US, INC. — 10/25/12
Consultant Designer & Firm or GDOT Concept/Design Phase Office Head & Office — DATE

11/8/2012
Office Head *(GDOT Project Manager's Office)* — DATE

Sue Anne Decku — 11/1/12
GDOT Project Manager — DATE

Recommendation for approval: *(Delete any inapplicable signature lines)*

Program Control Administrator — DATE

* Glenn Bowman /MDH — 12/4/2012
State Environmental Administrator *(recommendation required)* — DATE

* Kathy Zahul /MDH — 1/16/2013
State Traffic Engineer *(recommendation required for roundabout projects)* — DATE

* Lisa Myers /MDH — 11/20/2012
Project Review Engineer — DATE

* Patrick Allen /MDH — 11/20/2012
for State Utilities Engineer — DATE

* Rachel Brown /MDH — 12/7/2012
District Engineer *(projects not originating in District Office)* — DATE

State Transportation Financial Management Administrator — DATE

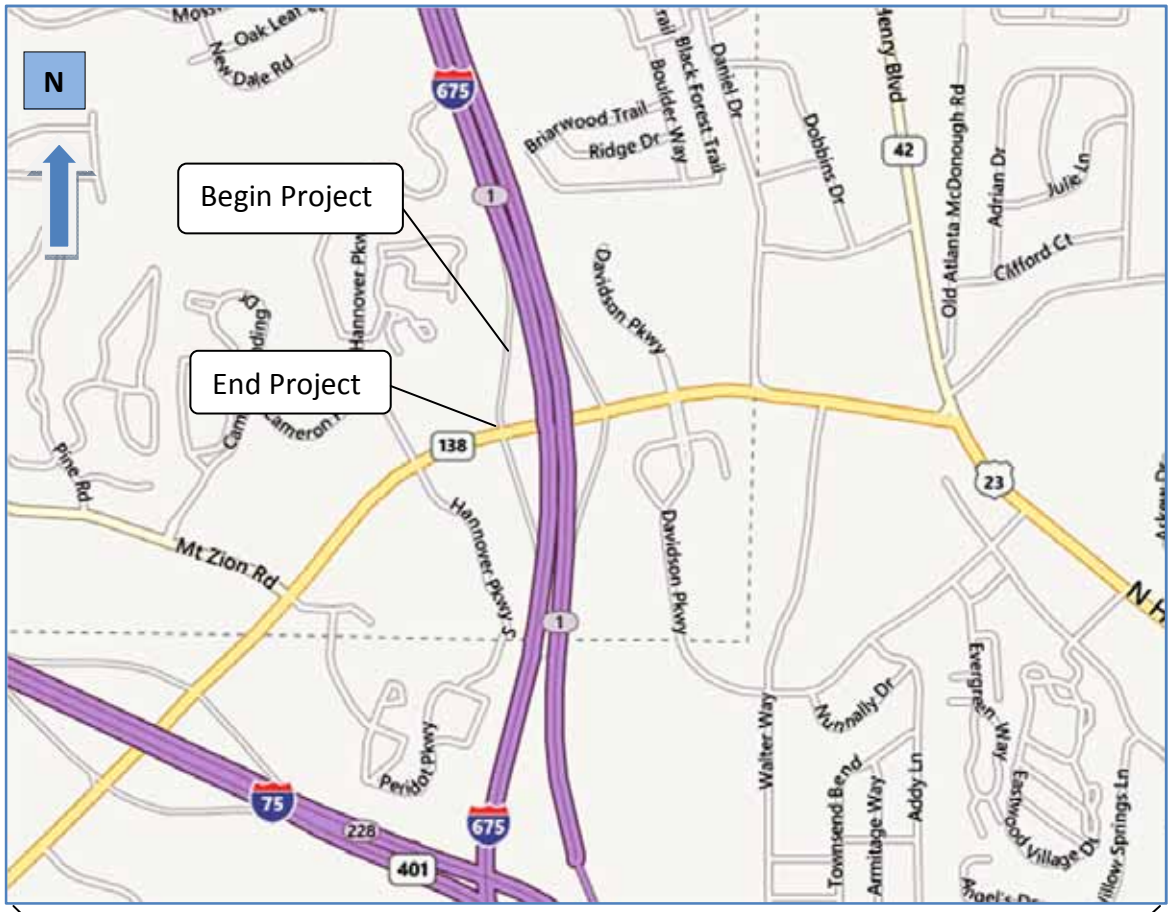
The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Plan (RTP) and/or the State Transportation Improvement Program (STIP).

Cynthia L Vaughe — 11-2012
State Transportation Planning Administrator *(recommendation required)* — DATE

* Recommendation on file - MDH

PROJECT LOCATION

I-675 southbound off-ramp at SR 138



NOT TO SCALE

PLANNING & BACKGROUND DATA

Project Justification Statement: I-675 southbound off-ramp at SR 138 was identified for operational improvements and is included in the GDOT Operational Improvement Lump Sum Program from the Office of Traffic Operations. This proposed project was presented to and approved by the Operational Improvement Committee as a QUICK project.

The SR 138 at I-675 interchange is located in Clayton County, Georgia. I-675 is a four lane divided freeway that serves as a parallel alternate route for I-75 to access I-285. SR 138 is currently a five lane arterial with left turn bays at signals and two way left turn lanes in between the signals. SR 138 has a speed limit of 45 miles per hour (mph) within the study area. The existing ramp configuration consists of two 12-foot travel lanes which become one approximately 470 feet left turn lane and one approximately 470 feet right turn lane onto SR 138 east and west bound. There is a 10-foot shoulder present on the right side of the I-675 ramp approaching SR 138 and a 6-foot shoulder on the left side. Crosswalks exist across all the approaches of the intersection except the westbound approach.

The intersection of SR 138 with I-675 southbound off-ramp currently operates at LOS B during the AM peak hour. During the PM peak hour the intersection operates at LOS F. Heavy eastbound through traffic on SR 138, heavy turning traffic from I-676 SB off-ramp contribute to the high delays at this intersection which results in long queues on I-675 southbound off-ramp.

Description of the proposed project: The proposed operational improvements are along the I-675 southbound off-ramp leading to its intersection with SR 138. The project begins approximately 900ft along the ramp from the intersection of SR 138 and consists of addition of two 12-foot wide turn lanes on the inside of the ramp plus 4-foot paved shoulder of the 8-foot graded inside shoulder. Approximately 500ft of guardrail is provided to cover the non-recoverable slopes inside the clear zone. The entire widening is carried on the inside of the existing ramp. The stop bars across the SR 138 westbound approach are moved back to accommodate the turning path of vehicles from the ramp.

The final configuration will consist of two left turn lanes and two right turn lanes on the off-ramp and rural shoulder with paving under guardrail. The crosswalks across the ramp and sidewalk pads are replaced with ADA compatible ramps.

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

MPO: Atlanta Regional Commission (ARC) MPO Project ID TIP#AR-106-2014

Regional Commission: ~~N/A~~ Atlanta Regional Commission RC Project ID: N/A

Congressional District(s): 13

Projected Traffic: ADT
Current Year (2012): 9700 Open Year (2015): 10290 Design Year (2035): 15290
Traffic Projections Performed by: *ARCADIS US, INC.*

Functional Classification (Mainline): Freeway Ramp

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

Is this project on a designated Bike Route, Pedestrian Plan, or Transit Network?
☒ None ☐ Bike Route ☐ Pedestrian Plan ☐ Transit Network

CONTEXT SENSITIVE SOLUTIONS

Issues of Concern: N/A

Context Sensitive Solutions: N/A

DESIGN AND STRUCTURAL DATA

Mainline Design Features: I-675 southbound off-ramp at SR 138

Feature	Existing	Standard*	Proposed
Typical Section			
- Number of Lanes	**2**		**4**
- Lane Width(s)	**12**	**12**	**12**
- Median Width & Type	**N/A**	**N/A**	**N/A**
- Outside Shoulder or Border Area Width	**10**	**12**	**10**
- Outside Shoulder Slope	**6:1**	**6:1**	**6:1**
- Inside Shoulder Width	**6**	**8**	**8**
- Sidewalks	**N/A**	**N/A**	**N/A**
- Auxiliary Lanes	**LT/RT**		**LT/RT**
- Bike Lanes	**N/A**		**N/A**
Posted Speed	**N/A**		**N/A**
Design Speed	**50**		**50**
Min Horizontal Curve Radius	**1460**	**643**	**1460**
Superelevation Rate	**0.06**	**0.06**	**0.06**
Grade	**-1.6530**		**-1.6530**
Access Control	**Limited**		**Limited**
Right-of-Way Width	**Variable**		**Variable**
Maximum Grade – Crossroad	**N/A**		**N/A**
Design Vehicle	**WB-67**		**WB-67**

*According to current GDOT design policy if applicable

Major Structures: N/A

Major Interchanges/Intersections: Intersection of I-675 southbound exit ramp with SR 138.

Utility Involvements: Utility conflicts are not anticipated on this project.

Public Interest Determination Policy and Procedure recommended (Utilities)? ☒ No ☐ Yes

SUE Required: ☒ No ☐ Yes

Railroad Involvement: N/A

Complete Streets - Bicycle, Pedestrian, and/or Transit Warrants:

Warrants met: ☒ None ☐ Bicycle ☐ Pedestrian ☐ Transit

- The proposed project in subject is a freeway off-ramp and pedestrian, bike and transit related activities are not expected along the ramp.

Right-of-Way:

Required Right-of-Way anticipated: ☒ No ☐ Yes ☐ Undetermined

Easements anticipated: ☒ None ☐ Temporary ☐ Permanent ☐ Utility ☐ Other

Anticipated number of impacted parcels:

Displacements anticipated: Total:

Businesses:

Residences:

Other:

Location and Design approval: ☒ Not Required ☐ Required

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

Transportation Management Plan [TMP] Required: ☒ No ☐ Yes

If Yes: Project classified as: ☐ Non-Significant ☐ Significant

TMP Components Anticipated: ☐ TTC ☐ TO ☐ PI

Design Exceptions to FHWA/AASHTO controlling criteria anticipated:

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

Design Variances to GDOT Standard Criteria anticipated:

GDOT Standard Criteria	Reviewing Office	No	Undeter--mined	Yes	Appvl Date (if applicable)
1. Access Control - *Median Opening Spacing*	DP&S	☒	☐	☐	
2. Median Usage & Width	DP&S	☒	☐	☐	
3. Intersection Skew Angle	DP&S	☒	☐	☐	
4. Lateral Offset to Obstruction	DP&S	☒	☐	☐	
5. Intersection Sight Distance	DP&S	☒	☐	☐	
6. Bike, Pedestrian & Transit Accommodations	DP&S	☒	☐	☐	
7. GDOT Drainage Manual	DP&S	☒	☐	☐	
8. Georgia Standard Drawings	DP&S	☒	☐	☐	
9. GDOT Bridge & Structural Manual	Bridge Design	☒	☐	☐	
10. Roundabout Illumination	DP&S	☒	☐	☐	
11. Rumble Strips	DP&S	☒	☐	☐	
12. Safety Edge	DP&S	☒	☐	☐	

VE Study anticipated: ☒ No ☐ Yes ☐ Completed – Date:

ENVIRONMENTAL DATA

Anticipated Environmental Document:

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

Project Air Quality:

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

The project is in the approved FY 2012-2017 Transportation Improvement Program (TIP). The reference number in the TIP is AR-106-2014. The project consists of an intersection operational improvement and would not increase segment capacities. In addition, the proposed project would have no impact on design year build and no-build volumes. The truck percentages, as well as traffic volumes, are expected to remain the same for design year build and no-build per the traffic study.

Based on the above, a qualitative PM2.5 hotspot analysis is not required for this project since it is NOT a project of local air quality concern under 40 CFR 93.123(b) (1). The Clean Air Act and 40CFR 93.116 requirements were met without a hotspot analysis since this project has been found not to be of air quality concern under 40CFR 93.123(b)(1). Therefore, the project meets statutory and regulatory transportation conformity requirements without a hot-spot analysis.

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

The project is located in Clayton County, which is within the MS4 boundary of the state. The project disturbs more than 1 acre of land and adds more than 5000 Sq. ft. of new impervious area, therefore compliance with post-construction storm water treatment requirement of the MS4 permit is required. These requirements include

- Removal of 80 % of the average annual TSS load from pavement runoff by treating the first 1.2 inch rainfall.
- Stream channel protection by detaining 1 year 24 hour rainfall for 24 hours.
- Provide overbank protection by not increasing the post-developed compared to pre-developed flows for the 25 year 24 hour rainfall event.
- Provide extreme flood protection by controlling the 100 year 24 hour flood and routing through the BMP.

A conceptual hydrologic study indicates that a 220 ft. long by 40 ft. wide by 4 ft. deep enhanced dry swale constructed in the infield area of the interchange will meet the post-construction storm water

treatment requirements. Water quality treatment will be provided through the use of permeable soils, gradual slopes and rip-rap check dams for velocity control to promote infiltration. A small diameter perforated under drain installed under the swale will prevent oversaturation of soils by discharging excess flows. Runoff from large storm events will be routed to the existing concrete ditch via a new concrete overflow spillway. Additional right of way will not be required for the construction of the dry swale. The cost of the dry swale will be less than 10% of the overall project cost.

Environmental Permits/Variances/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	No	Yes	Remarks
1. U.S. Coast Guard Permit	☒	☐	
2. Forest Service/Corps Land	☒	☐	
3. CWA Section 404 Permit	☒	☐	
4. Tennessee Valley Authority Permit	☒	☐	
5. Buffer Variance	☒	☐	
6. Coastal Zone Management Coordination	☒	☐	
7. NPDES	☐	☒	Project disturbs more than 1 acre of land.
8. FEMA	☒	☐	
9. Cemetery Permit	☒	☐	
10. Other Permits	☒	☐	
11. Other Commitments	☒	☐	
12. Other Coordination	☒	☐	

Is a PAR required? ☒ No ☐ Yes ☐ Completed – Date:

NEPA/GEPA: Draft PCE preparation is currently underway.

Ecology: Ecology survey has been completed and Ecology Resource Survey and Assessment of Effects Report is currently underway.

No protected species habitat is present within study corridor. The project area contains one perennial stream and two drainage feature habitats. No ecological resources will be impacted by the proposed project.

History: This project falls under the Memorandum of understanding (MOU) agreement of No Potential to Cause Effect (NPCE); therefore no historic resource survey would be required. Based on the determination under the MOU, there are no further obligations under Section 106 of the National Historic Preservation Act for these Specified undertakings and no additional documentation is required.

Archeology: No archaeological resources are present within the projects Area of Potential Effect (APE); therefore, the project would have no impacts to archaeological resources.

Noise: The project meets the criteria of a Type III project and does not require a noise study.

Public Involvement: None

Major stakeholders: None

CONSTRUCTION

Issues potentially affecting constructability/construction schedule:
The construction schedule will be affected by AM/PM peak traffic hours. Due to very high traffic volumes, off-hour construction will be required.

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

PROJECT RESPONSIBILITIES

Project Activities:

Project Activity	Party Responsible for Performing Task(s)
Concept Development	ARCADIS U.S., Inc.
Design	ARCADIS U.S., Inc.
Right-of-Way Acquisition	N/A
Utility Relocation	N/A
Letting to Contract	GDOT
Construction Supervision	GDOT
Providing Material Pits	N/A
Providing Detours	N/A
Environmental Studies, Documents, and Permits	ARCADIS U.S., Inc.
Environmental Mitigation	N/A
Construction Inspection & Materials Testing	GDOT

Lighting required: ☒ No ☐ Yes

Initial Concept Meeting: N/A

Concept Meeting:

Other projects in the area: N/A

Other coordination to date: None.

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	ROW	Reimbursable Utility	CST*	Environmental Mitigation	Total Cost
By Whom	GDOT	-	-	GDOT	-	
$ Amount	$202,036.72	$0	$0	$428,897.52	$0	$630,934.24
Date of Estimate	8/21/2012	N/A	N/A	1/2/2013	N/A	

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

ALTERNATIVES DISCUSSION

Alternative selection:

Preferred Alternative 2: *Widening to the east only: This alternative involves addition of two 500 ft. turn lanes on the **inside (East side)** of the existing I-675 southbound off-ramp.*			
Estimated Property Impacts:	**None**	**Estimated Total Cost:**	$630,934.24
Estimated ROW Cost:	**None**	**Estimated CST Time:**	9 months
Rationale: *This alternative meets all the goals outlined in the justification report with no property impacts and is the most economical. This alternative will reduce the intersection delay and queuing for severely affected PM peak hour traffic.*			

Alternative 2A: *Widening to the west only: this alternative involves addition of two 500 ft. turn lanes on the **outside (West side)** of the existing I-675 southbound off- ramp.*			
Estimated Property Impacts:	**None**	**Estimated Total Cost:**	$682,271.40
Estimated ROW Cost:	**None**	**Estimated CST Time:**	9 months
Rationale: *This alternative will result in higher cost due to the required reconstruction of 10 ft. wide outside concrete shoulder compared to the reconstruction of 4 ft. paved inside shoulder, which is required under preferred alternative. This alternative also requires relocation of two utility poles and a signal controller.*			

Alternative 2B: *Symmetrical widening: This alternative involves addition of two 500 ft. turn lanes by widening along east and west sides of the existing I-675 southbound off-ramp.*			
Estimated Property Impacts:	**None**	**Estimated Total Cost:**	$723,803.44
Estimated ROW Cost:	**None**	**Estimated CST Time:**	12 months
Rationale: *This alternative will result in higher cost due to the required 10 ft. outside shoulder and 4ft. paved inside shoulder. In addition, guardrail including the paving underneath the guardrail will be required on both shoulders. This alternative also requires relocation of two utility poles and a signal controller box. In addition, this will cause additional disruption to traffic since the widening will be required on both sides of existing ramp.*			

Alternative 1: *Adding one right turn lane only: This alternative involves addition of one 500 ft. turn lane adjacent to the existing right turn lane on I-675 southbound off-ramp making it a dual right turn lane onto SR 138.*			
Estimated Property Impacts:	**None**	**Estimated Total Cost:**	$524,473.41
Estimated ROW Cost:	**None**	**Estimated CST Time:**	9 months
Rationale: *This alternative will result in lowest cost among all the alternatives but fails to provide sufficient capacity and is not the recommended alternative.*			

Comments: N/A

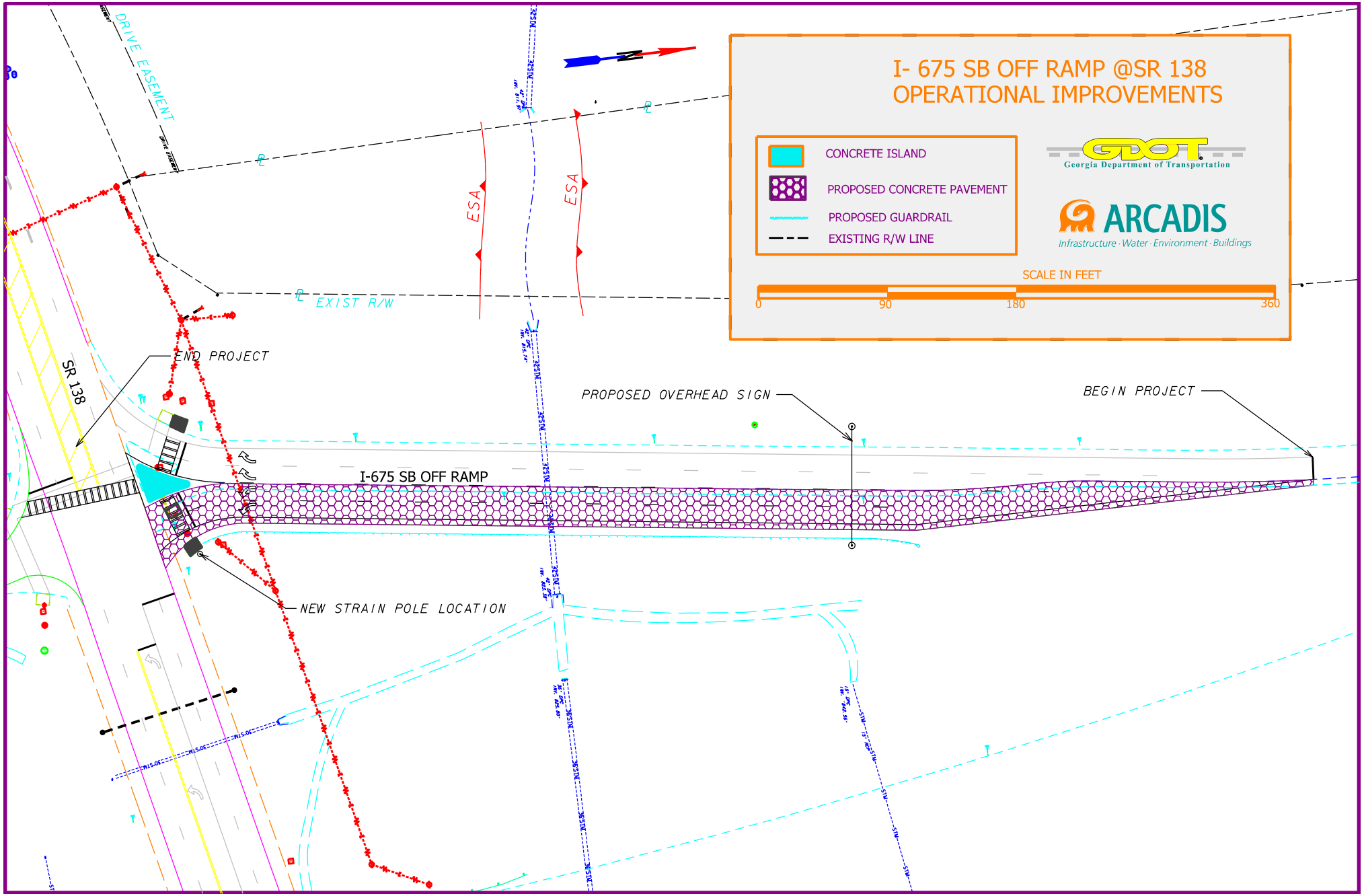
Attachments:

1. Concept Layout
2. Typical sections
3. Detailed Cost Estimates:
    a. Construction including Engineering and Inspection
    b. Completed Fuel & Asphalt Price Adjustment forms
4. Traffic diagrams
5. Summary of Capacity Analysis

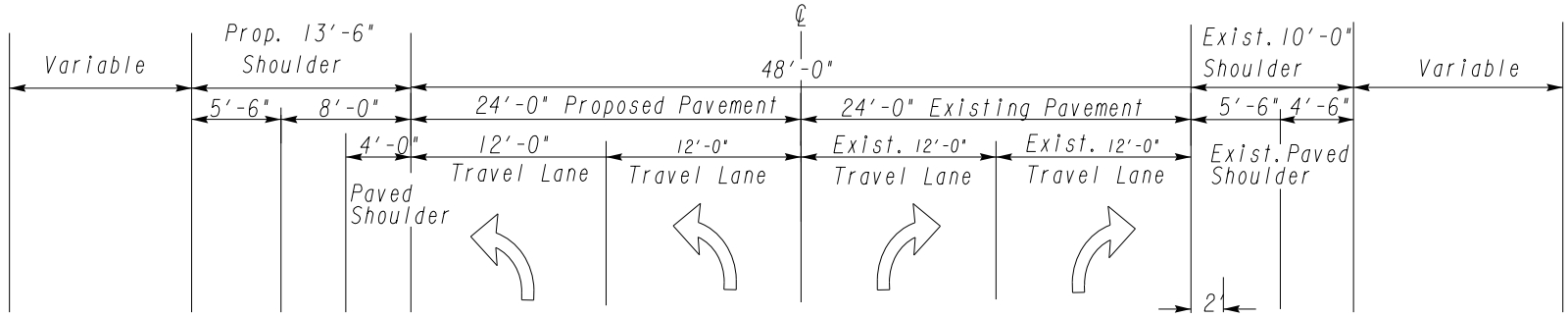
APPROVALS

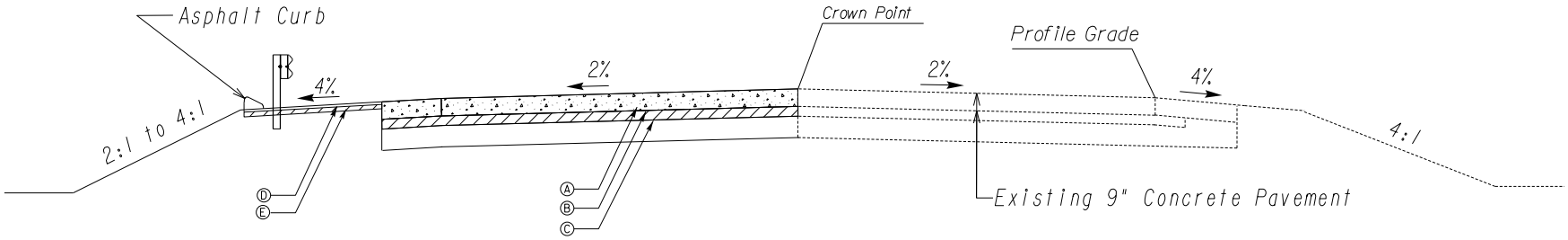
Concur: _____
Director of Engineering

Approve: _____ 1/25/13
Chief Engineer Date


I- 675 SB OFF RAMP @SR 138
OPERATIONAL IMPROVEMENTS
CONCRETE ISLAND
PROPOSED CONCRETE PAVEMENT
PROPOSED GUARDRAIL
EXISTING R/W LINE
Georgia Department of Transportation
ARCADIS
Infrastructure · Water · Environment · Buildings
SCALE IN FEET
0
90
180
360
DRIVE EASEMENT
ESA
ESA
EXIST R/W
SR 138
END PROJECT
PROPOSED OVERHEAD SIGN
BEGIN PROJECT
I-675 SB OFF RAMP
NEW STRAIN POLE LOCATION

I-675 SB OFF RAMP AT SR 138





Ⓐ PLAIN PORTLAND CEMENT CONCRETE PAVEMENT (CLASS I), 9" THICK
Ⓑ ASPHLAT CONCRETE 19MM, 5" THICK.
Ⓒ GRADED AGGREGATE SUBBASE AND SHOULDER COURSE ,6" THICK.
Ⓓ 12.5 mm ASPHALTIC CONCRETE SUPERPAVE, 165 LBS/SY
Ⓔ 19 mm SPHALTIC CONCRETE SUPERPAVE, 220 LBS/SY

N.T.S

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:
TYPICAL SECTIONS

DRAWING No.
05-

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE PROJECT No. NA, Clayton County
I-675 @ SR 138
P.I. No. 0009724

OFFICE Program Delivery

DATE 1/2/2013

FROM Genetha Rice Singleton, State Program Delivery

TO Lisa Myers, State Project Review Engineer

SUBJECT REVISIONS TO PROGRAMMED COSTS

PROJECT MANAGER Sue Anne Decker, P.E.

MNGT LET DATE 4/15/2014

MNGT R/W DATE NA

PROGRAMMED COST (TPro W/OUT INFLATION)		**LAST ESTIMATE UPDATE**
CONSTRUCTION	$535,000.00	DATE 2/16/2010
RIGHT OF WAY	$0.00	DATE NA
UTILITIES	$0.00	DATE NA

REVISED COST ESTIMATES

CONSTRUCTION*	$428,897.52
RIGHT OF WAY	$0.00
UTILITIES	$0.00

* Costs contain 5% Engineering and Inspection.

REASON FOR COST DECREASE: This is a concept cost estimate. The original cost was provided by the Office of Traffic Operations.

CONTINGENCY SUMMARY

Construction Cost Estimate:	$396,923.66	(Base Estimate)
Engineering and Inspection:	$19,846.18	(Base Estimate x 5 %)
Total Liquid AC Adjustment	$ 12,127.68	
Construction Total:	$428,897.52	
Utility Cost Estimate:	$0.00	
Utility Total:	$0.00	

REIMBURSABLE UTILITY COST

Utility Owner	Reimbursable Costs

Attachments

cc: Kathy Zahul, State Traffic Engineer
Attn: Jim Tolson, State Signal Engineer

STATE HIGHWAY AGENCY

DATE : 01/02/2013
PAGE : 1

JOB ESTIMATE REPORT

JOB NUMBER : 0009724 SPEC YEAR: 01
DESCRIPTION: I-675 SB OFF RAMP@SR 138 OPERATIONAL IMPROVEMENTS
TASK ORDER # 8

ITEMS FOR JOB 0009724

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
0005	150-1000		LS	TRAFFIC CONTROL - 0009724	1.000	15000.00	15000.00
0010	210-0100		LS	GRADING COMPLETE - 0009724	1.000	65000.00	65000.00
0035	402-3190		TN	RECYL AC 19 MM SP,GP 1 OR 2 ,INC BM&HL	665.000	90.87	60428.63
0040	413-1000		GL	BITUM TACK COAT	20.000	5.08	101.74
0050	441-0104		SY	CONC SIDEWALK, 4 IN	18.000	21.42	385.64
0075	163-0240		TN	MULCH	12.000	253.71	3044.63
0080	163-0300		EA	CONSTRUCTION EXIT	1.000	1457.42	1457.42
0090	165-0030		LF	MAINT OF TEMP SILT FENCE, TP C	450.000	0.46	208.04
0095	165-0101		EA	MAINT OF CONST EXIT	1.000	458.10	458.10
0100	165-0105		EA	MAINT OF INLET SEDIMENT TRAP	1.000	62.99	62.99
0110	171-0030		LF	TEMPORARY SILT FENCE, TYPE C	900.000	2.80	2521.38
0115	700-6910		AC	PERMANENT GRASSING	1.000	960.60	960.60
0120	700-7000		TN	AGRICULTURAL LIME	1.000	126.28	126.29
0125	700-8000		TN	FERTILIZER MIXED GRADE	1.000	477.34	477.34
0130	700-8100		LB	FERTILIZER NITROGEN CONTENT	14.000	3.17	44.50
0135	167-1000		EA	WATER QUALITY MONITORING AND SAMPLING	1.000	72.11	72.11
0140	167-1500		MO	WATER QUALITY INSPECTIONS	12.000	384.05	4608.64
0145	310-1101		TN	GR AGGR BASE CRS, INCL MATL	750.000	23.79	17849.66
0150	402-3130		TN	RECYL AC 12.5MM SP,GP2,BM&HL	50.000	83.06	4153.32
0160	441-0748		SY	CONC MEDIAN, 6 IN	62.000	43.52	2698.56
0165	641-1200		LF	GUARDRAIL, TP W	465.000	17.55	8161.56
0170	641-5012		EA	GUARDRAIL ANCHORAGE, TP 12	1.000	1834.84	1834.84
0175	641-5001		EA	GUARDRAIL ANCHORAGE, TP 1	1.000	597.44	597.44
0180	430-0190		SY	PLN PC CONC PVMT/CL1C/ 9" TK	2197.000	50.00	109850.00
0185	163-0232		AC	TEMPORARY GRASSING	1.000	531.98	531.98
0190	163-0529		LF	CNST/REM TEMP SED BAR OR BLD STRW CK DM	100.000	3.77	377.97
0195	165-0041		LF	MAINT OF CHECK DAMS - ALL TYPES	50.000	1.66	83.35
0200	716-2000		SY	EROSION CONTROL MATS, SLOPES	1000.000	0.99	992.41
0205	647-1000		LS	TRAF SIGNAL INSTALLATION NO - 0009724	1.000	20000.00	20000.00
0210	639-3004		EA	STEEL STRAIN POLE, TP IV	3.000	9037.79	27113.39
0215	636-1033		SF	HWY SIGNS, TP1MAT,REFL SH TP 9	10.000	23.31	233.19
0220	636-1041		SF	HWY SIGNS,TP 2MAT,REFL SH TP 9	50.000	30.71	1535.90
0225	636-2070		LF	GALV STEEL POSTS, TP 7	40.000	9.97	399.15
0230	657-5017		EA	PRF PL PVT MKG,ARW TP2,WH,TPPB	20.000	796.52	15930.48
0235	657-1054		LF	PRF PL SD PVMT MKG,5",WH,TP PB	1500.000	3.72	5592.33
0240	657-6054		LF	PRF PL SD PVMT MKG,5",YW,TP PB	780.000	4.39	3424.76
0245	657-1244		LF	PRF PL SD PVMT MKG,24",WH,TPPB	75.000	38.52	2889.02
0250	657-1084		LF	PRF PL SD PVMT MKG,8",WH,TP PB	130.000	5.88	765.39
0255	657-3054		GLF	PRF PL SK PVMT MKG,5",WH,TP PB	270.000	5.00	1352.57
0260	657-5001		SY	PREFORMED PLASTIC PVMT MKG, WHITE, TP PB	50.000	20.98	1049.25

STATE HIGHWAY AGENCY

DATE : 01/02/2013
PAGE : 2

JOB ESTIMATE REPORT

0265	657-5002	SY	PREFORMED PLASTIC PVMT MKG, YE, TP PB	50.000	21.66	1083.44
0270	654-1003	EA	RAISED PVMT MARKERS TP 3	20.000	5.53	110.79
0275	682-6233	LF	CONDUIT, NONMETL, TP 3, 2 IN	50.000	3.39	169.50
0280	573-2004	LF	UNDDR PIPE INCL DRAIN AGGR 4"	250.000	10.50	2625.00
0285	500-3200	CY	CL B CONC	50.000	161.20	8060.36
0290	700-9920	LB	GRASSING, RIPARIAN SEED MIX	50.000	50.00	2500.00

ITEM TOTAL 396923.66
INFLATED ITEM TOTAL 396923.66

TOTALS FOR JOB 0009724

ESTIMATED COST: 396923.66
CONTINGENCY PERCENT (0.0): 0.00
ESTIMATED TOTAL: 396923.66

PROJ. NO.	TM120015	CALL NO.
P.I. NO.	0009724	
DATE	1/2/2013	

INDEX (TYPE)	**DATE**	**INDEX**
REG. UNLEADED	Dec-12	$ 3.276
DIESEL		$ 3.997
LIQUID AC		$ 568.00

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

LIQUID AC ADJUSTMENTS

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

Asphalt

Price Adjustment (PA)				**12098.4**	**$**	**12,098.40**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	908.80		
Monthly Asphalt Cement Price month project let (APL)			$	568.00		
Total Monthly Tonnage of asphalt cement (TMT)				35.5		

ASPHALT	**Tons**	**%AC**	**AC ton**
Leveling		5.0%	0.00
12.5 OGFC		5.0%	0.00
12.5 mm	45	5.0%	2.25
9.5 mm SP		5.0%	0.00
25 mm SP		5.0%	0.00
19 mm SP	665	5.0%	33.25
	710		**35.50**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$**	**29.28**	**$**	**29.28**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	908.80		
Monthly Asphalt Cement Price month project let (APL)			$	568.00		
Total Monthly Tonnage of asphalt cement (TMT)				0.085902018		

Bitum Tack Gals	gals/ton	tons
20	232.8234	0.08590202

BITUMINOUS TACK COAT (surface treatment)

Price Adjustment (PA)				**0**	**$**	**-**
Monthly Asphalt Cement Price month placed (APM)	Max. Cap	60%	$	908.80		
Monthly Asphalt Cement Price month project let (APL)			$	568.00		
Total Monthly Tonnage of asphalt cement (TMT)				0		

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

TOTAL LIQUID AC ADJUSTMENT	**$**	**12,127.68**

Department of Transportation
State of Georgia

INTERDEPARTMENT CORRESPONDENCE

FILE Clayton County
P.I. # 0009724

OFFICE Planning

DATE February 13, 2012

FROM Cindy VanDyke, State Transportation Planning Administrator

TO Bobby K. Hilliard, P.E., State Program Delivery Design Engineer
Attention: Sue Anne Decker

SUBJECT **Reviewed** Design Traffic for I-675 @ S.R. 138.

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

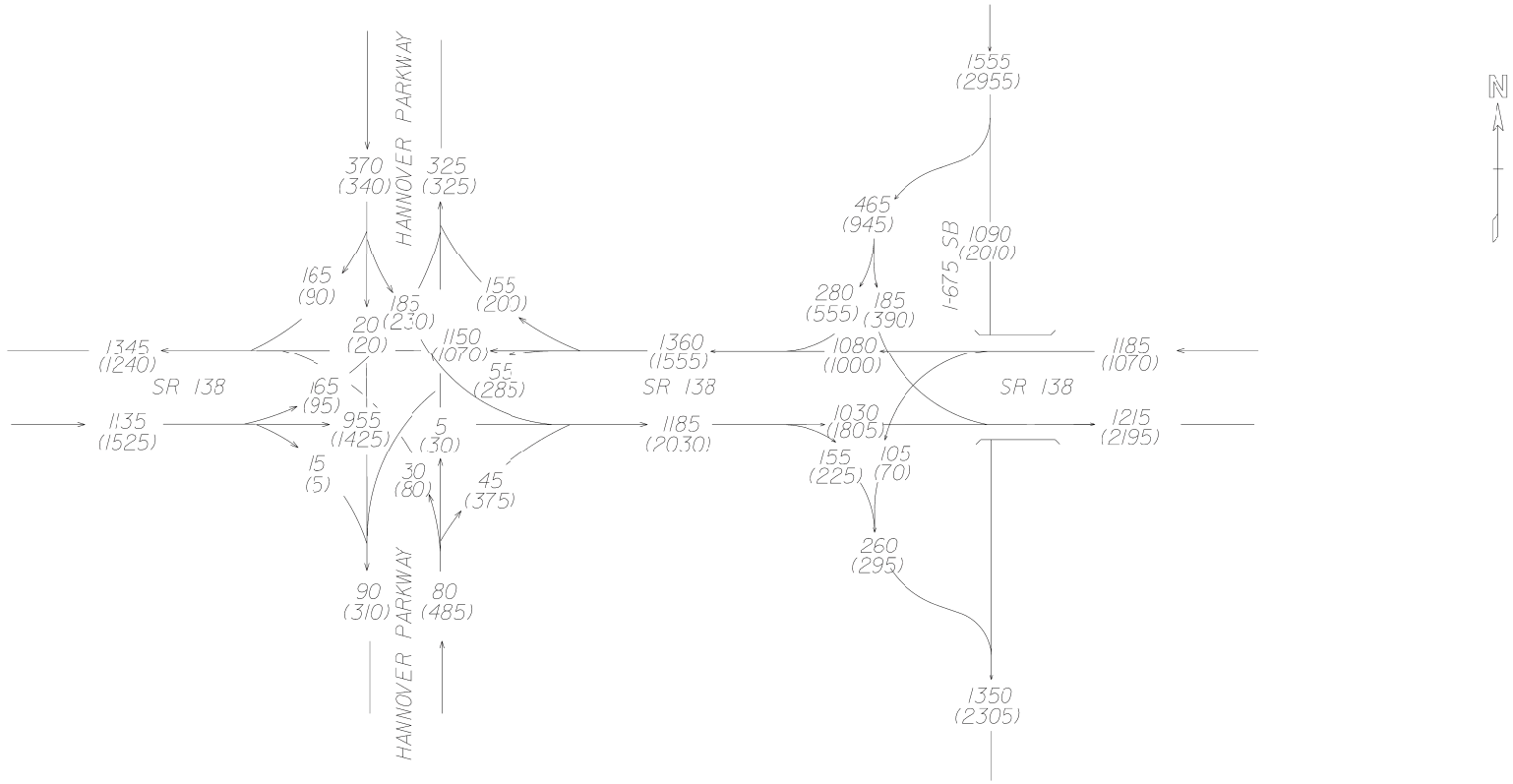
The Design Traffic is approved based on the information furnished. If you have any questions concerning this information please contact Leslie R. Woods at (404) 631-1773.

CLV/LRW

SHEET 1 OF 7

EXISTING YEAR (2012)
DESIGN HOURLY VOLUMES (DHV)

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



ARCADIS

SR 138 TRUCK %		I-675 SB OFF RAMP TRUCK %	
AM PEAK	PM PEAK	AM PEAK	PM PEAK
S.U. = 7%	S.U. = 5%	S.U. = 11%	S.U. = 11%
COMB = 5%	COMB = 4%	COMB = 2%	COMB = 3%
T = 12%	T = 9%	T = 13%	T = 14%

2012 AM = 000
2012 PM = (000)

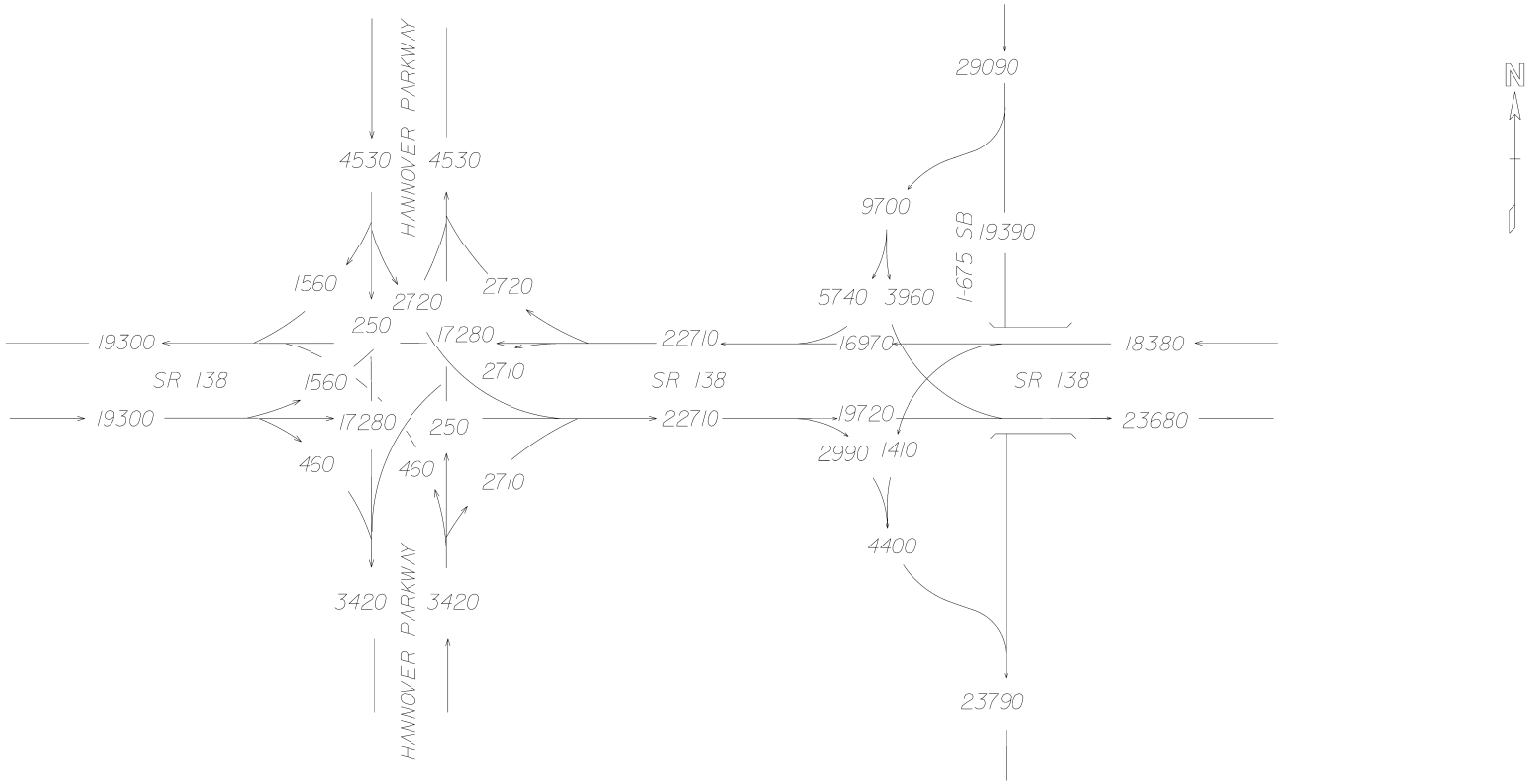
P.I. 0009724
TASK ORDER #2

I-675 SB OFF RAMP
AT SR 138
CLAYTON COUNTY

JN
01/2012

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING

EXISTING YEAR (2012)
AVERAGE DAILY TRAFFIC (ADT)



ARCADIS

SR 138 TRUCK %

24 HR S.U. = 7%
24 HR COMB = 4%
24 HR T = 11%

I-675 SB OFF RAMP TRUCK %

24 HR S.U. = 12%
24 HR COMB = 2%
24 HR T = 14%

2012 ADT = 000

P.I. 0009724
TASK ORDER #2

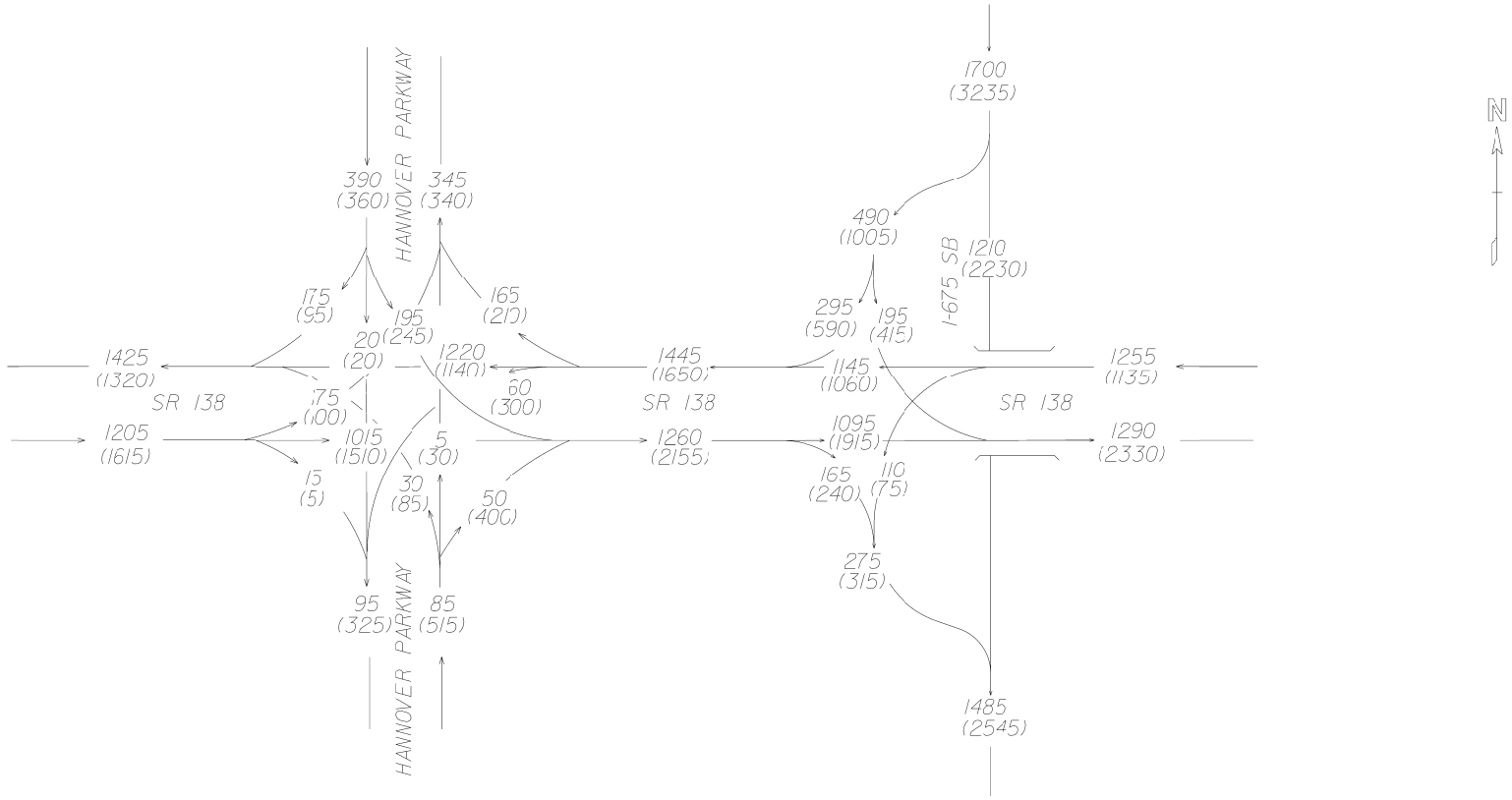
I-675 SB OFF RAMP
AT SR 138
CLAYTON COUNTY

JN
01/2012

SHEET 3 OF 7

OPEN YEAR (2015)
DESIGN HOURLY VOLUMES (DHV)

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



ARCADIS

SR 138 TRUCK %		I-675 SB OFF RAMP TRUCK %	
AM PEAK	PM PEAK	AM PEAK	PM PEAK
S.U. = 7%	S.U. = 5%	S.U. = 11%	S.U. = 11%
COMB = 5%	COMB = 4%	COMB = 2%	COMB = 3%
T = 12%	T = 9%	T = 13%	T = 14%

2015 AM = (000)
2015 PM = (000)

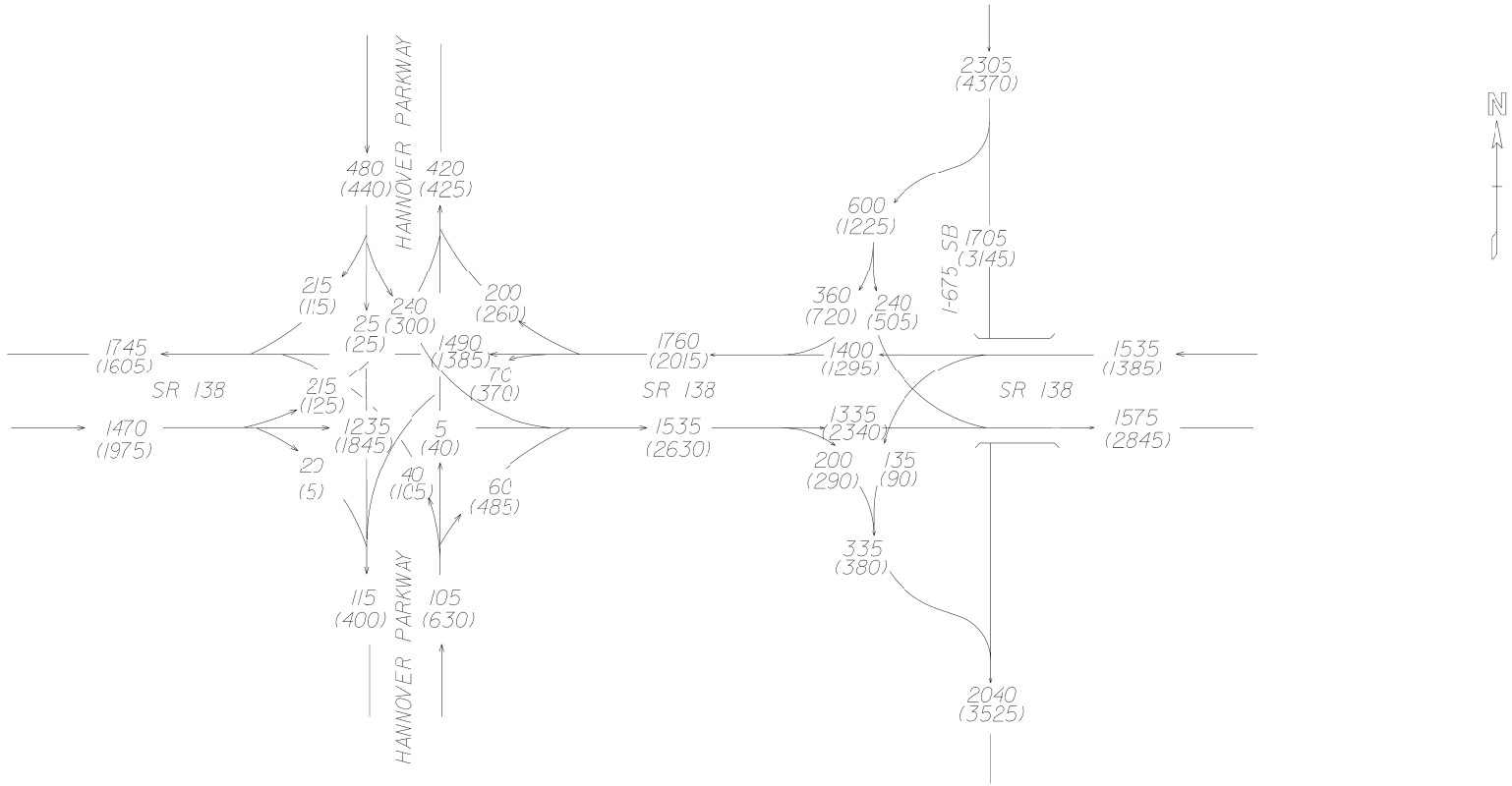
P.I. 0009724
TASK ORDER #2

I-675 SB OFF RAMP
AT SR 138
CLAYTON COUNTY

JN
01/2012

INTERIM YEAR (2025)
DESIGN HOURLY VOLUMES (DHV)

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



ARCADIS

SR 138 TRUCK %		I-675 SB OFF RAMP TRUCK %	
AM PEAK	PM PEAK	AM PEAK	PM PEAK
S.U. = 7%	S.U. = 5%	S.U. = 11%	S.U. = 11%
COMB = 5%	COMB = 4%	COMB = 2%	COMB = 3%
T = 12%	T = 9%	T = 13%	T = 14%

2025 AM = 000
2025 PM = (000)

P.I. 0009724
TASK ORDER #2

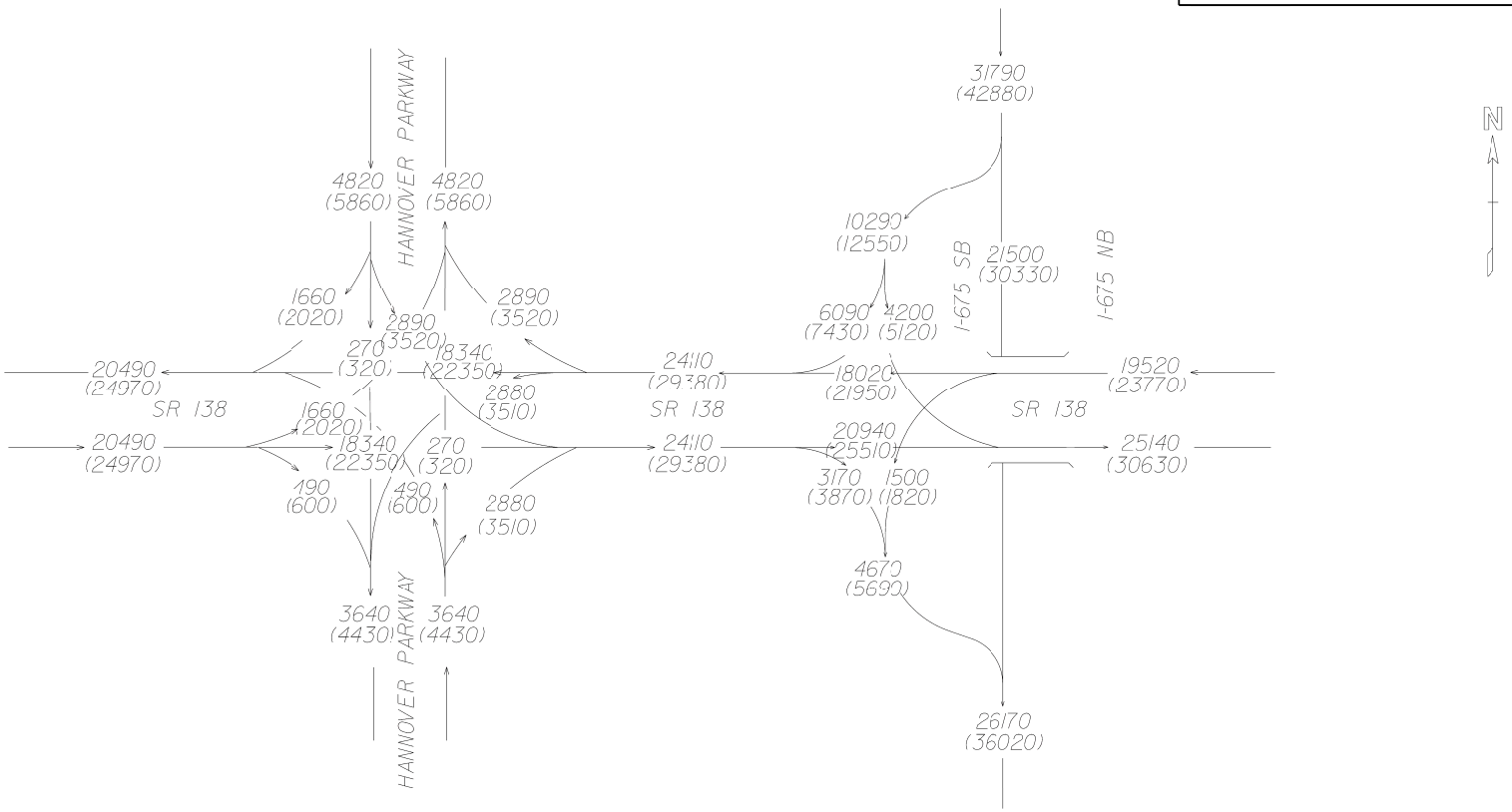
I-675 SB OFF RAMP
AT SR 138
CLAYTON COUNTY

JN
01/2012

SHEET 5 OF 7

OPEN YEAR (2015) & INTERIM YEAR (2025) AVERAGE DAILY TRAFFIC (ADT)

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



ARCADIS

SR 138 TRUCK %	I-675 SB OFF RAMP TRUCK %
24 HR S.U. = 7%	24 HR S.U. = 12%
24 HR COMB = 4%	24 HR COMB = 2%
24 HR T = 11%	24 HR T = 14%

2015 ADT = 000
2025 ADT = (000)

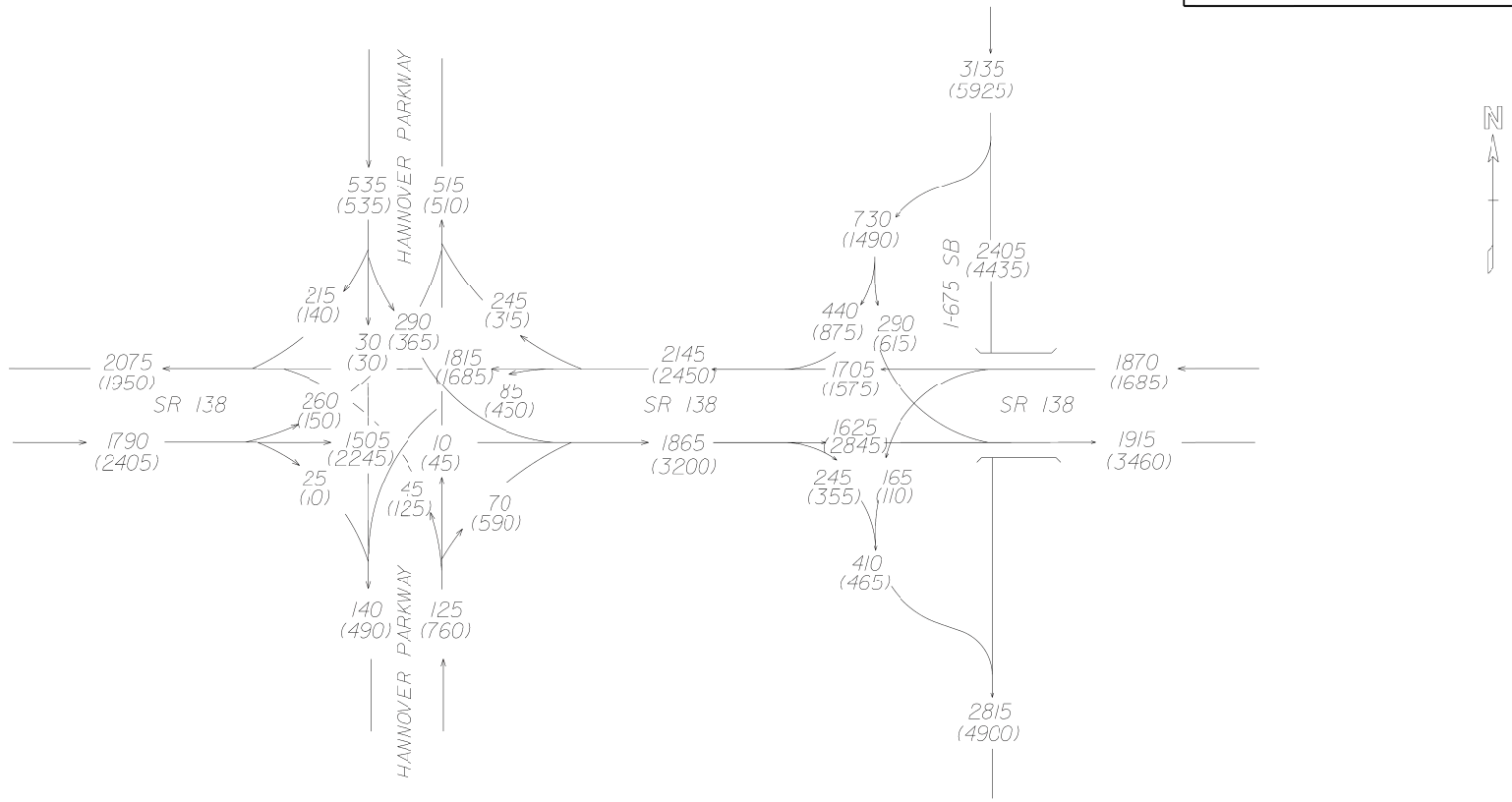
P.I. 0009724
TASK ORDER #2

I-675 SB OFF RAMP
AT SR 138
CLAYTON COUNTY

JW
01/2012

DESIGN YEAR (2035)
DESIGN HOURLY VOLUMES (DHV)

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



ARCADIS

SR 138 TRUCK %		I-675 SB OFF RAMP TRUCK %	
AM PEAK	PM PEAK	AM PEAK	PM PEAK
S.U. = 7%	S.U. = 5%	S.U. = 11%	S.U. = 11%
COMB = 5%	COMB = 4%	COMB = 2%	COMB = 3%
T = 12%	T = 9%	T = 13%	T = 14%

2035 AM = 000
2035 PM = (000)

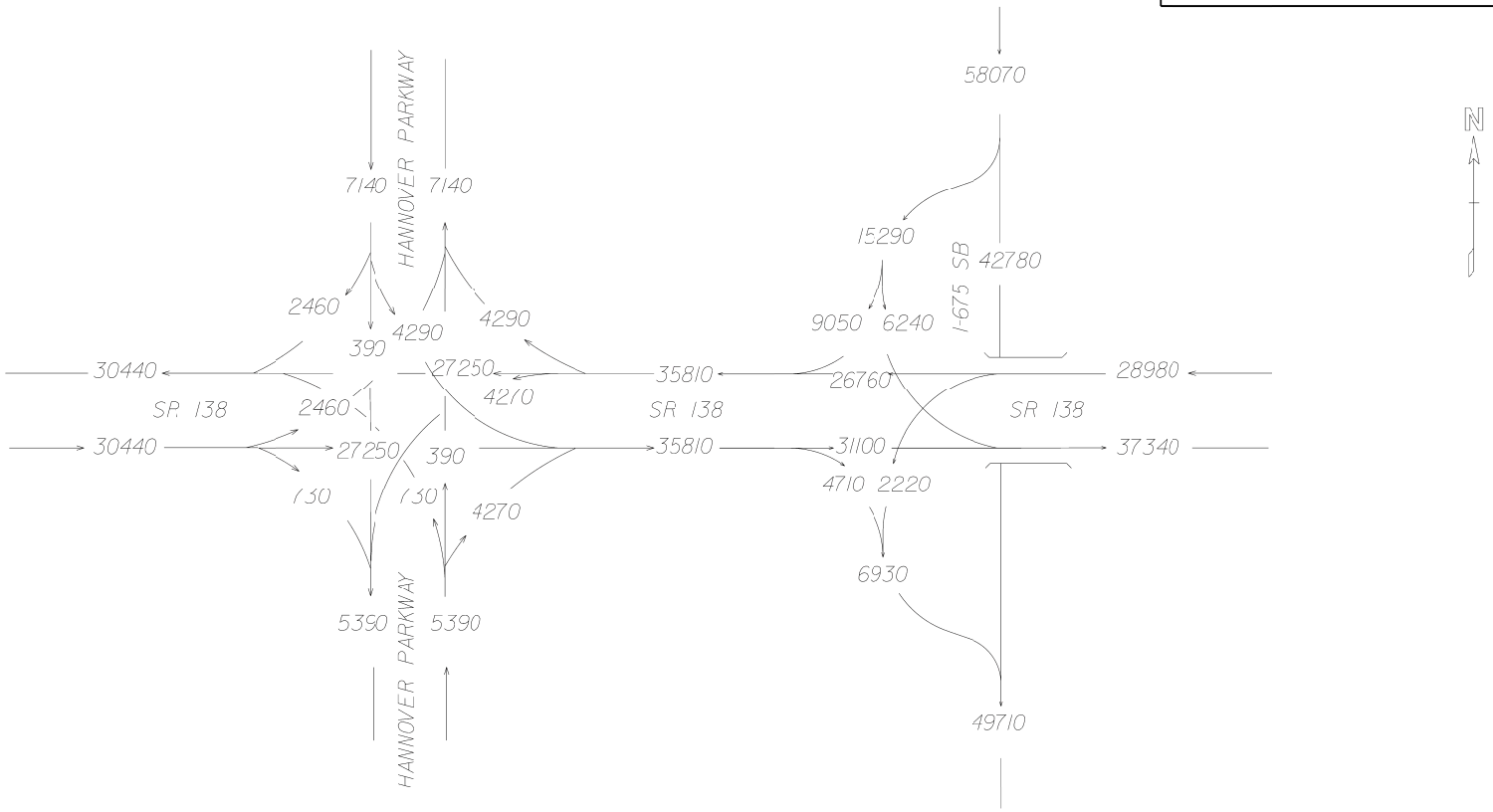
P.I. 0009724
TASK ORDER #2

I-675 SB OFF RAMP
AT SR 138
CLAYTON COUNTY

JN
01/2012

DESIGN YEAR (2035)
AVERAGE DAILY TRAFFIC (ADT)

GEORGIA DEPARTMENT OF TRANSPORTATION
OFFICE OF PLANNING



ARCADIS

SR 138 TRUCK %	I-675 SB OFF RAMP TRUCK %
24 HR S.U. = 7%	24 HR S.U. = 12%
24 HR COMB = 4%	24 HR COMB = 2%
24 HR T = 11%	24 HR T = 14%

2035 ADT = 000

P.I. 0009724
TASK ORDER #2

I-675 SB OFF RAMP
AT SR 138
CLAYTON COUNTY

JW
01/2012

ARCADIS U.S., Inc.
2410 Paces Ferry Road
#400
Atlanta
Georgia 30339
Tel 770 431 8666
Fax 770 435 2666

ARCADIS U.S., Inc.

MEMO

To:
Sue Anne H. Decker, P.E.

Copies:
Paul DeNard, GDOT
Doug Tilt, ARCADIS
Prasoon Sinha, ARCADIS

From:
Koushik Arunachalam, P.E.

Date:
January 24, 2012

ARCADIS Project No.:
IS110001.2000

Subject:

Justification for limits of operational improvements at I-675 Southbound Off Ramp at SR 138 (P.I. 0009724)

The scope of this memorandum is to summarize the results of traffic analysis to justify the limits of operational improvements at the intersection of I-675 Southbound (SB) off ramp at SR (P.I. 0009724).

The SR 138 at I-675 interchange is located in Clayton County, Georgia. I-675 is a four lane divided highway that serves as a parallel alternate route for I-75 to access I-285. SR 138 is currently a five lane (with median turn lane) arterial with a speed limit of 45 miles per hour (mph) within the study area. Traffic analysis was conducted at the following two signalized intersections due to the proximity of these intersections.

- I-675 Southbound (SB) off ramp at SR 138
- SR 138 at Hannover Parkway

Field Observations:

Field observations were conducted during the weekday peak hours and the findings from these observations, specific to I-675 Southbound off ramp are summarized below.

- PM peak hour is the most critical peak hour for I-675 SB off ramp.

- Heavy right turn volume from I-675 SB off ramp onto SR 138 was observed during the PM peak hours, resulting in long queues on the off ramp.

- Very few vehicles were observed making a right onto Hannover Parkway from I-675 SB off ramp. This observation was made to validate if there would be need for a free flow slip movement due to the proximity of Hannover Pkwy and I-675 SB ramp along SR 138.

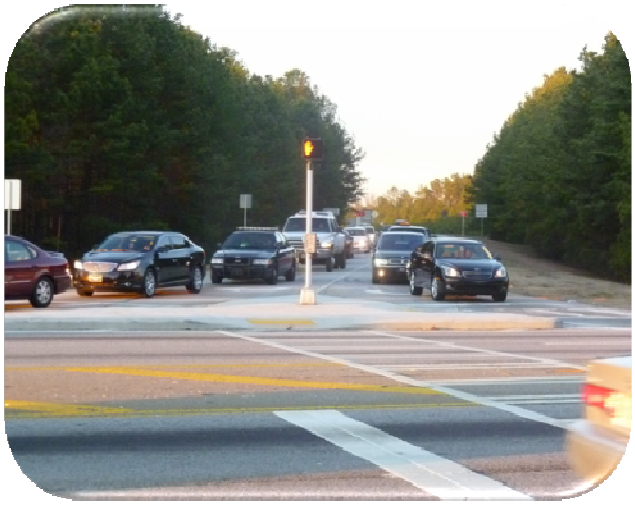


Figure 1: Snapshot of I-675 Southbound Off Ramp (PM Peak Hour)

Traffic Operational Analysis

Existing (2012) Conditions:

The information related to the existing conditions lane geometry, turn lane storage lengths, speed limits, signal timing and phasing information were used to create a traffic simulation model in Synchro 8. The traffic volumes (pending approval by Georgia DOT Office of Planning) were input to Synchro 8 to perform intersection capacity analysis. Refer Appendix A for the raw traffic counts. Refer Appendix B for the existing conditions volume diagrams.

Detailed capacity analysis was performed for the morning and afternoon peak hours. The intersection capacity analysis was performed in accordance with the Highway Capacity Manual methodologies.

The results of the existing conditions capacity analysis is summarized in Table 1.

Table 1: Existing Conditions Capacity Analysis Summary

Intersection	Delay (Sec/Veh)	
	AM	PM
I-675 Southbound Off Ramp @ SR 138	18.6	91.8
SR 138 @ Hannover Parkway	19.3	38.9

LOS A-B LOS C LOS D LOS E LOS F

Findings:

- The intersections of I-675 Southbound Off Ramp at SR 138 and Hannover Parkway currently operates at LOS B during the AM peak hour

- During the PM peak hour, the intersection of I-675 SB off ramp at SR 138 operates at LOS F with an intersection delay of 91.8 sec/veh. Heavy eastbound through traffic on SR 138, heavy turning traffic from I-676 SB off ramp contribute to the high delays at this intersection.

- LOS F on I-675 off-ramp results in long queues.

Open Year (2015) Conditions:

In order to evaluate the traffic operations in the future year, it is necessary to estimate the growth rate in the study area. An annual growth rate of 2 percent was estimated along SR 138 based on Georgia DOT STARS data in the vicinity of the study area. Existing traffic volumes were grown at the estimated annual growth rate to develop open year (2014) traffic projections. Refer Appendix B for the approved open year no-build and build conditions volume diagrams.

The scope of build condition is to evaluate the need and impact of additional turn lanes on I-675 SB off-ramp. The results of open year (2014) no-build and build conditions are summarized in Table 3. Two alternatives were analyzed to address the capacity and queuing issues on I-675 SB off ramp.

- **Alternative 1 :** Add one right turn lane to existing exclusive right and left turn lanes to form dual right turn lanes and a left turn lane

- **Alternative 2:** Add one right turn and one left turn lane to existing exclusive right and left turn lanes to form dual right turn and dual left turn lanes.

The results of open year (2015) no-build and build conditions capacity analysis are summarized in Table 2. Queuing analysis was performed in order to evaluate the impact of spillback on I-675 off ramp. The results of queuing analysis are summarized in Table 3.

Table 2: Open Year Conditions Capacity Analysis Summary

Intersection	No-Build		Alternative 1			
	Delay (Sec/Veh)		Delay (Sec/Veh)		% Change in Delay Over No-Build	
	AM	PM	AM	PM	AM	PM
I-675 Southbound Off Ramp @ SR 138	18.4	120.3	12.9	68.8	-30%	-43%
SR 138 @ Hannover Parkway	16.7	43.7	17.3	49.0	4%	12%

Intersection	Alternative 2					
	Delay (Sec/Veh)		% Change in Delay Over No-Build		% Change in Delay Over Alternative 1	
	AM	PM	AM	PM	AM	PM
I-675 Southbound Off Ramp @ SR 138	10.8	48	-41%	-60%	-16%	-30%
SR 138 @ Hannover Parkway	17.6	45.8	5%	5%	2%	-7%

LOS A-B LOS C LOS D LOS E LOS F

Table 3: Open Year Conditions Queuing Analysis

No-Build	Alternative 1	Alternative 2
1196 FT	1180 FT	360 FT

Findings:

- I-675 SB off ramp would operate at LOS F with an intersection delay of 120.3 sec/veh
- Alternative 1 would operate at LOS E and still would result in significant reduction in intersection delay over no-build conditions, by approximately 43% during the PM peak hour.
- Alternative 2 would result in significant reduction in intersection delay over no-build conditions, by approximately 60% during the PM peak hour and operate at LOS D.

- The additional delay reduction under Alternative 2 over Alternative 1 would be due to the additional left turn lane to service the heavy left turn volume on I-675 SB off ramp.

- The results of queuing analysis indicate that no-build and Alternative 1 would result in longer queues along I-675 SB off ramp as compared to Alternative 2. Under Alternative 1, the heavy right turn movement would be serviced by the dual right turn lanes. However the cause of long queues would be due to lack of available left turn movement capacity. With the left turn capacity addressed under Alternative 2, the queue lengths would be significantly reduced.

Interim Year (2025) Conditions:

The interim year analysis was based on interim year no-build and build conditions volume diagrams (Refer Appendix B). The results of the interim year (2025) no-build and build conditions are summarized in Table 4. Queuing analysis was performed in order to evaluate the impact of spillback on I-675 off ramp. The results of queuing analysis are summarized in Table 5.

Table 4: Interim Year Conditions Capacity Analysis Summary

Intersection	No-Build		Alternative 1			
	Delay (Sec/Veh)		Delay (Sec/Veh)		% Change in Delay Over No-Build	
	AM	PM	AM	PM	AM	PM
I-675 Southbound Off Ramp @ SR 138	34.0	175.9	19.5	125.3	-43%	-29%
SR 138 @ Hannover Parkway	26.0	71.3	27.5	71.0	6%	-1%

Intersection	Alternative 2					
	Delay (Sec/Veh)		% Change in Delay Over No-Build		% Change in Delay Over Alternative 1	
	AM	PM	AM	PM	AM	PM
I-675 Southbound Off Ramp @ SR 138	16.0	95.3	-53%	-46%	-18%	-24%
SR 138 @ Hannover Parkway	28.4	70.5	9%	-1%	3%	-1%

LOS A-B LOS C LOS D LOS E LOS F

Table 5: Interim Year Conditions Queuing Analysis

No-Build	Alternative 1	Alternative 2
1540 FT	1300 FT	415 FT

Findings:

- I-675 SB off ramp would operate at LOS F, with intersection delays ranging between 95.3 sec/veh to 175.9 sec/veh

- The scope of the operational improvements is necessarily not to address the future capacity needs, but address the operational issues faced under the existing conditions. The LOS F under future year alternatives does not indicate failure of the proposed operational improvements.

- Alternative 1 would operate at LOS F and still would result in significant reduction in intersection delay over no-build conditions, by approximately 29% during the PM peak hour.

- Alternative 2 would operate at LOS F and still would result in significant reduction in intersection delay over no-build conditions, by approximately 46% during the PM peak hour.

- Similar to the open year conditions, the additional delay reduction under Alternative 2 over Alternative 1 would be due to the additional left turn lane to service the heavy left turn volume on I-675 SB off ramp.

- The results of queuing analysis indicate that no-build queues would exceed the off ramp length. Alternative 1 would have long queues along I-675 SB off ramp as compared to Alternative 2. Under Alternative 1, the heavy right turn movement would be serviced by the dual right turn lanes. However the cause of long queues would be due to lack of available left turn movement capacity. With the left turn capacity addressed under Alternative 2, the queue lengths would be significantly reduced.

- The recommended storage length is based on the estimated average queue length of 415 feet from the interim year analysis. It is recommended to open the additional turn lanes on I-675 off ramp at the same location as existing turn lanes, which is greater than the estimate queue length.

Design Year (2035) Conditions:

The design year analysis was based on design year no-build and build conditions volume diagrams (Refer Appendix B). The results of the design year (2035) no-build and build conditions are summarized in Table

6. Queuing analysis was performed in order to evaluate the impact of spillback on I-675 off ramp. The results of queuing analysis are summarized in Table 7.

Table 6: Design Year Conditions Capacity Analysis Summary

Intersection	No-Build		Alternative 1			
	Delay (Sec/Veh)		Delay (Sec/Veh)		% Change in Delay Over No-Build	
	AM	PM	AM	PM	AM	PM
I-675 Southbound Off Ramp @ SR 138	76.8	335.8	44.4	253.5	-42.2%	-24.5%
SR 138 @ Hannover Parkway	53.9	173.1	58.5	176.9	8.5%	2.2%

Intersection	Alternative 2					
	Delay (Sec/Veh)		% Change in Delay Over No-Build		% Change in Delay Over Alternative 1	
	AM	PM	AM	PM	AM	PM
I-675 Southbound Off Ramp @ SR 138	37.4	218.2	-51.3%	-35.0%	-15.8%	-13.9%
SR 138 @ Hannover Parkway	56.5	180.5	4.8%	4.3%	-3.4%	2.0%

LOS A-B LOS C LOS D LOS E LOS F

Table 7: Design Year Conditions Queuing Analysis

No-Build	Alternative 1	Alternative 2
1553 FT	1538 FT	902 FT

Findings:

- I-675 SB off ramp would operate at LOS F with significant intersection delays
- The primary cause of these delays are due to the major capacity needs along SR 138 and not necessarily due to failure of the operational improvements on I-675 SB off ramp

Conclusion and Recommendation:

- The proposed operational improvements (Alternative 1 and Alternative 2) would improve the traffic operations during the open year (2015) and interim year (2025).

- Alternative 2 would yield the most reduction in delay as compared to no-build and Alternative 1. The additional delay reduction under Alternative 2 over Alternative 1 would be due to the additional left turn lane to service the heavy left turn volume on I-675 SB off ramp.

- The scope of the operational improvements is necessarily not to address the future capacity needs, but address the operational issues faced under the existing conditions. The LOS F under future year alternatives does not indicate failure of the proposed operational improvements.

- Alternative 2, with dual right and dual left turn lanes, with a storage length of approximately 500 feet would be the recommended operational improvements on I-675 SB off ramp.