ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

OFFICE OF DESIGN POLICY & SUPPORT
INTERDEPARTMENTAL CORRESPONDENCE

FILE P.I. # 522570-
NH000-0026-03(056)
Liberty & Long Counties
GDOT District 5 - Jesup
US 84 Connector

OFFICE Design Policy & Support

DATE 9/22/2014

FROM Keith Posey for Brent Story, State Design Policy Engineer

TO SEE DISTRIBUTION

SUBJECT **APPROVED CONCEPT REPORT**

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

Attachment

DISTRIBUTION:

Glenn Bowman, Director of Engineering
Joe Carpenter, Director of P3/Program Delivery
Genetha Rice-Singleton, Assistant Director of P3/Program Delivery
Albert Shelby, State Program Delivery Engineer
Bobby Hilliard, Program Control Administrator
Cindy VanDyke, State Transportation Planning Administrator
Hiral Patel, State Environmental Administrator
Ben Rabun, State Bridge Engineer
Kathy Zahul, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Lisa Myers, State Project Review Engineer
Charles "Chuck" Hasty, State Materials Engineer
Mike Bolden, State Utilities Engineer
Paul Tanner, Asst. State Transportation Data Administrator
Attn: Systems & Classification Branch
Jeff Fletcher, Statewide Location Bureau Chief
Karon Ivery, District Engineer
William Murphy, District Preconstruction Engineer
Dallory Rozier, District Utilities Engineer
Aghdas Ghazi, Project Manager
BOARD MEMBER - 1st Congressional District

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT

Project Type:	New Location/ Bypass	P.I. Number:	522570
GDOT District:	5	County:	Liberty/Long
Federal Route Number:	N/A	State Route Number:	119

Freight Route 119 would construct a two-lane highway in Liberty and Long County. It would provide connectivity between SR 119 and US84/SR38.

Submitted for approval:

William Dial — 7/17/13
Consultant Designer & Firm *or* GDOT Concept/Design Phase Office Head & Office — DATE

Local Government *(if applicable)* — DATE

Office Head *(GDOT Project Manager's Office)* — 7/23/2013 DATE

Ashley S. Wilson — 7/19/2013
GDOT Project Manager — DATE

Recommendation for approval:

Program Control Administrator — GLENN BOWMAN*/EKP — 8/7/2013 DATE

State Environmental Administrator — KATHY ZAHUL*/EKP — 8/12/2013 DATE

State Traffic Engineer — LISA MYERS*/EKP — 8/1/2013 DATE

Project Review Engineer — JON BIRNKAMMER*/EKP — 8/5/2013 DATE

FOR State Utilities Engineer — KARON IVERY*/EKP — 8/9/2013 DATE

District Engineer — BEN RABUN*/EKP — 5/28/2014 DATE

State Bridge Design Engineer — DATE

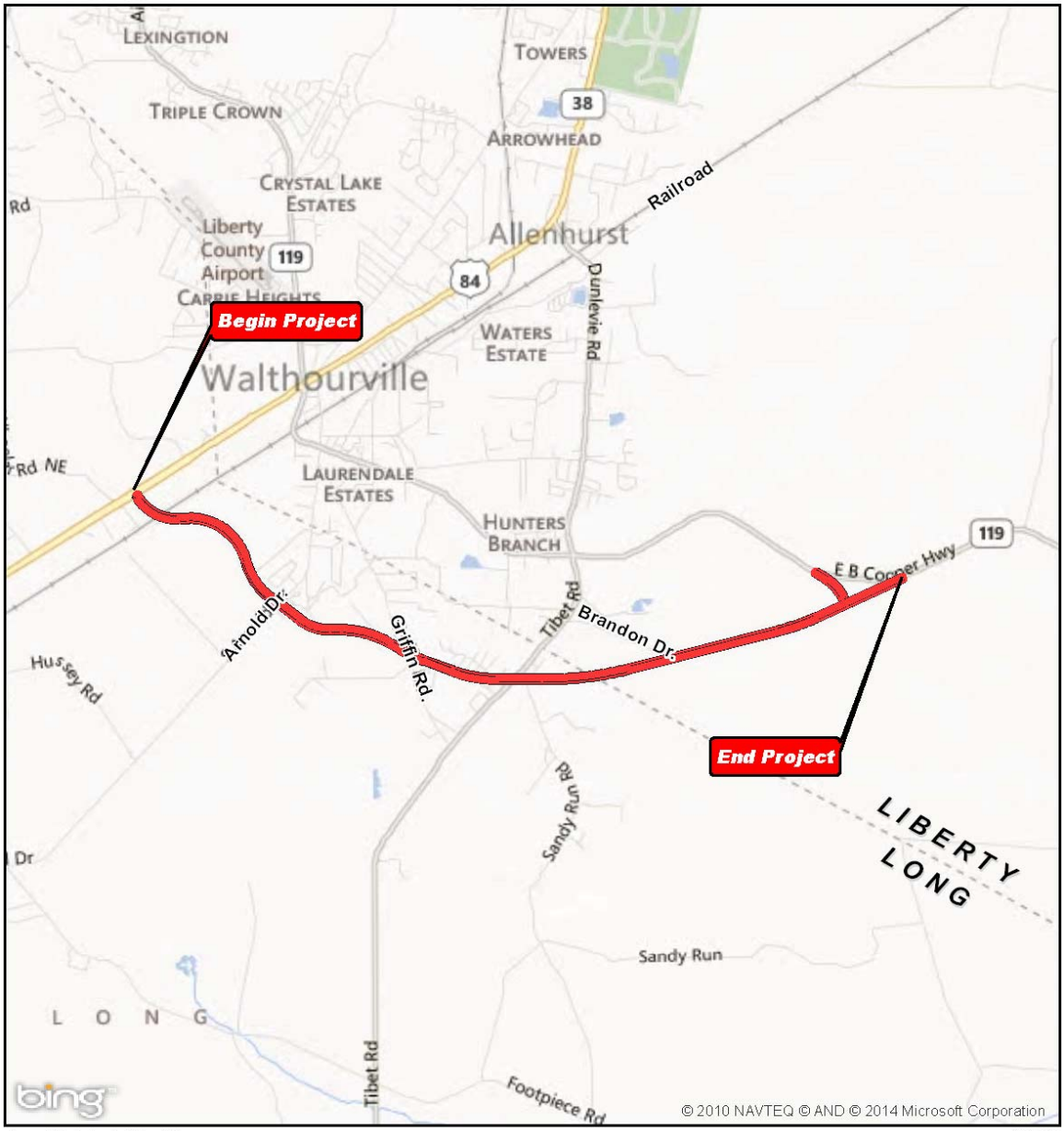
State Transportation Financial Management Administrator — DATE

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).

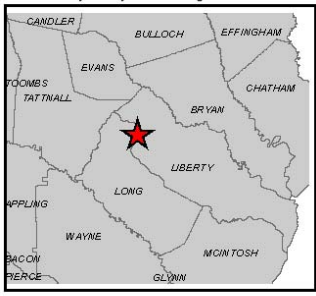
CINDY VAN DYKE*/EKP — 7/31/2013
State Transportation Planning Administrator — DATE

* - RECOMMENDATION ON FILE

PROJECT LOCATION



Source: Liberty County GIS and Bing 4-16-14



Project Location Map

Project Alignment

0 4,000 8,000 Feet

NH000-0026-03(756)
P.I. Number 522570
Freight Route 119

Liberty and
Long Counties, Georgia

N

PLANNING & BACKGROUND DATA

Project Justification Statement:

PI 522570 is listed in the Hinesville MPO's LRTP with ROW funds programmed in the TIP. The project was added to Georgia DOT's work program in 1992 at the request of Liberty County. US84/SR38 has been designated a non-interstate route in the Strategic Highway Network (STRAHNET) and is currently a coastal evacuation route. The Coastal Regional Commission identified US84/SR38 as a potential bike and pedestrian route beginning from the Wayne/Long County line and ending at the intersection with US17 in Midway. The Liberty Transit system has multiple local bus routes that serve US84/SR38 in the project area.

A traffic study completed in 2010 by Moreland Altobelli and approved by GDOT and the Hinesville Area Metropolitan Planning Organization (HAMPO) identified the need to shift regional traffic away from the section of US84/SR38 that travels through the center of Hinesville. According to the HAMPO travel demand model, approximately 35% of the traffic currently on US84/SR38 in Hinesville is regional traffic. Due to commercial development and a large number of driveways, the roadway's functionality as regional thoroughfare is diminished.

As documented in HAMPO's travel demand model, traffic volumes on US84/SR38 inside the City of Hinesville are expected to increase 64% by the 2035 design year, which would result in most of the roadway segments and intersections within the City of Hinesville operating at LOS E or LOS F, which represent unacceptable traffic conditions. Therefore, the capacity of US84/SR38 is unable to handle the future traffic demand. The regional traffic also includes a large number of tractor trailer trucks traveling between manufacturers in Wayne County (southwest of Hinesville) and the Port of Savannah. The roadway segment of US84/SR38 through Hinesville has 19% trucks as determined from the daily truck classification data collected in August of 2010.

The project runs south of Walthourville and parallels SR119. The proposed western limit of the project is located on US84/SR38 just southwest of Walthourville and at the edge of the heavily developed commercial area extending from Hinesville; this is where traffic volumes decrease and future level-of-service is acceptable. The eastern project limit is proposed to be along existing SR119 between Tibet Road and Homestown Road. The official logical termini will be verified during the NEPA process.

In addition to providing congestion relief on US84/SR38 and an essential evacuation route, the project would provide regional economic benefits by facilitating truck movements and access to areas development. The purpose of this project is to improve regional travel through Liberty and Long Counties while also accommodating local traffic in Hinesville. With regard to statewide performance measures, this project is needed to improve future traffic conditions on US84/SR38 to an acceptable level-of-service.

Project Description:

The proposed bypass, referred to as Freight Route 119, consists of a new location roadway that would begin at US84/SR38 (Oglethorpe Highway). The new Freight Route 119 intersection with US84/SR38 would be located approximately one mile south of SR 119, just outside the city limits of Walthourville in

Long County. The alignment would continue east parallel to SR 119 and bridge over the CSXT railroad. The bypass would intersect with Arnold Drive, Griffin Road, Tibet Road (also called Tibet Highway), and Sandy Run Rd. Proceeding east from Sandy Run Road, the alignment crosses into Liberty County where it continues primarily on new location (a short section of existing Brandon Dr. would be utilized) before intersecting with existing SR119 approximately four miles southeast of US84/SR38. A bridge is proposed over Payne Creek and a portion of the large wetland between Sandy Run Road and Brandon Drive. The proposed route would become SR119 and existing SR119 from Walthourville would be realigned to intersect the new bypass. The proposed roadway constructed is 4.8 miles long with 3.9 miles of new location.

Federal Oversight: ☐ Full Oversight ☒ Exempt (EKP) ☐ State Funded ☐ Other

MPO: ☐ N/A ☒ MPO - Hinesville Area MPO
MPO Project TIP # 2005-D-1

Regional Commission: ☐ N/A ☒ RC – Coastal Georgia RC
RC Project ID # 2005-D-1

Congressional District(s): 1

Projected Traffic: ADT **Mainline**
Current Year (2013): 0 Open Year (2020): 5,660 Design Year (2040): 7,080

Functional Classification (Mainline): Rural Minor Arterial

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: None

Context Sensitive Solutions: A bridge would be constructed over a large wetland to minimize ecological impacts.

Pavement Evaluation and Recommendations
Preliminary Pavement Evaluation Summary Report Required? ☒ No ☐ Yes
A pavement evaluation summary is not necessary on this project because it is primarily on new location. In the few, short areas where an existing roadway alignment is being utilized, the existing pavement will be reconstructed due to its low quality.

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

A Pavement Type Selection Report has been completed for this project and is attached at the end of the report. The HMA pavement type scored slightly higher than the PCC, therefore HMA pavement type will be used for this project.

DESIGN AND STRUCTURAL DATA

Mainline Design Features: Hinesville Bypass –Freight 119

Feature	Existing	Standard*	Proposed
Typical Section			
- **Number of Lanes**	**N/A**	**2 or 4**	**2**
- **Lane Width(s)**	**N/A**	**11'-12'**	**12'**
- **Median Width & Type**	**N/A**	**N/A**	**none**
- **Outside Shoulder Width & Type**	**N/A**	**10' Total / 4' Paved**	**10' Total / 4' Paved**
- **Outside Shoulder Slope**	**N/A**	**6%**	**6%**
- **Inside Shoulder Width & Type**	**N/A**	**N/A**	**none**
- **Sidewalks**	**N/A**	**N/A**	**none**
- **Auxiliary Lanes**	**N/A**	**At intersections as required by traffic volumes**	**At intersections as required by traffic volumes**
- **Bike Lanes**	**N/A**	**Not Marked. Available on Paved Shoulder**	**Not Marked. Available on Paved Shoulder**
- **Posted Speed**	**N/A**	**N/A**	**55**
- **Design Speed**	**N/A**	**55**	**55**
- **Min Horizontal Curve Radius**	**N/A**	**1060'**	**1500'**
- **Maximum Superelevation Rate**	**N/A**	**6%**	**6%**
- **Grade**	**N/A**	**4%**	**** 4%**
- **Access Control**	**N/A**	**Limited/By Permit**	**Limited/By Permit**
- **Right-of-Way Width**	**N/A**	**N/A**	**varies**
- **Maximum Grade – Sideroad**	**N/A**	**7% (collectors & locals) 5% (arterials)**	****7% (collectors & locals) ****5% (arterials)**
- **Design Vehicle**	**N/A**	**SU**	**WB-67**

*According to current GDOT design policy if applicable,

** Profile has not been developed yet. Due to the level topography, it is not anticipated that grades approaching the maximum will be necessary.

Major Structures:

Structure	Existing	Proposed
Bridge over CSXT Railroad	N/A	The approximate dimensions of the bridge are as follows: Length = 150' Width = 47'
Bridge over Payne Creek & wetland	N/A	The approximate dimensions of the bridge are as follows: Length = 1900' Width = 47'
Retaining walls	N/A	N/A
Other	N/A	N/A

Major Interchanges/Intersections: Hinesville Bypass @ US84 (west of Hinesville), Hinesville Bypass at SR 119

Minor intersections include Arnold Drive, Griffin Road, Tibet Road, Sandy Run Road, and Brandon Drive

Utility Involvements: Georgia Power-Distribution, Georgia Power-Transmission, Canoochee EMC, Century Link, City of Walthourville Water, City of Walthourville Sewer, Coastal EMC, Comcast, Liberty County Commissioners Water, Liberty County Commissioners Sewer, Verizon, Atlanta Gas Light

Public Interest Determination Policy and Procedure recommended (Utilities)? ☐ YES ☒ NO
Due to the low density of utilities on this project, it is assumed at this point that the Public Interest Determination Policy and Procedure would not be recommended. This issue will be coordinated with the District Utilities Engineer per the PDP.

SUE Required: ☐ Yes ☒ No
Due to the new location nature of the project, few existing utilities would need to be located so it is assumed at this point that SUE would not be required. This issue will be coordinated with the District Utilities Engineer per the PDP.

Railroad Involvement: Freight Route 119 will cross the existing CSXT railroad on structure. The proposed bridge will need to be wide enough accommodate additional tracks underneath in the future. Initial coordination with CSXT has already begun and they have provided guidance on this issue.

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

Warrants met: ☒ None ☐ Bicycle ☐ Pedestrian ☐ Transit

Right-of-Way:
Required Right-of-Way anticipated: ☒ YES ☐ NO ☐ Undetermined
Easements anticipated: ☒ Temporary ☒ Permanent ☐ Utility ☐ Other

Anticipated number of impacted parcels:	38
Anticipated number of displacements (Total):	45
Businesses:	0
Residences (Tenants):	45
Other:	0

Of the 45 displacements, there is only one single family home, the rest are trailers occupied primarily by tenants. Thirty of the displacements are in one trailer park along Palmetto Ridge. These displacements are based on a worst case scenario assuming a 100-ft right-of-way width. It is anticipated that the number of displacements will be reduced as the project develops, better data is obtained, and minor design changes can be identified and implemented that would reduce or shift right-of-way limits.

Location and Design approval: ☐ Not Required ☒ Required

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

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	YES	Approval Date *(if applicable)*	NO	Undetermined
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	YES	Appvl Date (if applicable)	NO	Undetermined
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 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	☐		☒	☐

Median Opening Spacing: Spacing of median openings will be an issue on US84/SR38. The proposed Freight Route 119 intersection hits between two existing median openings that are only 1300' apart. It is anticipated that one of these median openings may have to be closed or somehow combined with the proposed intersection.

Intersection Skew Angle: Two of the sidestreets – Griffin Rd. & Tibet Rd. – will need to be realigned slightly to meet intersection skew angle criteria.

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

ENVIRONMENTAL & PERMITS

Anticipated Environmental Document:

GEPA: ☐ **NEPA:** ☐ Categorical Exclusion ☒ EA/FONSI ☐ EIS

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

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

Environmental Permits/Variances/Commitments/Coordination anticipated:

Permit/ Variance/ Commitment/ Coordination Anticipated	YES	NO	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	☒	☐	
8. FEMA	☐	☒	
9. Cemetery Permit	☐	☒	
10. Other Permits	☐	☒	
11. Other Commitments	☐	☒	
12. Other Coordination	☐	☒	

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

Based on the current estimated impacts to streams and wetlands, an Individual 404 Permit is not anticipated, so a PAR would not be required. Potential impacts to one large wetland would be minimized by constructing a bridge.

NEPA/GEPA: No 4(f) resources have been identified in the project area.

Ecology: A preliminary desktop survey for wetlands, streams, and endangered/threatened species has been performed for preparation of the Concept Report. Based on the National Wetlands Inventory Map (NWI) approximately nineteen jurisdictional Waters of the U.S. (one named perennial stream, three potential unnamed tributaries, four open water ponds, and 11 wetlands) potentially exist within the survey limits of the proposed project corridor. The identified wetlands, perennial stream, unnamed tributaries, and open waters are likely state and federal waters. The United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPAC) website lists protected species which are known to potentially occur in Liberty County. All protected species and their associated habitats will be assessed through a field visit to determine the presence/absence of these species and habitats along the proposed project. The ecology impacts shown in the Mitigation Cost Estimate are based on the worst case scenario assuming all features within proposed right-of-way would be impacted.

A Georgia Environmental Protection Division (EPD) Stream Buffer Variance (SBV) may be required for the identified streams and open waters if the 25-foot buffer associated with these resources were impacted by the proposed project in such a manner that would not be considered an exempt activity. A United States Army Corps of Engineers (USACE) Regional Permit 01 is anticipated for impacts to jurisdictional waters of the U.S.

History: A preliminary desktop survey for History has been performed for preparation of the Concept Report. Based on preliminary database research, two potential National Register of Historic Places eligible properties were identified within the project area potential effect. These potential resources will be further evaluated along with others that are identified during the history field survey. Impacts to these properties are not anticipated at this time.

Archeology: An archeology survey has not been performed.

Air & Noise: Air and Noise studies have not been performed.

Public Involvement: This project will require a PIOH and PHOH. In addition, quarterly reports to the Liberty County Board of Commissioners will be prepared and delivered during open board meetings.

Major stakeholders: Traveling Public, Long County, Liberty County, City of Hinesville, City of Flemington, GDOT, U.S. Army, and USACE

CONSTRUCTION

Issues potentially affecting constructability/construction schedule: None

Early Completion Incentives recommended for consideration: ☒ No ☐ Yes

PROJECT RESPONSIBILITIES

Project Activities:

Project Activity	Party Responsible for Performing Task(s)
Concept Development	Liberty County/Moreland Altobelli
Design	Liberty County/Moreland Altobelli
Right-of-Way Acquisition	GDOT
Utility Relocation	[illegible]
Letting to Contract	GDOT
Construction Supervision	GDOT
Providing Material Pits	Contractor
Providing Detours	Contractor
Environmental Studies, Documents, & Permits	Liberty County/Moreland Altobelli
Environmental Mitigation	GDOT
Construction Inspection & Materials Testing	GDOT

Lighting required: ☒ No ☐ Yes

Concept Meetings:
Several concept meetings were held as listed below. See attachments for meeting minutes. The project alignment has changed several times (mostly due to environmental impacts) during the project development. The meetings listed below pertained to different alignments than what is currently proposed in this report. As such, the attached meeting minutes are included for reference only.

- The Kick-off Meeting was held on May 4, 2004.
- The Initial Concept Meeting was held on December 14, 2004.
- A Concept Revision Meeting was held on February 15, 2007.
- The "Final" Concept Meeting was held on February 11, 2009.

Other projects in the area: PI#0000455 SR38/US84 at SR196

Other coordination to date: See attached meeting minutes of GDOT and FHWA meeting held February 6, 2014. At this meeting, FHWA was pleased to see that the project size and resulting environmental impacts had been reduced.

Project Cost Estimate and Funding Responsibilities:

	Breakdown of PE	**ROW**	**Utility**	**CST***	**Environmental Mitigation**	**Total Cost**
By Whom	Liberty County	GDOT	GDOT	GDOT	GDOT	
	$1,250,000	$3,044,000	$812,400	$18,443,555	$221,000	$23,770,955
Date of Estimate	6/25/2013	4/9/2014	9/26/2013	4/17/2014	4/15/2014	

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

ALTERNATIVES DISCUSSION

Alternative selection:

Preferred Alternative: New location roadway beginning at US84/SR38 southwest of Walthourville in Long County, traveling east, and ending at existing SR119 in Liberty County.			
Estimated Property Impacts:	**38 Parcels** **45 Displacements**	**Estimated Total Cost:**	**$18,443,555**
Estimated ROW Cost:	**$3,044,000**	**Estimated CST Time:**	**24**
Rationale: This alternative had the least combined impacts on the environment and property owners. There are moderate impacts to wetlands and one large wetland will be bridged to minimize its impacts. No historic properties are impacted by this alignment. All displacements are in trailer parks occupied primarily by tenants, except for one single family home which does not appear to be occupied at this time.			

No-Build Alternative			
Estimated Property Impacts:	**0**	**Estimated Total Cost:**	**0**
Estimated ROW Cost:	**0**	**Estimated CST Time:**	**0**
Rationale: The No Build Alternative would not decrease the amount of traffic or large truck traffic currently traversing Hinesville on US84.			

Alternative 1: Widening of SR119 through Walthourville.			
Estimated Property Impacts:	**60 Parcels** **27 Displacements**	**Estimated Total Cost:**	**$19,800,000**
Estimated ROW Cost:	**$7,400,000**	**Estimated CST Time:**	**24**
Rationale: This alternate was rejected due to the increased impact to property owners and displacements. Although the wetlands impacts are smaller, the overall impact to residential structures, a church, and the old post office makes this alternative less appealing than the preferred alternative. The historic district in Walthourville is impacted by this alignment. The displacements in this alternative are all single family houses.			

Attachments:

1. Concept Layout
2. Typical Sections
3. Detailed Cost Estimates:
    a. Construction (including Engineering and Inspection)
    b. Completed Fuel & Asphalt Price Adjustment forms
    c. Right-of-Way
    d. Utilities
    e. Environmental Mitigation (EPD, etc)
4. Crash Summaries
5. Traffic Diagrams
6. Capacity Analysis Summary
7. Signal Warrant Analysis
8. Concept Hydrology Study for MS4 Requirements
9. Pavement Design
10. Meeting Summaries
11. Pavement Type Selection Report

APPROVALS

Concur: _____ 6/16/14
Director of Engineering — Date

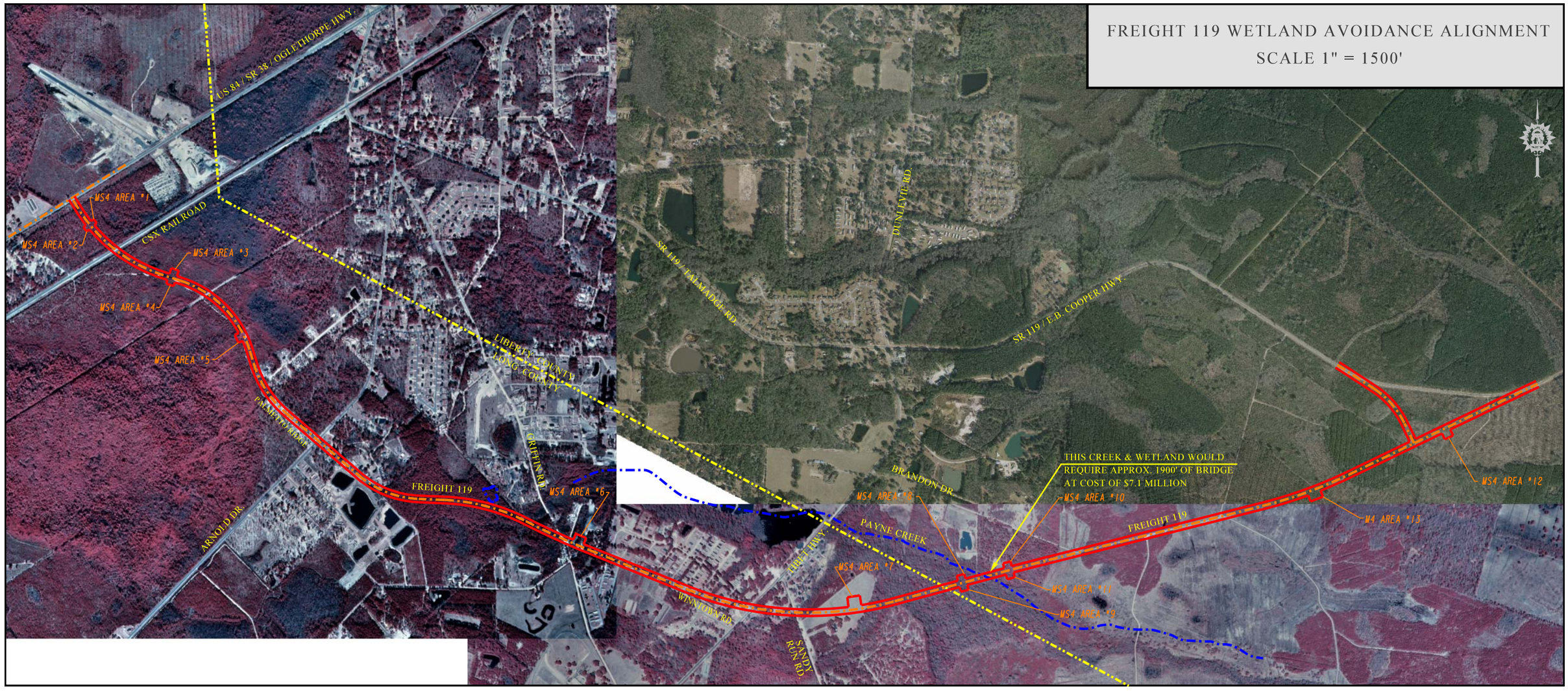
Approve: N/A (EXP)
Division Administrator, FHWA — Date

Approve: _____ 6/23/14
Chief Engineer — Date

Attachment #1
Concept Layout

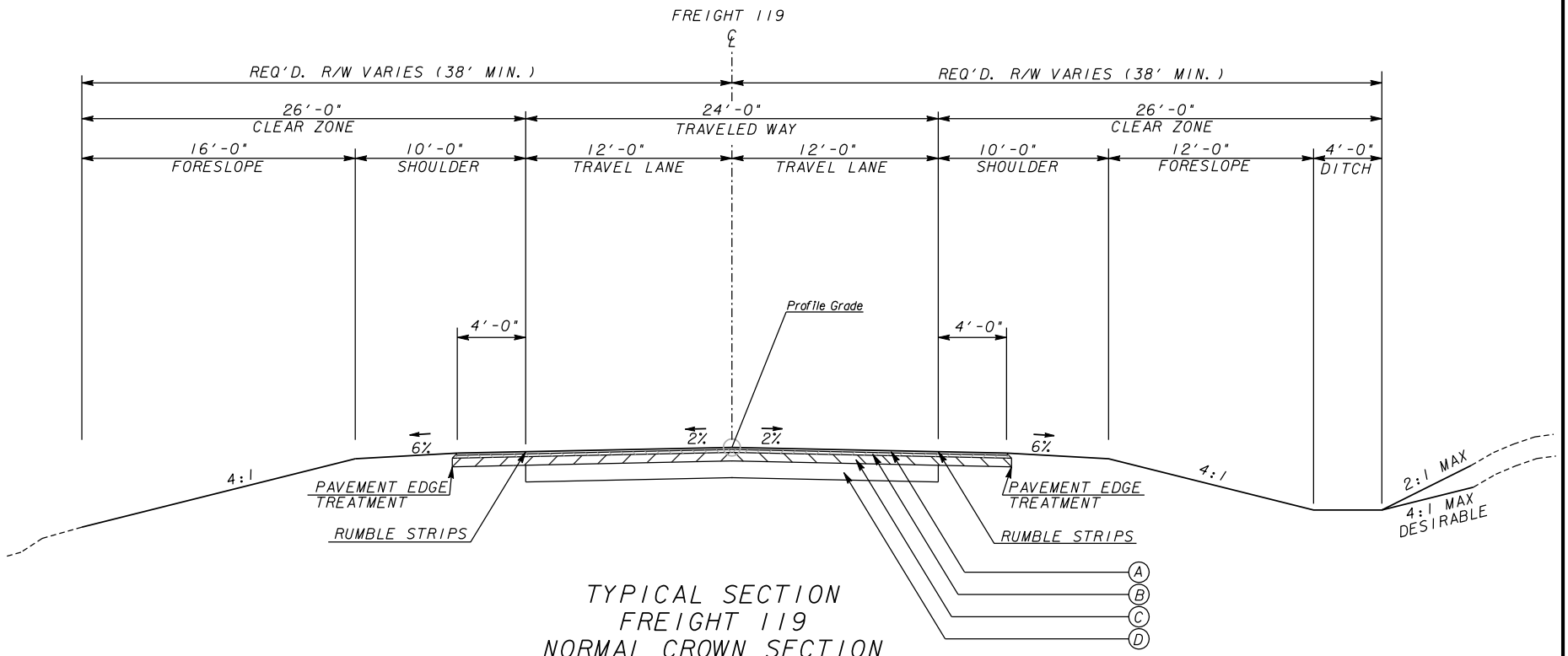
FREIGHT 119 WETLAND AVOIDANCE ALIGNMENT

SCALE 1" = 1500'



Attachment #2
Typical Sections

DATE$$$	TIME$$$	PRF	DGN	STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$$PENTABLE$$		GA			



TYPICAL SECTION
FREIGHT 119
NORMAL CROWN SECTION
N.T.S.

Ⓐ - RECYCLED ASPH CONC 12.5 mm SUPERPAVE, GP 2 ONLY, INCL POLYMER-MODIFIED BITUM MATL & H-LIME (165 LBS/SY)
Ⓑ - RECYCLED ASPH CONC 19 mm SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H-LIME (220 LBS/SY)
Ⓒ - RECYLCED ASPH CONC 25 mm SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H-LIME (440 LBS/SY)
Ⓓ - GRADED AGGREGATE BASE COURSE 12", INCL MATL

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE:

TYPICAL SECTIONS

DRAWING No. 5-01

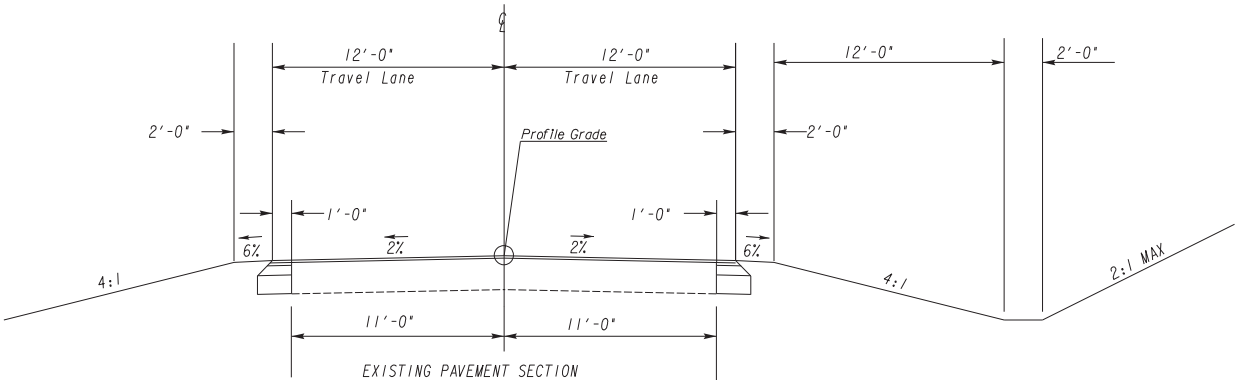
1/5/2009 GPM

...\TYPICAL-SECTION.dgn 4/18/2014 3:01:14 PM

		COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		$COUNTY$	$PROJECT NUMBER$		

TYPICAL SECTION

NOT TO SCALE



Side Road Constuction

MORELAND-ALTOBELLI ASSOC., INC. (912) 963-1112			
DESIGNED BY:			
DRAWN BY:			
CHECKED BY:			
SUPERVISED BY:	WILLIAM DIAL P.E.		

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE:

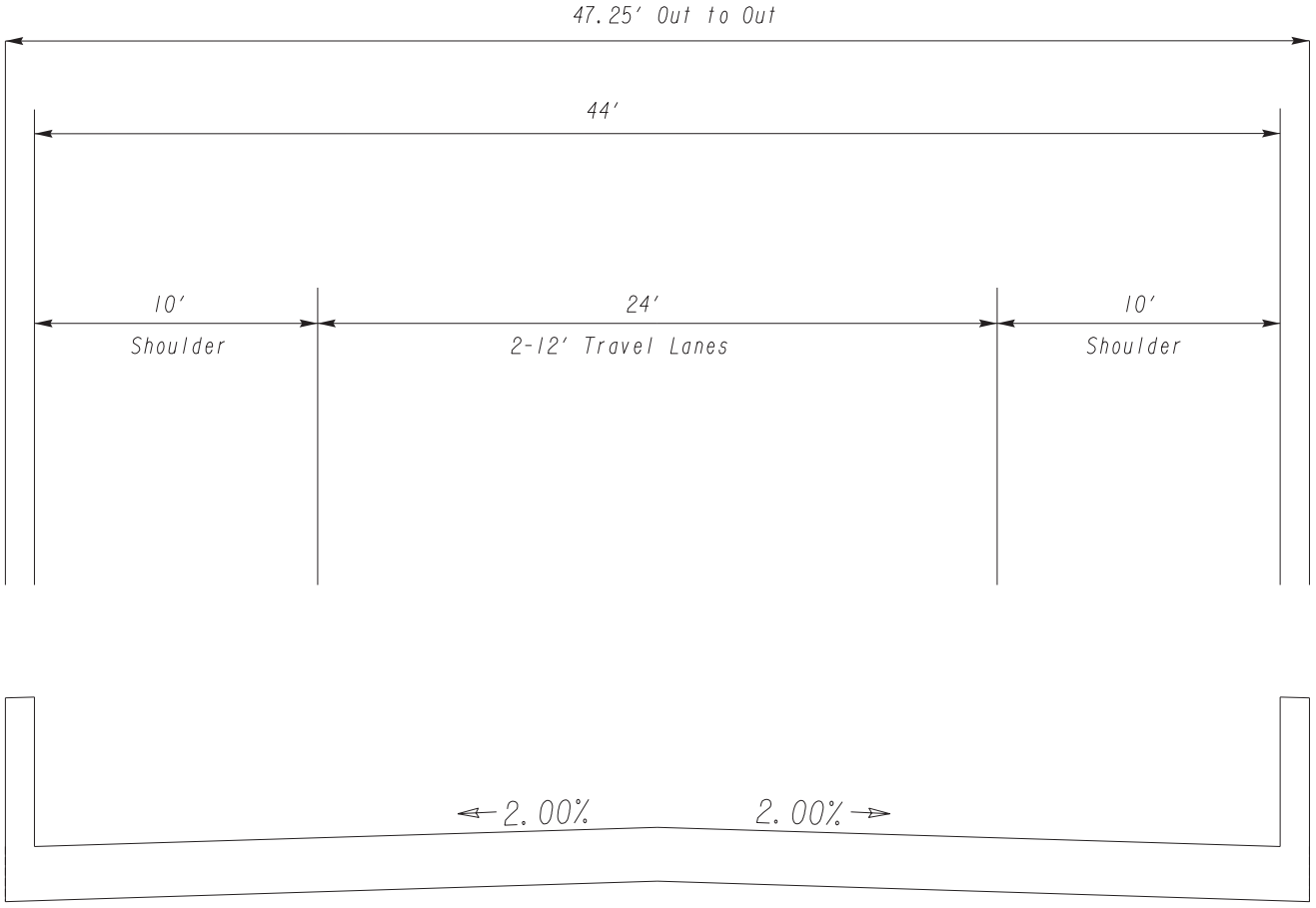
TYPICAL SECTIONS

DRAWING No. 5-02

		COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		$COUNTY$	$PROJECT NUMBER$		

TYPICAL SECTION

NOT TO SCALE



Bridge over the Railroad

DESIGNED BY:		
DRAWN BY:		
CHECKED BY:		
SUPERVISED BY:	WILLIAM DIAL P.E.	

MORELAND-ALTOBELLI ASSOC., INC.
(912) 963-1112

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE:

TYPICAL SECTIONS

DRAWING No.
5-03

Attachment #3
Detailed Cost Estimates

DATE : 04/17/2014
PAGE : 1

JOB ESTIMATE REPORT

JOB NUMBER : 522570 SPEC YEAR: 01
DESCRIPTION: FREIGHT 119 / HINESVILLE BYPASS COST ESTIMATE

ITEMS FOR JOB 522570

LINE	ITEM	ALT	UNITS	DESCRIPTION	QUANTITY	PRICE	AMOUNT
ROADWAY ITEMS							
0005	150-1000		LS	TRAFFIC CONTROL -	1.00	50000.00	50000.00
0010	201-1500		LS	CLEARING & GRUBBING -	1.00	300000.00	300000.00
0015	205-0001		CY	UNCLASS EXCAV	45000.00	5.34	240300.00
0020	206-0002		CY	BORROW EXCAV, INCL MATL	527500.00	4.86	2563650.00
0025	207-0203		CY	FOUND BKFILL MATL, TP II	500.00	45.44	22720.00
0030	310-5100		SY	GR AGGR BASE CRS, 10 INCH, INCL MATL	71900.00	15.40	1107260.00
0035	310-5060		SY	GR AGGR BASE CRS, 6 INCH, INCL MATL	38950.00	10.30	401185.00
0040	318-3000		TN	AGGR SURF CRS	2000.00	25.51	51020.00
0045	402-1812		TN	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	2000.00	75.22	150440.00
0050	402-3121		TN	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	17250.00	68.43	1180417.50
0055	402-3141		TN	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL	9975.00	58.49	583437.75
0060	402-3190		TN	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM MATL & H LIME	13300.00	72.66	966378.00
0065	413-1000		GL	BITUM TACK COAT	2100.00	2.40	5040.00
0070	433-1000		SY	REINF CONC APPROACH SLAB	315.00	132.62	41775.30
0075	436-1000		LF	ASPHALTIC CONCRETE CURB - 6 IN	2400.00	9.01	21624.00
0080	441-0016		SY	DRIVEWAY CONCRETE, 6 IN TK	800.00	29.35	23480.00
0085	441-0748		SY	CONCRETE MEDIAN, 6 IN	1500.00	30.66	45990.00
0090	446-1000		LF	PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH	1000.00	2.29	2290.00
0095	500-9999		CY	CLASS B CONC, BASE OR PVMT WIDENING	75.00	166.64	12498.00
0100	550-1180		LF	STORM DRAIN PIPE, 18 IN, H 1-10	700.00	31.80	22260.00
0105	550-1240		LF	STORM DRAIN PIPE, 24 IN, H 1-10	700.00	36.02	25214.00
0110	550-2180		LF	SIDE DRAIN PIPE, 18 IN, H 1-10	1000.00	24.24	24240.00
0115	550-3318		EA	SAFETY END SECTION 18 IN, STORM DRAIN, 4:1 SLOPE	20.00	685.66	13713.20
0120	550-3324		EA	SAFETY END SECTION 24 IN, STORM DRAIN, 4:1 SLOPE	20.00	756.36	15127.20
0125	550-3618		EA	SAFETY END SECTION 18 IN, SIDE DRAIN, 6:1 SLOPE	40.00	686.44	27457.60
0130	576-1018		LF	SLOPE DRAIN PIPE, 18 IN	200.00	31.10	6220.00
0135	603-2181		SY	STN DUMPED RIP RAP, TP 3, 18 IN	175.00	54.62	9558.50
0140	603-2182		SY	STN DUMPED RIP RAP, TP 3, 24 IN	245.00	47.74	11696.30
0145	603-7000		SY	PLASTIC FILTER FABRIC	420.00	2.93	1230.60
0150	634-1200		EA	RIGHT OF WAY MARKERS	125.00	110.10	13762.50
0155	641-1100		LF	GUARDRAIL, TP T	84.00	59.27	4978.68
0160	641-1200		LF	GUARDRAIL, TP W	2200.00	18.30	40260.00
0165	641-5001		EA	GUARDRAIL ANCHORAGE, TP 1	4.00	640.66	2562.64
0170	641-5012		EA	GUARDRAIL ANCHORAGE, TP 12	4.00	1901.78	7607.12
0175	643-8200		LF	BARRIER FENCE (ORANGE), 4 FT	5000.00	2.31	11550.00
ITEM SUBTOTAL							8006943.89
BRIDGE ITEMS							
0180	999-0000		SF	BRIDGE CONSTRUCTION - RAILROAD (Station 1010+00)	7088.00	115.00	815062.50
0185	999-0000		SF	BRIDGE CONSTRUCTION - PAYNE CREEK & WETLAND (Station 1146+00 to 1165+00)	89300.00	80.00	7144000.00
ITEM SUBTOTAL							7959062.50

STATE HIGHWAY AGENCY

DATE : 04/17/2014
PAGE : 2

JOB ESTIMATE REPORT

EROSION CONTROL ITEMS						
0190	163-0232	AC	TEMPORARY GRASSING	40.00	494.87	19794.80
0195	163-0240	TN	MULCH	540.00	166.24	89769.60
0200	163-0300	EA	CONSTRUCTION EXIT	6.00	1509.01	9054.06
0205	163-0531	EA	CONSTRUCT AND REMOVE SEDIMENT BASIN TP1	6.00	8220.00	49320.00
0210	165-0101	EA	MAINTENANCE OF CONSTRUCTION EXIT	4.00	401.04	1604.16
0215	165-0010	LF	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	12800.00	0.88	11264.00
0220	165-0030	LF	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	19200.00	0.86	16512.00
0225	165-0060	EA	MAINTENANCE OF TEMPORATY SEDIMENT BASIN	6.00	1242.75	7456.50
0230	167-1000	EA	WATER QUALITY MONITORING AND SAMPLING	2.00	242.91	485.82
0235	167-1500	MO	WATER QUALITY INSPECTIONS	24.00	851.59	20438.16
0240	171-0010	LF	TEMPORARY SILT FENCE, TYPE A	12800.00	2.12	27136.00
0245	171-0030	LF	TEMPORARY SILT FENCE, TYPE C	19200.00	2.85	54720.00
0250	700-6910	AC	PERMANENT GRASSING	26.00	981.58	25521.08
0255	700-7000	TN	AGRICULTURAL LIME	53.00	16.88	894.64
0260	700-8000	TN	FERTILIZER MIXED GRADE	24.00	458.48	11003.52
0265	700-8100	LB	FERTILIZER NITROGEN CONTENT	1315.00	2.36	3103.40
0270	710-9000	SY	PERMANENT SOIL REINFORCING MAT	6200.00	2.20	13640.00
0275	716-2000	SY	EROSION CONTROL MATS, SLOPES	2000.00	1.35	2700.00
0280	999-0001	EA	MS4 WATER TREATMENT STRUCTURES	12.00	20000.00	240000.00
ITEM SUBTOTAL						604417.74
SIGNING & MARKING ITEMS						
0285	636-1020	SF	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	2120.00	12.12	25694.40
0290	636-1033	SF	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	1960.00	16.20	31752.00
0295	636-2070	LF	GALV STEEL POSTS, TP 7	4170.00	6.22	25937.40
0300	636-2080	LF	GALV STEEL POSTS, TP 8	2340.00	8.83	20662.20
0305	653-0120	EA	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	21.00	66.53	1397.13
0310	653-1501	LF	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	49000.00	0.36	17640.00
0315	653-1502	LF	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	24500.00	0.39	9555.00
0320	653-1704	LF	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	300.00	4.31	1293.00
0325	653-3501	GLF	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	24500.00	0.24	5880.00
0330	653-6004	SY	THERMOPLASTIC TRAF STRIPING, WHITE	540.00	2.88	1555.20
0335	653-6006	SY	THERMOPLASTIC TRAF STRIPING, YELLOW	375.00	3.26	1222.50
0340	654-1001	EA	RAISED PVMT MARKERS TP 1	505.00	3.06	1545.30
0345	654-1002	EA	RAISED PVMT MARKERS TP 2	70.00	2.81	196.70
0350	654-1003	EA	RAISED PVMT MARKERS TP 3	1610.00	3.03	4878.30
0355	657-1085	LF	PREFORMED PLASTIC SOLID PVMT MKG, 8 IN, CONTRAST (BLACK-WHITE), TP PB	300.00	5.64	1692.00
0360	657-6085	LF	PREFORMED PLASTIC SOLID PVMT MKG, 8 IN, CONTRAST (BLACK-YELLOW), TP PB	150.00	6.12	918.00
0365	999-0001	EA	TRAFFIC SIGNAL INSTALLATION STA 10+00 SR38/US84	1.00	150000.00	150000.00
ITEM SUBTOTAL						301819.13

TOTALS FOR JOB 522570

ESTIMATED COST:	16872243.26
CONTINGENCY PERCENT (5.0):	843612.16
ESTIMATED TOTAL:	17715855.42

PROJ. NO.	Hinesville Bypass/Freight 119
P.I. NO.	522570
DATE	10/3/2013

CALL NO.

INDEX (TYPE)	DATE	INDEX
REG. UNLEADED	Oct-13	$ 3.254
DIESEL		$ 3.869
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)				**724626**	**$ 724,626.00**
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)				2126.25	

ASPHALT	Tons	%AC	AC ton
Leveling	2000	5.0%	100
12.5 OGFC	0	5.0%	0
12.5 mm	9975	5.0%	498.75
9.5 mm SP	0	5.0%	0
25 mm SP	17250	5.0%	862.5
19 mm SP	13300	5.0%	665
	42525		**2126.25**

BITUMINOUS TACK COAT

Price Adjustment (PA)			**$**	**3,073.92**	**$ 3,073.92**
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)				9.019711936	

Bitum Tack Gals	gals/ton	tons
2100	232.8234	9.01971194

PROJ. NO.	Hinesville Bypass/Freight 119	CALL NO.	
P.I. NO.	522570		
DATE	10/3/2013		

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	0.20	0	232.8234	0
Double Surf.Trmt.	0	0.44	0	232.8234	0
Triple Surf. Trmt	0	0.71	0	232.8234	0
					0

TOTAL LIQUID AC ADJUSTMENT	**$**	**727,699.92**

GEORGIA DEPARTMENT OF TRANSPORTATION
PRELIMINARY ROW COST ESTIMATE SUMMARY

Date: 4/9/2014
Revised:

Project: Freight Route 119
County: Long/Liberty
PI: 522570

Description: Freight Route 119
Project Termini: US 84 to SR 119

Existing ROW: Varies
Parcels: 38
Required ROW: 100'

Land and Improvements		$1,155,510.00
Proximity Damage	*$0.00*	
Consequential Damage	*$0.00*	
Cost to Cures	*$0.00*	
Trade Fixtures	*$0.00*	
Improvements	*$400,000.00*	
Valuation Services		$65,625.00
Legal Services		$250,650.00
Relocation		$976,000.00
Demolition		$150,000.00
Administrative		$446,000.00
TOTAL ESTIMATED COSTS		$3,043,785.00
TOTAL ESTIMATED COSTS (ROUNDED)		***$3,044,000.00***

Preparation Credits	Hours	Signature
Benjamin M. Garland Jr.	6	GA#270820
Michael H. Yee	2	250075

Prepared By: CG#: 250075 (DATE)
Approved By: CG#: (DATE)

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

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE NH000-0026-03(056), Liberty County
P.I. # 522570

OFFICE Jesup

DATE 9-26-2013

FROM Dallory Rozier, District Utilities Engineer

TO Aghdas Ghazi, Project Manager

SUBJECT PRELIMINARY UTILITY COST ESTIMATE

As requested by your office, we are furnishing you with an Updated Utility Cost Estimate of each utility with facilities potentially located within the above project limits.

Facility Owner	Non-Reimbursable	Reimbursable	Comments
Atlanta Gas Light	$ 0.00	$ 200,000.00	
Canoochee EMC	$ 27,000.00	$ 0.00	
Century Link	$ 156,720.00	$ 50,400.00	
City of Walthourville - Water	$ 21,000.00	$ 0.00	
City of Walthourville - Sewer	$ 18,000.00	$ 0.00	
Coastal EMC	$ 288,000.00	$ 99,000.00	
ComCast	$ 37,500.00	$ 55,500.00	
Georgia Power - Distribution	$ 0.00	$ 135,000.00	
Georgia Power – Transmission	$ 0.00	$ 240,000.00	
Liberty County Commissioners	$ 35,000.00	$ 17,500.00	Water
Liberty County Commissioners	$ 30,000.00	$ 15,000.00	Sewer
Totals	**$ 613,220.00**	**$ 812,400.00**	
Total Reimbursement		**$ 812,400.00**	

CC; Angie Robinson, Office of Financial Management;
Lee Upkins, Assistant State Utilities Engineer
Utilities Office File

Moreland Altobelli Associates, Inc.
67 Brampton Road
Garden City, Georgia 31408
Phone: 912-963-1112 Fax: 912-963-1120

Preliminary Mitigation Cost Estimate

Project:	**Hinesville Bypass**
	PI No. 522570
Prepared By:	Matt Chamblee
Prepared On:	04/15/14

Date	04/15/14
MA Project No.	LIB001
CC: Project File	

As requested for the concept cost estimate of the subject project, a preliminary mitigation cost estimate has been prepared as detailed below. The cost estimate is based on an anticipated cost of $5,000 per wetland credit and $60 per stream credit. The impacts are based on NWI mapping of wetlands.

Wetlands Credits	Cost	Stream Credits	Cost
24.4	$122,000	2200	$99,000
Total Cost	$221,000		

Since design plans have not be completed for the preferred alternative, impacts to Waters of the U.S. are based on a worse-case scenario from right-of-way limit to right-of-way limit.

Attachment #4
Crash Summaries

Summary of Crash Data Analysis for SR 119 Freight Route (Hinesville Bypass)

The most recent available roadway crash data was obtained from GDOT for 2006 through 2008 for SR 119. The data provided recorded crashes for each roadway, including the number of injuries and fatalities. This data was used to develop rates for crashes, injuries, and fatalities. The calculated rates were then compared to statewide average rates for crashes, injuries, and fatalities to determine if the data exceeds statewide averages for similar type facilities. This information is provided in Table 1.

Table 1
Summary of Crash, Injury and Fatality Rates
SR 119 from SR 38 to Holmestown Road (Urban Minor Arterial)
Mile Log 7.64 to 12.45, 4.81 miles

Year	No. of Crashes	Crash Rate*	Statewide Average Crash Rate*	No. of Injury	Injury Rate*	Statewide Average Injury Rate*	No. of Fatalities	Fatality Rate*	Statewide Average Fatality Rate*
2006	36	526	*531*	22	**321**	*132*	1	**14.60**	*1.51*
2007	33	**546**	*413*	26	**431**	*106*	1	**16.56**	*1.82*
2008	38	**646**	*383*	28	**476**	*99*	0	0.00	*1.79*

* Values for Rate of Crashes, Injuries and Fatalities are per 100 million vehicle-miles.

The analysis shows that the crash, injury and fatality rates for years 2006, 2007, and 2008 on SR 119 as compared to the statewide average for similar facilities. The crash and fatality rates exceed the statewide averages for two of the three years analyzed. The injury rates exceed the statewide averages for all three years analyzed.

Further examination of the crash data revealed that of the 107 total crashes reported for SR 119 approximately 52 percent were combined angle and rear-end collisions, as shown in Table 2. Such a high number of angle and rear-end collisions indicates a high demand for frequent left- and right-turn maneuvers along a heavily traveled two-lane roadway without separate turn lanes. Also, there were a significant number of single vehicle crashes that loss control and hit an object. A number of these crashes occurred at the locations where vehicles were trying to negotiate the curvature of the roadway.

Table 2
Summary of Crash Types

Year	Totals	Angle	Rear-end	Head-on	Sideswipe	Hit an Object
2006	36	13	6	3	2	12
2007	33	9	7	1	3	13
2008	38	11	6	3	3	15
Total	**107**	**33**	**19**	**7**	**8**	**40**
% of Total	**100%**	**31%**	**18%**	**7%**	**7%**	**37%**

Attachment #5
Traffic Diagrams

Department of Transportation
State of Georgia

INTERDEPARTMENT CORRESPONDENCE

FILE NH000-0026-03(056)
Liberty & Long Counties
P.I. # 522570

OFFICE Planning

DATE March 4, 2014

FROM Cynthia L. VanDyke, State Transportation Planning Administrator

TO Albert Shelby, State Program Delivery Design Engineer
Attention: Aghdas S. Ghazi

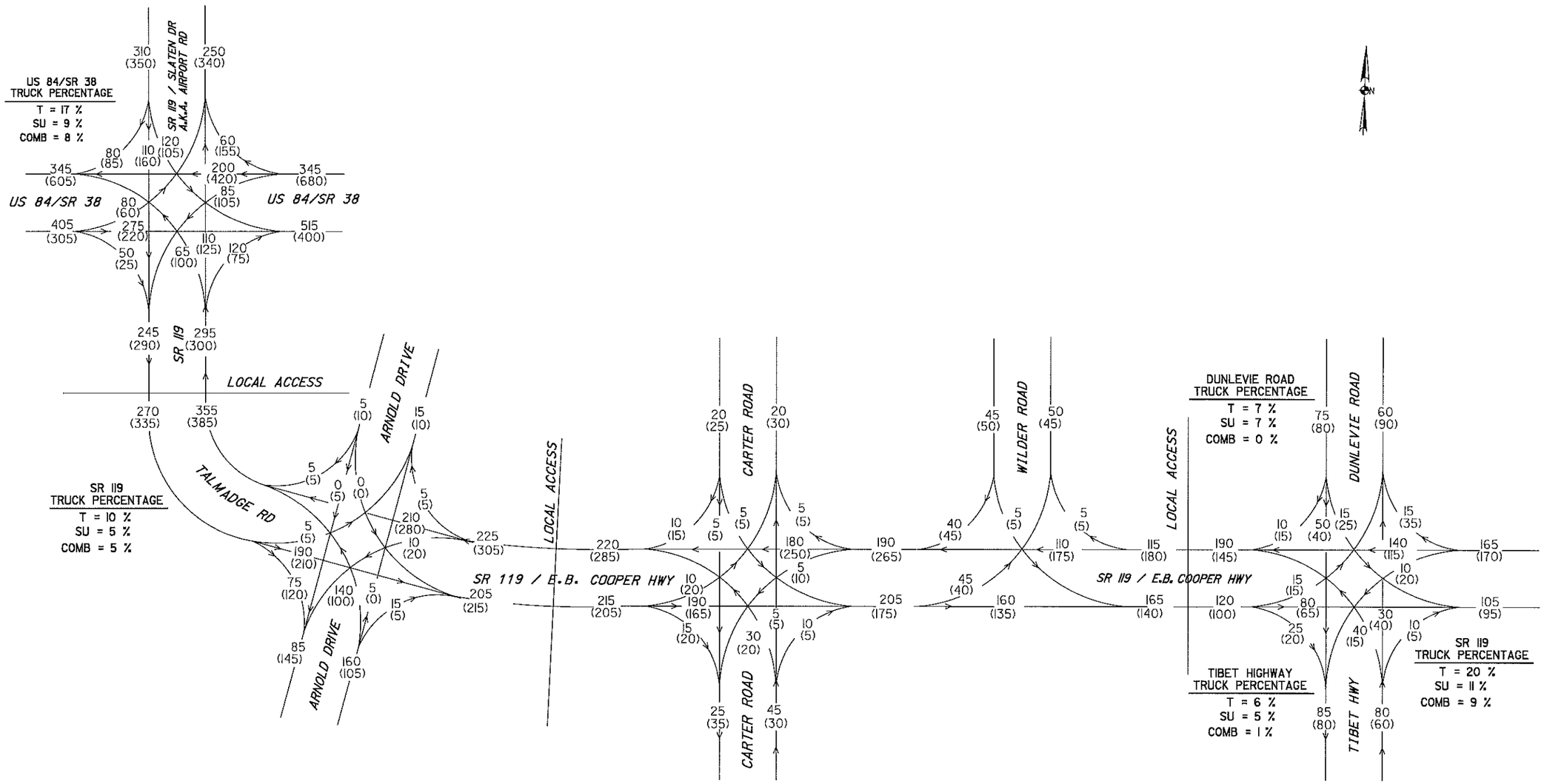
SUBJECT **Reviewed Design Traffic** for *US 84 CONN FM 1 MI S SR 196/US 84 INT TO US 84 S FLEMINGTON (a.k.a. Hinesville Freight Route 119)*

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

The Design Traffic is approved based on the information furnished. Any questions concerning this review should be addressed to Ms.Leslie R. Woods at e-mail lwoods2@dot.ga.gov or phone (404) 631-1773.

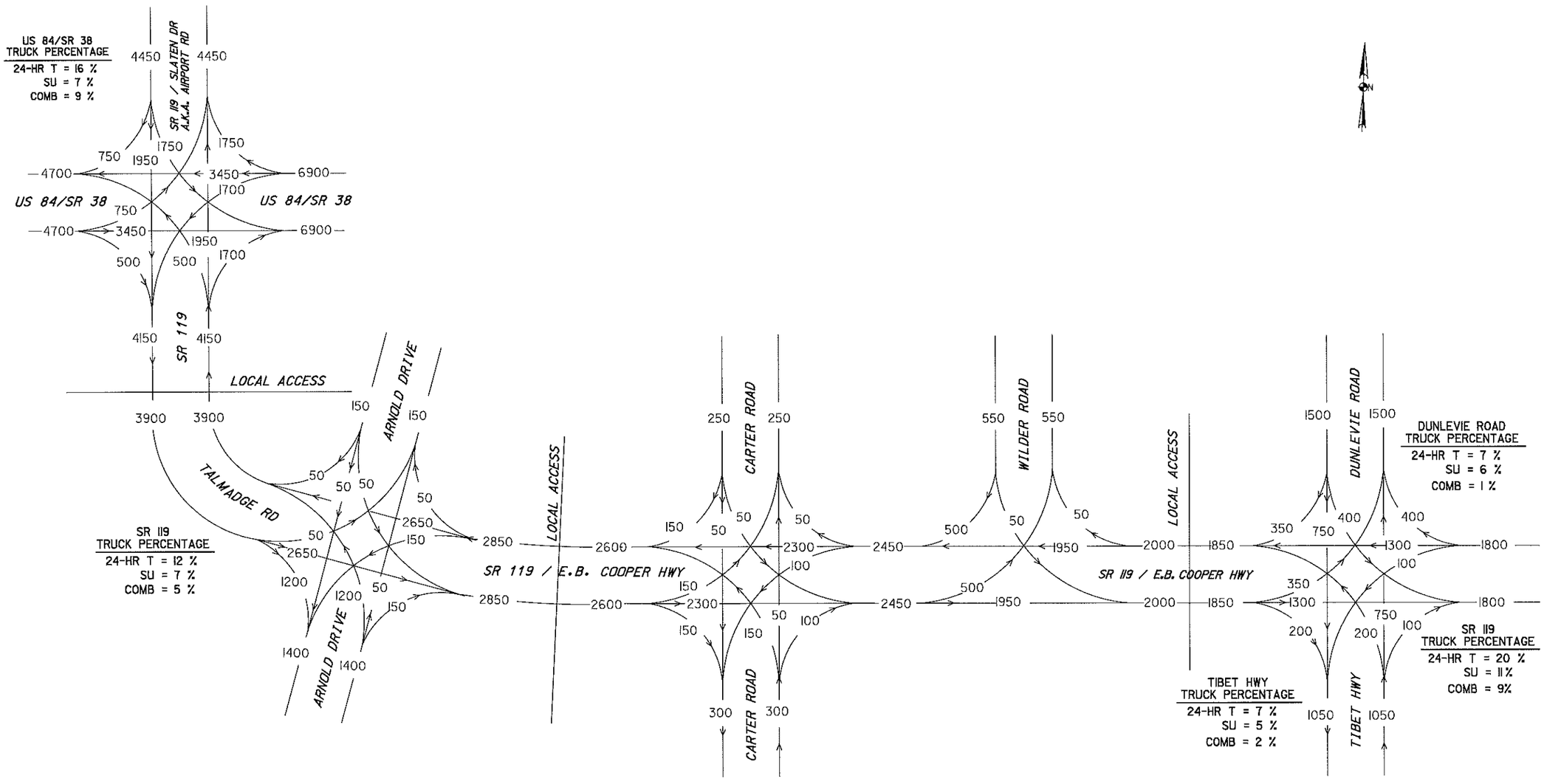
CLV/LRW

DATE TIME$$	TIME$$	PRF	DGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$				LIBERTY & LONG	NH000-0026-03 (056), P.I. NO. 522570		



		Moreland Altobelli Associates, Inc. 2211 Beaver Ruin Road Suite 190 Norcross, Georgia 30071 Telephone (770) 263-9445 KP 2/14	NH000-0026-03 (056) PI No. 522570 LIBERTY & LONG COUNTIES, GEORGIA	REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: TRAFFIC FLOW DIAGRAMS FREIGHT ROUTE 119 (US 84 CONNECTOR) LIBERTY & LONG COUNTIES 2013 EXISTING PEAK HOUR TRAFFIC DRAWING No. 10-01

DATE/TIME$$	TIME$$	PRF	DGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$				LIBERTY & LONG	NH000-0026-03 (056), P. I. NO. 522570		

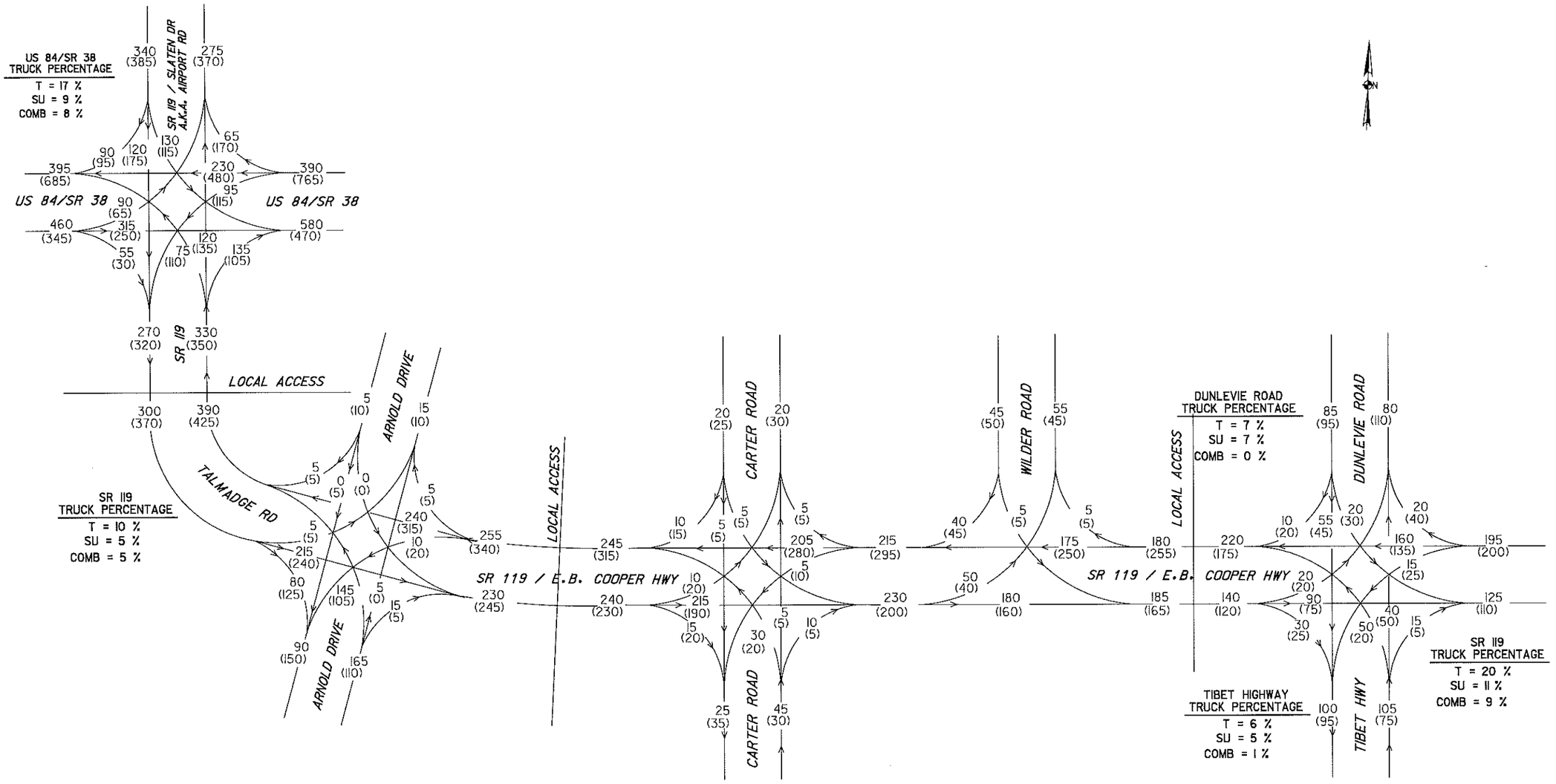


LEGEND

00 2013 ADT

		Moreland Altobelli Associates, Inc. 2211 Beaver Ruin Road Suite 190 Norcross, Georgia 30071 Telephone (770) 263-5945 KP 2/14	NH000-0026-03 (056) PI No. 522570 LIBERTY & LONG COUNTIES, GEORGIA	REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: TRAFFIC FLOW DIAGRAMS FREIGHT ROUTE 119 (US 84 CONNECTOR) LIBERTY & LONG COUNTIES 2013 EXISTING ADT DRAWING No. 10-02

DATE/TIME$$	TIME$$	PRF	DGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$				LIBERTY & LONG	NH000-0026-03 (056), P.I. NO. 522570		



LEGEND

00 AM PEAK HOUR
(00) PM PEAK HOUR

Moreland Altobelli Associates, Inc.
2211 Beaver Ruin Road
Suite 110
Norcross, Georgia 30071
Telephone (770) 263-5945

KP 2/14

NH000-0026-03 (056)
PI No. 522570
LIBERTY & LONG
COUNTIES, GEORGIA

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE:

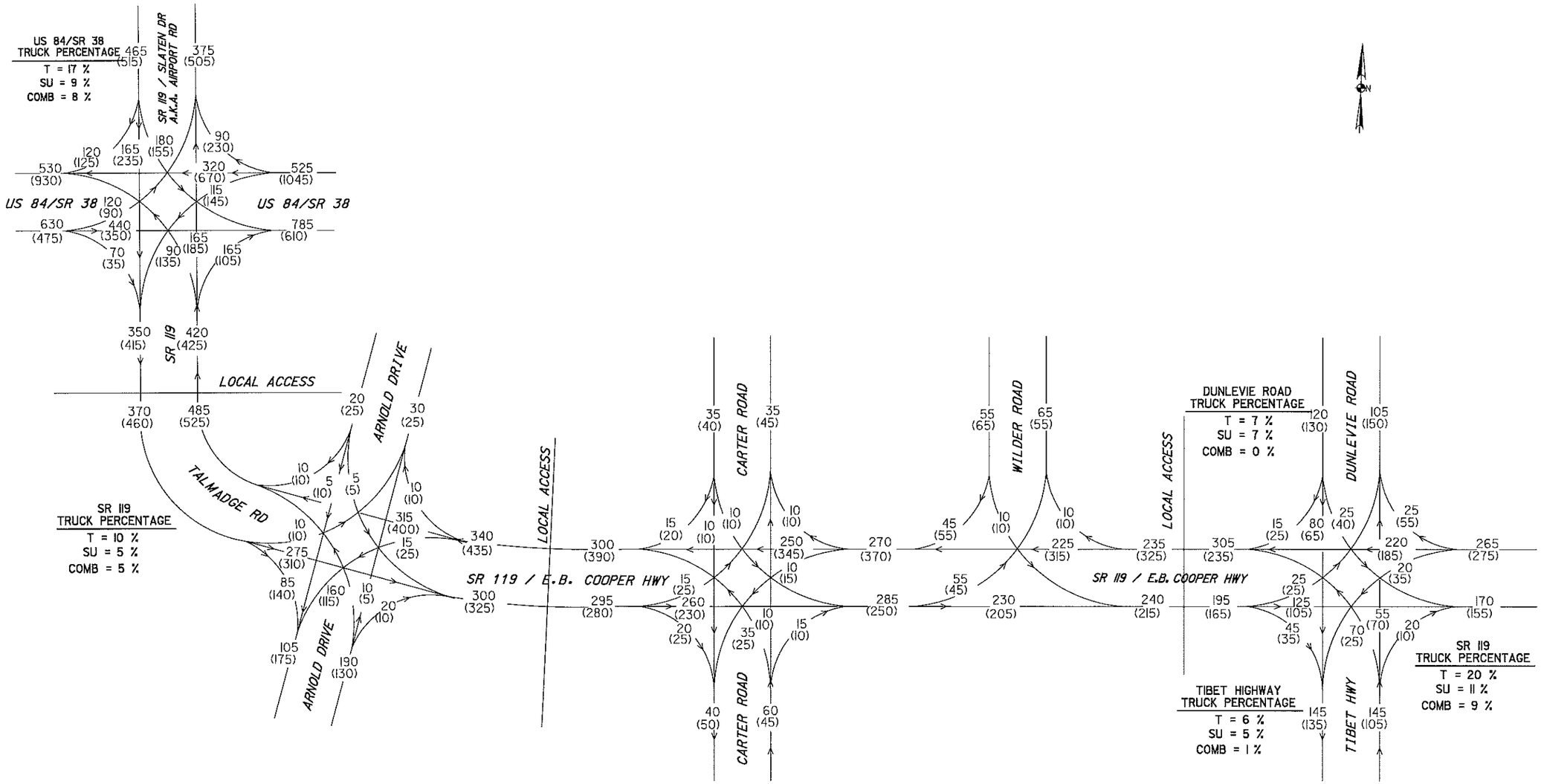
TRAFFIC FLOW DIAGRAMS

FREIGHT ROUTE 119 (US 84 CONNECTOR)
LIBERTY & LONG COUNTIES

2020 NO-BUILD PEAK HOUR TRAFFIC

DRAWING No. 10-03

DATE/TIME$$$	TIME$$$	PRF	OGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$				LIBERTY & LONG	NH000-0026-03 (056), P.I. NO. 522570		

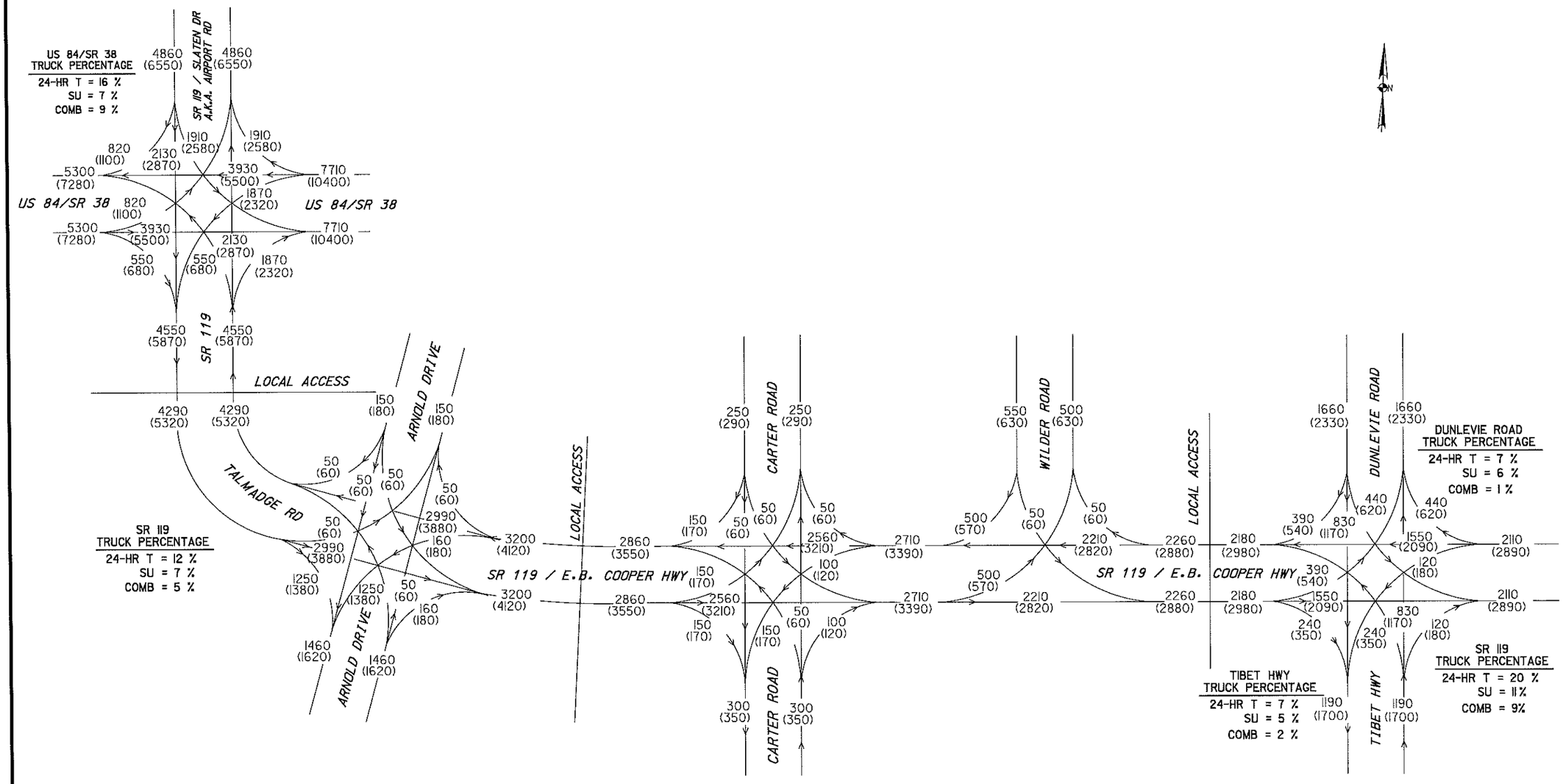


LEGEND

00 AM PEAK HOUR
(00) PM PEAK HOUR

		Moreland Altobelli Associates, Inc. 2211 Beaver Ruin Road Suite 150 Norcross, Georgia 30071 Telephone (770) 263-5945 KP 2/14	NH000-0026-03 (056) PI No. 522570 LIBERTY & LONG COUNTIES, GEORGIA	REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: TRAFFIC FLOW DIAGRAMS FREIGHT ROUTE 119 (US 84 CONNECTOR) LIBERTY & LONG COUNTIES 2040 NO-BUILD PEAK HOUR TRAFFIC DRAWING No. 10-04

DATE/TIME$$	TIME$$	PRF	DGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$				LIBERTY & LONG	NH000-0026-03 (056), P.I. NO. 522570		



LEGEND

00	2020 ADT
(00)	2040 ADT

		Moreland Altobelli Associates, Inc. 2211 Beaver Ruin Road Suite 190 Norcross, Georgia 30071 Telephone (770) 263-5945 KP 2/14	NH000-0026-03 (056) PI No. 522570 LIBERTY & LONG COUNTIES, GEORGIA	REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

OFFICE:

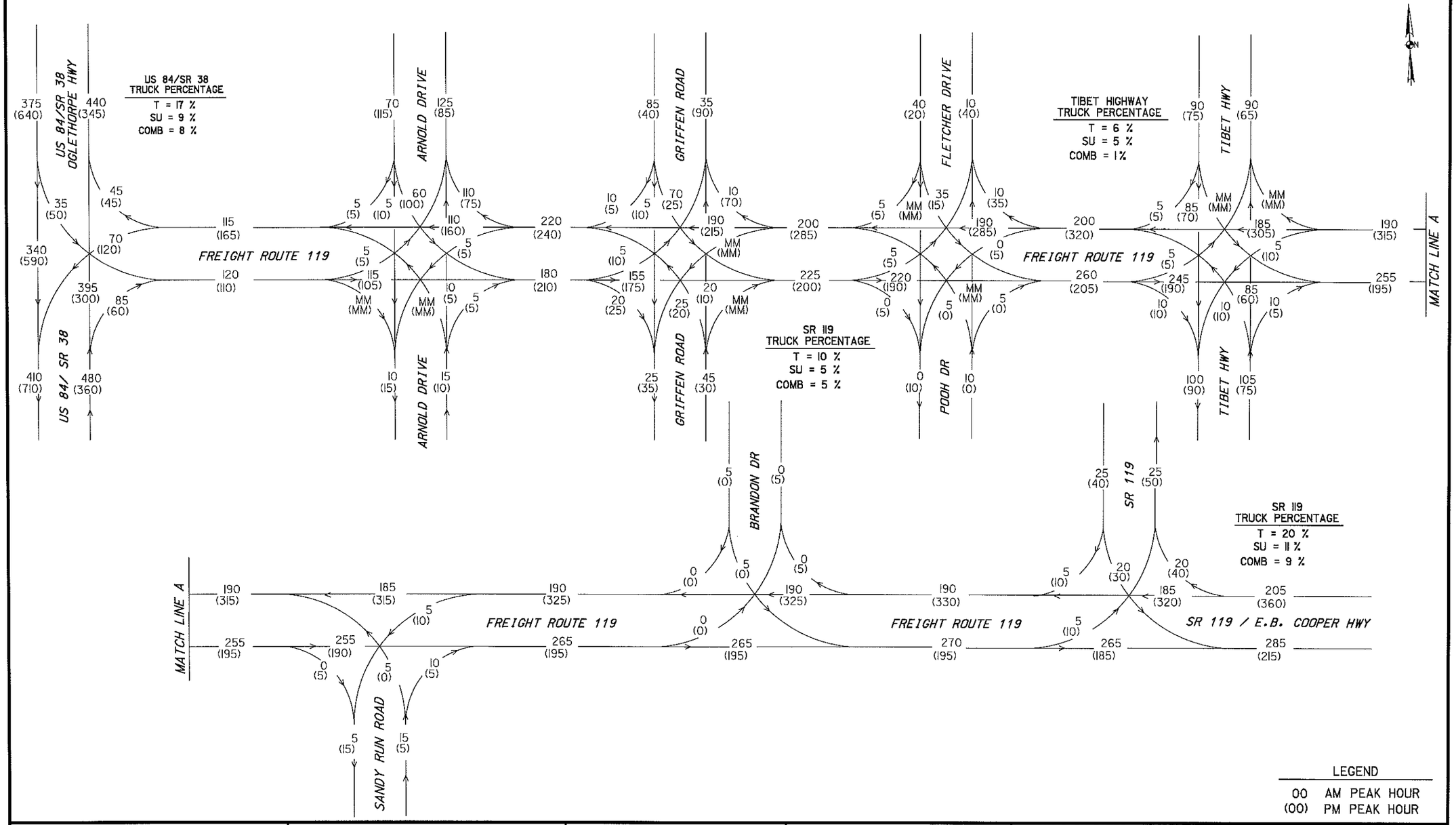
TRAFFIC FLOW DIAGRAMS

FREIGHT ROUTE 119 (US 84 CONNECTOR)
LIBERTY & LONG COUNTIES

2020/2040 NO-BUILD ADT

DRAWING No. 10-05

DATE/TIME:$$$ $USER$	TIME$$$:PRF	DGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
			LIBERTY & LONG	NH000-0026-03 (056), P.I. NO. 522570		

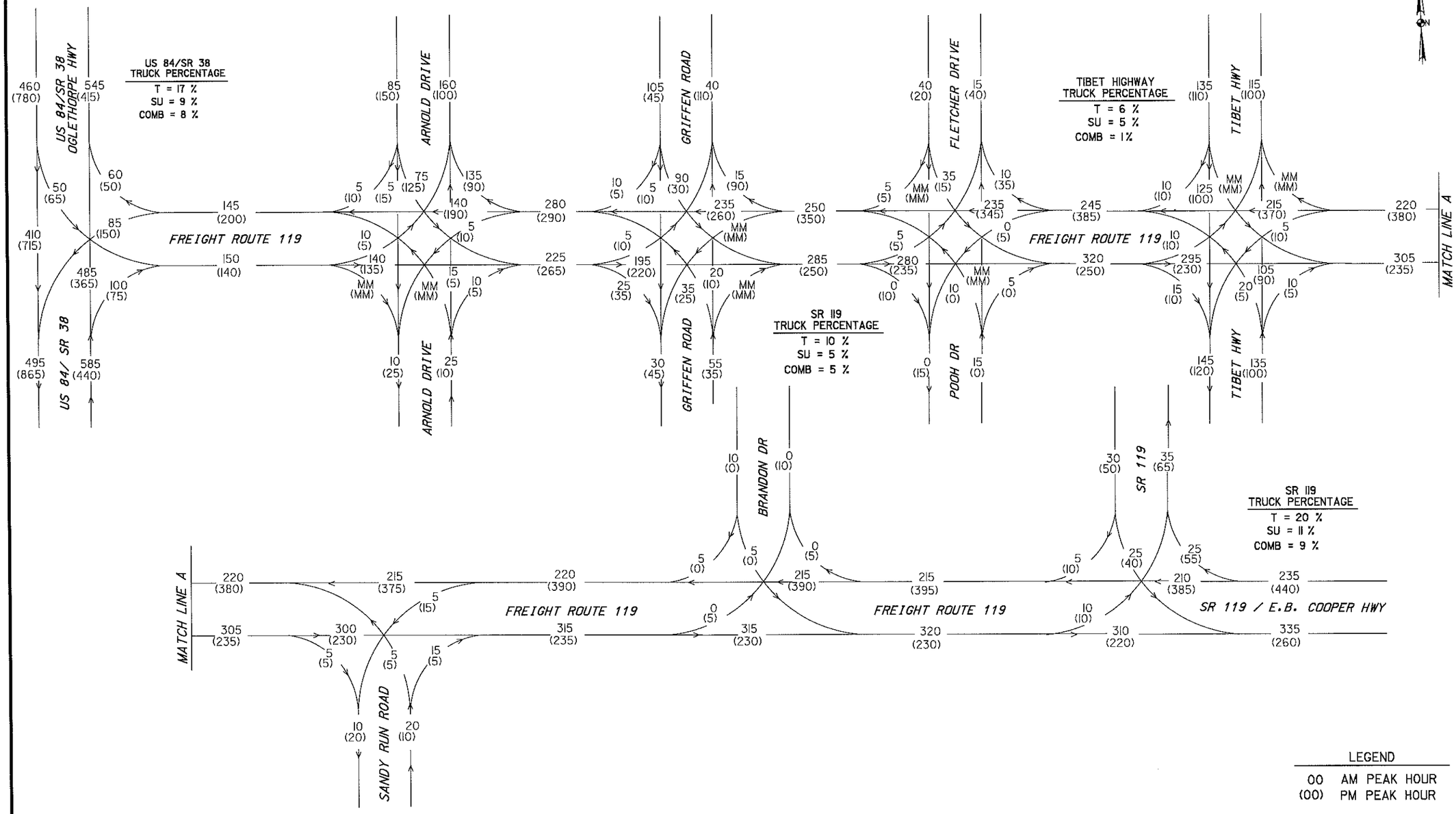


LEGEND

00 AM PEAK HOUR
(00) PM PEAK HOUR

		Moreland Altobelli Associates, Inc. 2211 Beaver Ruin Road Suite 190 Norcross, Georgia 30071 Telephone (770) 263-9145 KP 2/14	NH000-0026-03 (056) PI No. 522570 LIBERTY & LONG COUNTIES, GEORGIA	REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: TRAFFIC FLOW DIAGRAMS FREIGHT ROUTE 119 (US 84 CONNECTOR) LIBERTY & LONG COUNTIES 2020 BUILD PEAK HOUR TRAFFIC DRAWING NO. 10-06

DATETIM%$$	TIME$$	PRF	DGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$				LIBERTY & LONG	NH000-0026-03 (056), P.I. NO. 522570		

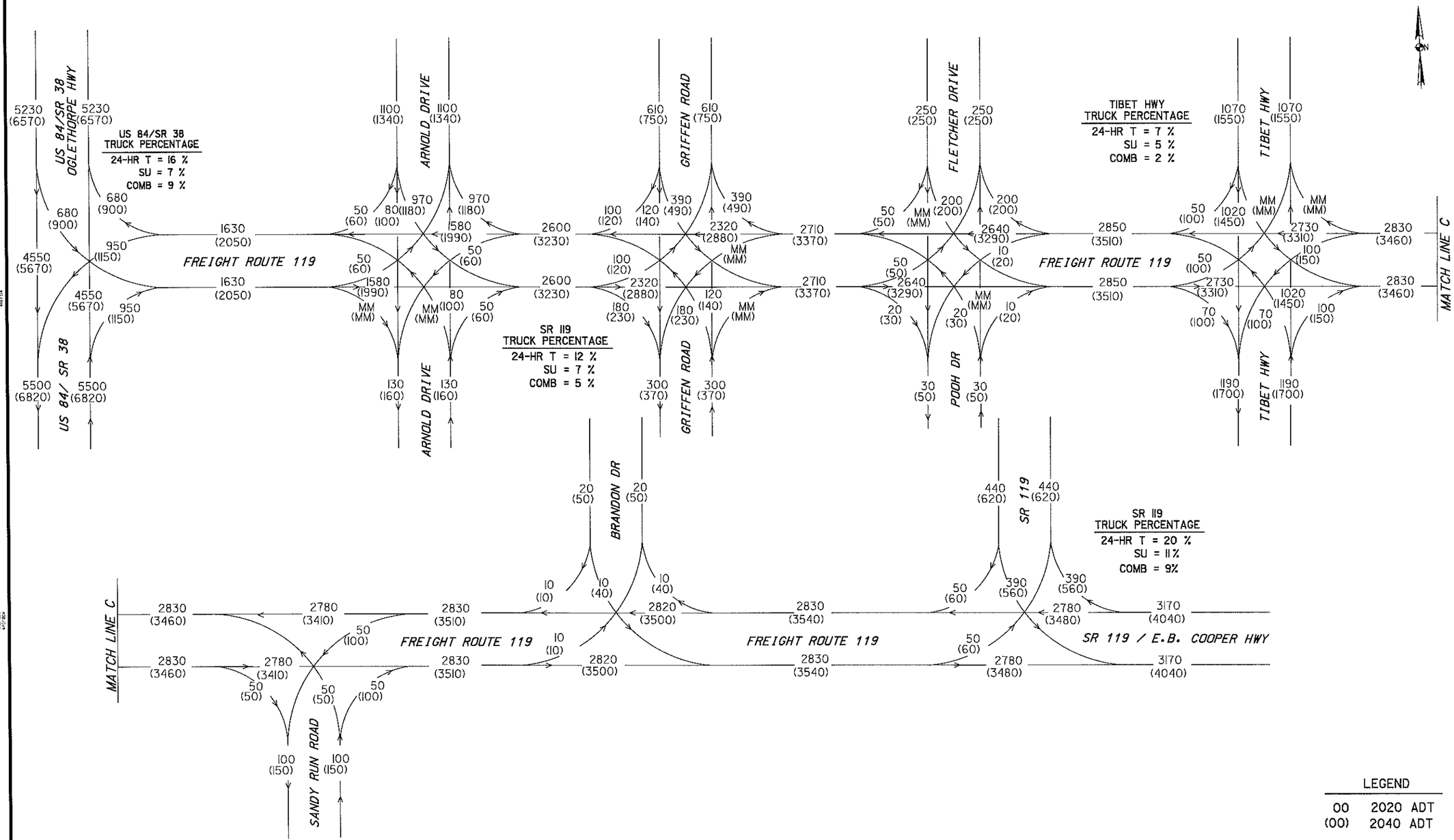


LEGEND

00 AM PEAK HOUR
(00) PM PEAK HOUR

		Moreland Altobelli Associates, Inc. 2211 Beaver Ruin Road Suite 190 Norcross, Georgia 30071 Telephone (770) 263-5945 KP 2/14	NH000-0026-03 (056) PI No. 522570 LIBERTY & LONG COUNTIES, GEORGIA	REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: TRAFFIC FLOW DIAGRAMS FREIGHT ROUTE 119 (US 84 CONNECTOR) LIBERTY & LONG COUNTIES 2040 BUILD PEAK HOUR TRAFFIC DRAWING No. 10-07

DATETIME$$	TIME$$	PRF	DGN	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
$USER$		$PENTABLE$		LIBERTY & LONG	NH000-0026-03 (056), P.I. NO. 522570		



		Moreland Altobelli Associates, Inc. 2211 Beaver Ruin Road Suite 110 Norcross, Georgia 30071 Telephone (770) 263-9145 KP 2/14	NH000-0026-03 (056) PI No. 522570 LIBERTY & LONG COUNTIES, GEORGIA	REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE: TRAFFIC FLOW DIAGRAMS FREIGHT ROUTE 119 (US 84 CONNECTOR) LIBERTY & LONG COUNTIES 2020/2040 BUILD ADT DRAWING No. 10-08

Attachment #6
Capacity Analysis Summary

LOS Analysis for Road Segments on the Existing Corridor[1]

ROAD SEGMENTS OF SR 119 FREIGHT ROUTE	2013 Existing Year			2020 (Opening Year)			2040 (Design Year)		
	ADT[2]	LOS AM	LOS PM	ADT[2]	LOS AM	LOS PM	ADT[2]	LOS AM	LOS PM
US 84/SR 38 to Carter Road (0.77 miles)	8,300	E	E	9,100	E	E	11,740	E	E
Carter Road to Tibet Hwy (1.27 miles)	4,900	E	E	5,720	E	E	4,220	E	E
Tibet Hwy to Project Terminus (1.8 miles)	3,600	C	C	7,100	C	C	5,780	D	D
SR 119 (1.0 miles)	3,600	C	C	7,100	C	C	5,780	D	D

[1]Analysis used HCS+ Software.
[2]The highest Eastbound / Westbound or Northbound / Southbound peak hour traffic for each segment is used to determine the HCS.

LOS Analysis for Road Segments on the Project Corridor[1]

ROAD SEGMENTS OF SR 119 FREIGHT ROUTE	2020 (Opening Year)			2040 (Design Year)		
	ADT[2]	LOS AM	LOS PM	ADT[2]	LOS AM	LOS PM
US 84/SR 38 to Arnold Drive (0.9 miles)	3,200	B	B	4,100	B	C
Arnold Drive to SR 119 (3.80 miles)	5,700	C	C	7,020	C	C
SR 119 (1.0 miles)	6,340	C	C	8,080	C	D

[1]Analysis used HCS+ Software.
[2]The highest Eastbound / Westbound or Northbound / Southbound peak hour traffic for each segment is used to determine the HCS.

LOS Analysis for Intersections on the Existing Corridor[1]

Intersection[2]	Existing Year 2013		Opening Year 2020		Design Year 2040	
	AM	PM	AM	PM	AM	PM
US 84/SR 38	**B**	**B**	**B**	**B**	**B**	**B**
Arnold Road	C	C	C	C	D	D
Carter Road	B	B	B	B	B	C
Tibet Hwy	B	B	B	B	C	C

[1]Analysis used HCS 2010 Software.

[2]Signalized intersections are indicated by bold-faced type. All other intersections are stop-controlled. LOS for un-signalized intersections is for the stop-controlled (side street) movement. LOS for signalized intersections is the weighted average of all movements

LOS Analysis for Intersections on the Project Corridor[1]

Intersection[2]	Opening Year 2020		Design Year 2040	
	AM	PM	AM	PM
US 84/SR 38	B	B	B	C
Arnold Road	B	B	B	B
Griffin Road	B	B	B	B
Pooh Drive	B	B	B	B
Tibet Hwy	B	B	C	C
Sandy Run Road	B	A	B	B
Brandon Drive	B	n/a	B	n/a
SR 119	B	B	B	B

[1]Analysis used HCS 2010 Software.

[2]Signalized intersections are indicated by bold-faced type. All other intersections are stop-controlled. LOS for un-signalized intersections is for the stop-controlled (side street) movement. LOS for signalized intersections is the weighted average of all movements

Attachment #7
Signal Warrant Analysis

Traffic Signal Warrant Study

US 84 at Freight Route 119

Year 2020 Traffic Analysis

Signal Warrants - Summary

Major Street Approaches

Northbound: **US 84**

Number of Lanes: **2**

85% Speed > 40 MPH.

Total Approach Volume: **5,502**

Southbound: **US 84**

Number of Lanes: **2**

85% Speed > 40 MPH.

Total Approach Volume: **5,232**

Minor Street Approaches

Westbound: **Freight Route 119**

Number of Lanes: **1**

Total Approach Volume: **952**

Warrant Summary **(Rural values apply.)**

Warrant 1 - Eight Hour Vehicular Volumes ..... **Not Satisfied**

Warrant 1A - Minimum Vehicular Volume .....**Not Satisfied**

Required volumes reached for 1 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic .....**Not Satisfied**

Required volumes reached for 4 hours, 8 are needed

Warrant 1 A&B - Combination of Warrants .....**Not Satisfied**

Required volumes reached for 1 hours, 8 are needed

Warrant 2 - Four Hour Volumes ..... **Not Satisfied**

Number of hours (2) volumes exceed minimum < minimum required (4).

Warrant 3 - Peak Hour ..... **Satisfied**

Warrant 3A - Peak Hour Delay .....**Satisfied**

Number of hours (12) volumes exceed minimum >= required (1). Delay data not evaluated.

Warrant 3B - Peak Hour Volumes .....**Satisfied**

Volumes exceed minimums for at least one hour.

Warrant 4 - Pedestrian Volumes ..... **Not Evaluated**

Warrant 5 - School Crossing ..... **Not Evaluated**

Warrant 6 - Coordinated Signal System ..... **Not Evaluated**

Warrant 7 - Crash Experience ..... **Not Evaluated**

Warrant 8 - Roadway Network ..... **Not Evaluated**

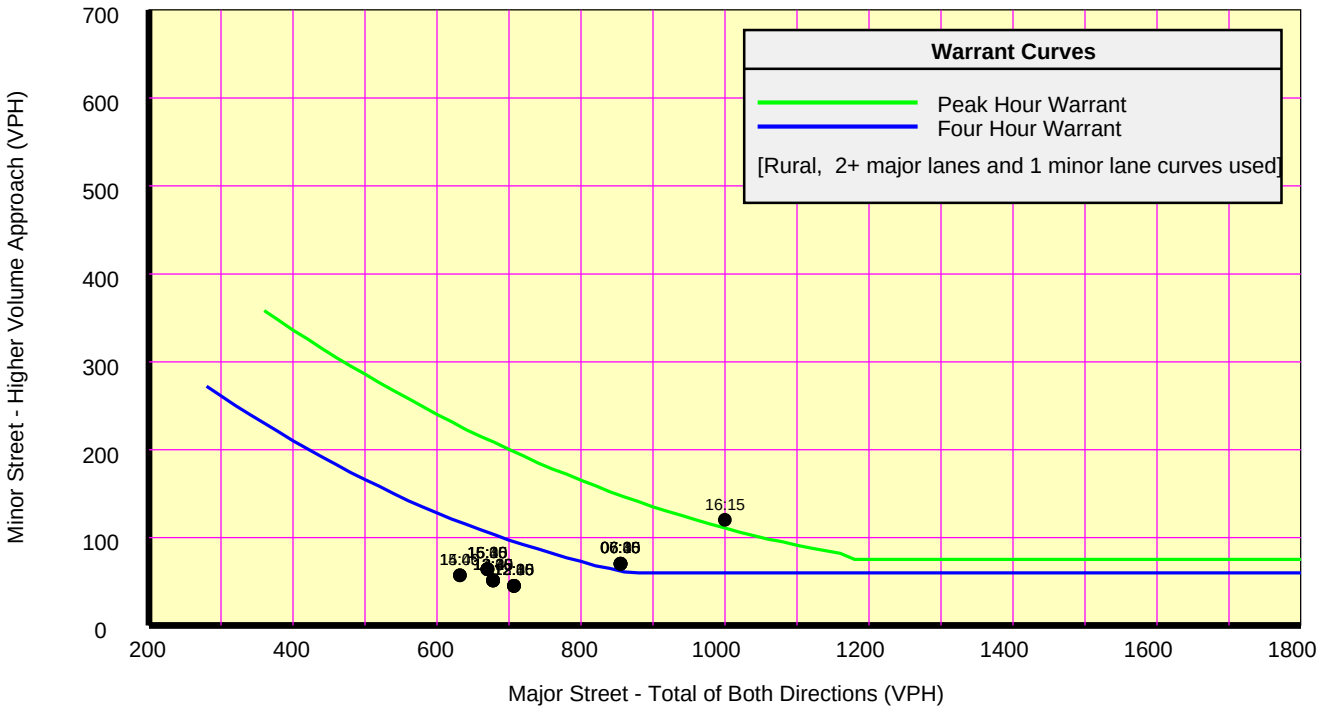
Warrant 9 - Intersection Near a Grade Crossing ..... **Not Evaluated**

Traffic Signal Warrant Study

US 84 at Freight Route 119

Year 2020 Traffic Analysis

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

Hour Begin	Major Total	Minor Vol	Minor Dir	Maj 420	Min 105
16:15	1,000	120	W	Yes	Yes
07:00	855	70	W	Yes	No
06:45	855	70	W	Yes	No
06:30	855	70	W	Yes	No
06:15	855	70	W	Yes	No
13:00	707	45	W	Yes	No
12:45	707	45	W	Yes	No
12:30	707	45	W	Yes	No
12:15	707	45	W	Yes	No
14:00	678	51	W	Yes	No
13:45	678	51	W	Yes	No
13:30	678	51	W	Yes	No
13:15	678	51	W	Yes	No
16:00	670	64	W	Yes	No
15:45	670	64	W	Yes	No
15:30	670	64	W	Yes	No
15:15	670	64	W	Yes	No
15:00	632	57	W	Yes	No
14:45	632	57	W	Yes	No
14:30	632	57	W	Yes	No
14:15	632	57	W	Yes	No
11:00	631	36	W	Yes	No
10:45	631	36	W	Yes	No
10:30	631	36	W	Yes	No

War 1B-Interruption of Traffic

Hour Begin	Major Total	Minor Vol	Minor Dir	Maj 630	Min 53
16:15	1,000	120	W	Yes	Yes
06:15	855	70	W	Yes	Yes
15:15	670	64	W	Yes	Yes
14:15	632	57	W	Yes	Yes
13:00	707	45	W	Yes	No
12:45	707	45	W	Yes	No
12:30	707	45	W	Yes	No
12:15	707	45	W	Yes	No
14:00	678	51	W	Yes	No
13:45	678	51	W	Yes	No
13:30	678	51	W	Yes	No
13:15	678	51	W	Yes	No
11:00	631	36	W	Yes	No
10:45	631	36	W	Yes	No
10:30	631	36	W	Yes	No
10:15	631	36	W	Yes	No
08:00	625	42	W	No	No
07:45	625	42	W	No	No
07:30	625	42	W	No	No
07:15	625	42	W	No	No
12:00	600	45	W	No	No
11:45	600	45	W	No	No
11:30	600	45	W	No	No
11:15	600	45	W	No	No

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol	Minor Dir	Maj 504	Min 84
16:15	1,000	120	W	Yes	Yes
07:00	855	70	W	Yes	No
06:45	855	70	W	Yes	No
06:30	855	70	W	Yes	No
06:15	855	70	W	Yes	No
13:00	707	45	W	Yes	No
12:45	707	45	W	Yes	No
12:30	707	45	W	Yes	No
12:15	707	45	W	Yes	No
14:00	678	51	W	Yes	No
13:45	678	51	W	Yes	No
13:30	678	51	W	Yes	No
13:15	678	51	W	Yes	No
16:00	670	64	W	Yes	No
15:45	670	64	W	Yes	No
15:30	670	64	W	Yes	No
15:15	670	64	W	Yes	No
15:00	632	57	W	Yes	No
14:45	632	57	W	Yes	No
14:30	632	57	W	Yes	No
14:15	632	57	W	Yes	No
11:00	631	36	W	Yes	No
10:45	631	36	W	Yes	No
10:30	631	36	W	Yes	No

Attachment #8
Concept Hydrology Study for MS4 Requirements

Area 1	1005+00 Left	
Pervious Area	0.87	Acres
Total Area	1.15	Acres
Impervious Area	0.28	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.030532599	acre-ft
WQv=	1330	Cubic Ft
Permanent Poolv=	665	Cubic Ft
CPv=	3990	Cubic Ft
25-year detention	4788	Cubic Ft
Total Volume	9443	Cubic Ft
Length	60	ft
Width	40	ft
Depth	4	ft

Area 2	1005+00 Right	
Pervious Area	0.87	Acres
Total Area	1.15	Acres
Impervious Area	0.28	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.030532599	acre-ft
WQv=	1330	Cubic Ft
Permanent Poolv=	665	Cubic Ft
CPv=	3990	Cubic Ft
25-year detention	4788	Cubic Ft
Total Volume	9443	Cubic Ft
Length	60	ft
Width	40	ft
Depth	4	ft

Area 3	1020+00 Left	
Pervious Area	2.62	Acres
Total Area	3.44	Acres
Impervious Area	0.83	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.091597796	acre-ft
WQv=	3990	Cubic Ft
Permanent Poolv=	1995	Cubic Ft
CPv=	11970	Cubic Ft
25-year detention	14364	Cubic Ft
Total Volume	28329	Cubic Ft
Length	104	ft
Width	69	ft
Depth	4	ft

Area 4	1020+00 Right	
Pervious Area	1.31	Acres
Total Area	1.72	Acres
Impervious Area	0.41	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.045798898	acre-ft
WQv=	1995	Cubic Ft
Permanent Poolv=	997.5	Cubic Ft
CPv=	5985	Cubic Ft
25-year detention	7182	Cubic Ft
Total Volume	14164.5	Cubic Ft
Length	74	ft
Width	49	ft
Depth	4	ft

Area 5	1035+00 Right	
Pervious Area	3.49	Acres
Total Area	4.59	Acres
Impervious Area	1.10	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.122130395	acre-ft
WQv=	5320	Cubic Ft
Permanent Poolv=	2660	Cubic Ft
CPv=	15960	Cubic Ft
25-year detention	19152	Cubic Ft
Total Volume	37772	Cubic Ft
Length	119	ft
Width	79	ft
Depth	4	ft

Area 6	1098+00 Left	
Pervious Area	5.23	Acres
Total Area	6.89	Acres
Impervious Area	1.65	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.183195592	acre-ft
WQv=	7980	Cubic Ft
Permanent Poolv=	3990	Cubic Ft
CPv=	23940	Cubic Ft
25-year detention	28728	Cubic Ft
Total Volume	56658	Cubic Ft
Length	146	ft
Width	97	ft
Depth	4	ft

Area 7	1142+00 Left	
Pervious Area	8.72	Acres
Total Area	11.48	Acres
Impervious Area	2.75	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.305325987	acre-ft
WQv=	13300	Cubic Ft
Permanent Poolv=	6650	Cubic Ft
CPv=	39900	Cubic Ft
25-year detention	47880	Cubic Ft
Total Volume	94430	Cubic Ft
Length	188	ft
Width	125	ft
Depth	4	ft

Area 8	1159+00 left	
Pervious Area	2.18	Acres
Total Area	2.87	Acres
Impervious Area	0.69	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.076331497	acre-ft
WQv=	3325	Cubic Ft
Permanent Poolv=	1662.5	Cubic Ft
CPv=	9975	Cubic Ft
25-year detention	11970	Cubic Ft
Total Volume	23607.5	Cubic Ft
Length	95	ft
Width	63	ft
Depth	4	ft

Area 9 1159+00 Right

Pervious Area	2.18	Acres
Total Area	2.87	Acres
Impervious Area	0.69	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.076331497	acre-ft
WQv=	3325	Cubic Ft
Permanent Poolv=	1662.5	Cubic Ft
CPv=	9975	Cubic Ft
25-year detention	11970	Cubic Ft
Total Volume	23607.5	Cubic Ft
Length	95	ft
Width	63	ft
Depth	4	ft

Area 10 1167+00 Left

Pervious Area	2.62	Acres
Total Area	3.44	Acres
Impervious Area	0.83	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.091597796	acre-ft
WQv=	3990	Cubic Ft
Permanent Poolv=	1995	Cubic Ft
CPv=	11970	Cubic Ft
25-year detention	14364	Cubic Ft
Total Volume	28329	Cubic Ft
Length	104	ft
Width	69	ft
Depth	4	ft

Area 11 1167+00 Right

Pervious Area	2.62	Acres
Total Area	3.44	Acres
Impervious Area	0.83	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.091597796	acre-ft
WQv=	3990	Cubic Ft
Permanent Poolv=	1995	Cubic Ft
CPv=	11970	Cubic Ft
25-year detention	14364	Cubic Ft
Total Volume	28329	Cubic Ft
Length	104	ft
Width	69	ft
Depth	4	ft

Area 12 1237+00 Right

Pervious Area	3.49	Acres
Total Area	4.59	Acres
Impervious Area	1.10	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.122130395	acre-ft
WQv=	5320	Cubic Ft
Permanent Poolv=	2660	Cubic Ft
CPv=	15960	Cubic Ft
25-year detention	19152	Cubic Ft
Total Volume	37772	Cubic Ft
Length	119	ft
Width	79	ft
Depth	4	ft

Area 13 1215+00 Right

Pervious Area	3.49	Acres
Total Area	4.59	Acres
Impervious Area	1.10	Acres
Percent Imp. Cover	24.00%	
Rv=	0.266	
WQv=	0.122130395	acre-ft
WQv=	5320	Cubic Ft
Permanent Poolv=	2660	Cubic Ft
CPv=	15960	Cubic Ft
25-year detention	19152	Cubic Ft
Total Volume	37772	Cubic Ft
Length	119	ft
Width	79	ft
Depth	4	ft

Attachment #9
Pavement Design

Flexible Pavement Design Analysis

PI Number	0522570	**County(s)**	Liberty & Long
Project Number	NH000-0026-03(056)	**Design Name**	FREIGHT ROUTE 119 FLEXIBLE PAVEMENT
Project Description	FREIGHT ROUTE 119		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	3,170	**24 Hour Truck %**	20.00	**Lanes in one direction**	1
Final Design Year	2040	**Final AADT, VPD**	4,040	**SU Truck %**	11.00	**Curb & Gutter/Barrier**	No
		Mean AADT, VPD	3,605	**MU Truck %**	9.00		

Design Data					
Lane Distribution Factor (%)	100.00	**Soil Support Value**	4.00	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.70	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.00	**Calculated 18-KIP ESAL**	0.90
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
3,605	100.00	Single Unit Truck	11.00	0.40	159
		Multi Unit Truck	9.00	1.50	487
				Total Daily ESALs	646
				Total Design Period ESALs	4,715,800

Proposed Flexible Full Depth Pavement Structure				
Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Course 1	9.5 mm Type II Superpave	1.25	0.4400	0.55
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.25	0.4400	0.55
		3.75	0.3000	1.13
Course 4	Graded Aggregate Base	10.00	0.1600	1.60

Required SN 4.76 **Proposed pavement is 1.23% Underdesigned** **Proposed SN** 4.71

Design Remarks	

Prepared By Will Sheehan 4/8/2014 3:16 PM

WILL SHEEHAN P.E **Date**

Recommended By

Consultant Design Phase Leader **Date**

Approved By

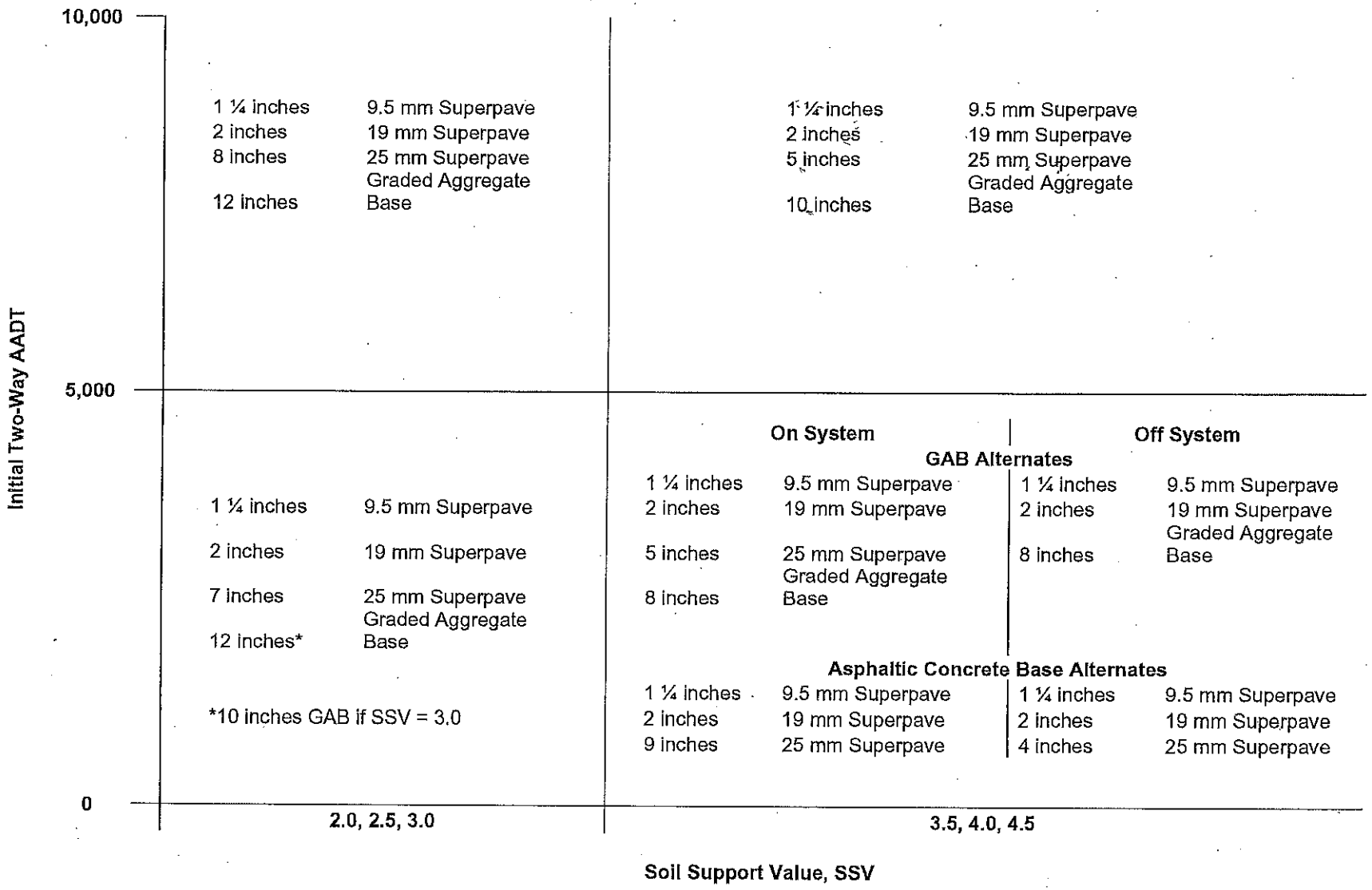
State Pavement Engineer **Date**

Filename: G:\hwy\LIB001\FREIGHT 119\GDOT Pavement Design Tool v2.0_4-08-2014.xlsm

GDOT Pavement Design Tool - Version 2.0

Standard Pavement Sections for Minor Projects

Projects with AADT > 10,000 or 24 hour Truck Percentage > 10% require approval by the Office of Materials and Research.



Rigid Pavement Design Analysis

PI Number	0522570	**County(s)**	Liberty & Long		
Project Number	NH000-0026-03(056)	**Design Name**	FREIGHT ROUTE 119 CONC PAVEMENT DESIGN		
Project Description	FREIGHT ROUTE 119				
Section Location	FULL LENGTH OF PROJECT			**Type Section**	JPCP
Begin Section Station	0+00	**End Section Station**	252+93	**Section Length**	25293

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	3,170	**24 Hour Truck %**	20.00	**Lanes in one direction**	1
Final Design Year	2040	**Final AADT, VPD**	4,040	**SU Truck %**	11.00	**Curb & Gutter/Barrier**	No
		Mean AADT, VPD	3,605	**MU Truck %**	9.00	**Interstate**	No

Design Loading (Calculated 18-KIP ESAL)

Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
3,605	100	Other Vehicles	80.00	0.004	12
		Single Unit Truck	11.00	0.500	199
		Multi Unit Truck	9.00	2.680	870
				Total Daily ESALs	1,081
				Total Design Period ESALs	7,891,300

Design Data

Terminal Serviceability Index (P_t)	2.50	**Working Stress (psi)**	450	**Modulus of Elasticity (psi)**	3,200,000		
Soil Support Value	4.00	**Subgrade Modulus (k)**	190	**Subbase Modulus (k_1)**	230	**Subbase Modulus (k_{eff})**	290
Trial Depth of PCC Pavement (inches)	12.00	**Calculated Stress from Equation (psi)**	296.63				
% Understressed	34.08	**% Overdesigned**	51.71	**Balanced Thickness (inches)**	9.52		
Non-Standard Value Comment							

Proposed Rigid Pavement Structure	
Material	**Thickness (inches)**
JPCP - Jointed Portland Cement Concrete Pavement	12.00
19 mm Superpave Asphaltic Concrete Interlayer	3.00
Graded Aggregate Base	8.00

JPCP - Dowel Bar Size and Spacing
Refer to GDOT Standard 5046H: Joint Details for Portland Cement Concrete Paving

Design Remarks	

Prepared By Will Sheehan 4/8/2014 2:39 PM

WILL SHEEHAN P.E — **Date**

Recommended By

Consultant Design Phase Leader — **Date**

Approved By

State Pavement Engineer — **Date**

Filename: G:\hwy\LIB001\FREIGHT 119\GDOT Pavement Design Tool v2.0_4-08-2014.xlsm

GDOT Pavement Design Tool - Version 2.0

CBR	S.S.V.	Subgrade k-Value, pci	Typical GAB Thickness (inches)
3.4	2.0	110	12
4.1-4.2	2.5	130	12
5.3-5.5	3.0	150	10
6.7-6.9	3.5	175	10
9.0-9.5	4.0	190	8
11.3-11.9	4.5	200	8

TABLE 11.3 TYPICAL SOIL DESIGN VALUES IN GEORGIA

Instead of using a nomograph to determine the effective subgrade reaction modulus, k_{eff}, the following two tables can be used instead of the nomograph for that determination.

Step 1: Determine Effective k value over GAB Layer

Locate the appropriate GAB Layer thickness (12 inches), then the reported k-value in the soil survey summary (150). This gives an effective k value over the GAB layer of 245 pci. Table 11.3c below gives the effective k value at the top of a Graded Aggregate Base Course, the minimum thickness of which is specified in the Soil Survey Summary.

GAB Layer Thickness, inches >>>		8	10	12	14
k on top of Subgrade, k_{subg}, pci	Effective k over GAB Layer, k_{GAB}, pci				
100		145	165	195	220
110		155	175	205	230
120		165	185	215	240
130		175	195	225	250
140		185	205	235	260
150		195	215	**245**	270
160		205	225	255	280
170		215	235	265	290
180		225	245	275	300
190		235	255	285	310
200		245	265	295	320

TABLE 11.4 EFFECTIVE K OVER THE GRADED AGGREGATE BASE LAYER WITH A KNOWN K VALUE FOR THE SUBGRADE USING TYPICAL GEORGIA SOIL VALUES

Attachment #10
Meeting Summaries

Moreland Altobelli Associates, Inc.
2211 Beaver Ruin Road, Suite 190
Norcross, Georgia 30071
Phone: 770-263-5945 Fax: 770-263-0166

MEETING MINUTES

Project:	**Hinesville Bypass**
	NH-026-3(56)SP Liberty County
	PI No. 522570
Meeting:	**Kickoff Meeting**
Location:	**Liberty County BOC Conference Room**
Prepared By:	**Jerry Brooks**

Meeting Date	5/04/04
MA Project No.	LIB001
CC: Attendees File	

ATTENDEES	ORGANIZATION	PHONE	E-MAIL
Jerry Brooks	Moreland Altobelli	770 263 5945	jbrooks@maai.net
Alva Byrom	Moreland Altobelli	770 263 5945	abyrom@maai.net
John McIver	Liberty County	912-876-2164	
Joey Brown	Liberty County	912-876-2164	Joey.brown@libertycountyga.com
Jim Simpson	Georgia DOT Road Design	404-657-9192	jim.simpson@dot.state.ga.us
Teresa Scott	Georgia DOT Dist 5	912-427-5788	teresa.scott@dot.state.ga.us
Chip Craven	Georgia DOT Dist 5	912-427-5793	
Billy Edwards	City of Hinesville	912-876-3564	bedwards@cityofhinesville.org

A kickoff meeting for the above referenced project was held on May 4, 2004. The following items were discussed:

- The proposed route for the project has not been finalized. It is expected that the Environmental study may play a big role in determining the route.
- The project will follow the GDOT Plan Development Process (PDP) and therefore an initial concept team meeting and a concept team meeting will be required.
- For the initial concept team meeting a need and purpose statement and an alignment on aerial photography is required with maybe a rough draft concept report.
- Traffic counts will be required in order to prepare the need and purpose statement.
- It is expected that the environmental document will be an EA and not require an EIS.
- The County will provide whatever aerial photography is available.
- Consideration should be given to adding the SR195 realignment to the bypass project.
- The typical section is expected to be 4 lane divided. May use a 5 lane urban section along SR119.
- MAAI will provide the County with a project schedule in a format such as Microsoft Project.
- The initial concept team meeting should be able to be requested in 90 days.
- The right of way width for a rural section may be as much as 250 feet.
- Liberty County would like for the project to be on the State system when open to traffic.

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- Study should be given to using an urban section at SR119 and a rural section on Holmestown Road section.
- Prior to field survey beginning, MAAI should send property owners a written notice explaining why we need to be on their property.
- Walthourville will be affected by this project and early coordination with the City officials is recommended.

Attachments:

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MEETING MINUTES

Project:	**NH-026-3(56)SP**
	Hinesville By-Pass
	P.I. No. 522570, Liberty County
Meeting:	**Initial Concept Team Meeting**
Location:	**Liberty County BOC Meeting Room**
Prepared By:	**Jerry L. Brooks, P.E.**

Meeting Date	December 14, 2004
MA Project No.	LIB001
CC: Attendees File	

ATTENDEES	ORGANIZATION	PHONE	E-MAIL
Jim Simpson	GDOT Road Design PM	404 657 9192	jim.simpson@dot.state.ga.us
Joey Brown	Liberty County	912 876 2164	joey.brown@libertycountyga.com
Keith Melton	GDOT Planning	404 657 6913	keith.melton@dot.state.ga.us
Jennifer Flournoy	Keep Liberty Co. Beautiful	912 368 4888	jennifer.flournoy@libertycountyga.com
Pat Smeeton	Moreland Altobelli	770 263 5945	psmeeton@maai.net
Jerry Brooks	Moreland Altobelli PM	770 263 5945	jbrooks@maai.net
George Shenk	GDOT District Utilities	912 427 5859	george.shenk@dot.state.ga.us
Tom Franklin	GDOT District Right of Way	912 638 7555	
Jerome Shefriely	GDOT District Construction	912 427 5760	
Gary Johnson	GDOT Road Design		gary.johnson@dot.state.ga.us
Tony Collins	GDOT Jesup	912 427 5715	
Sonny Timmerman	Hinesville MPO		

The Initial Concept Team Meeting for the Hinesville By-pass was held at 3 p.m. on December 14, 2004 in the Liberty County Board of Commissioners meeting room in Hinesville, GA.

Jim Simpson opened the meeting by thanking everyone for attending and asked everyone to introduce themselves. Jim then stated that this project was programmed for right of way in FY ’06 and construction in FY ’08. Jerry Brooks then explained the proposed project from a concept horizontal alignment plotted on aerial photography. The project begins on S.R. 119 at U.S. 84 in Wahthourville and proceeds southeasterly across Southern Crestline Railroad along S.R. 119 for approximately four miles until the intersection of C.R. 49 (Holmestown Road). At that point, the proposed alignment generally follows C.R. 49 northeasterly along existing and new location for approximately five miles until it intersects with U.S. 84. At that point the proposed alignment crosses U.S. 84 and then ties into S.R. 196. Total project length is approximately 9.5 miles. The concept proposes to bridge over the railroad in Wahthourville and tie into U.S. 84. The preferred location for this tie is to align with the existing location of S.R. 119 on the north side of U.S. 84. The proposed typical section for the S.R. 119 widening is a five lane urban section from U.S. 84 to Dunlevie Road on 100 feet of right of way and then a five lane rural section from Dunlevie Road to Holmestown Road on 130 feet of right of way. The proposed typical section for the Holmestown Road section is four lanes rural with a 44 foot depressed median on 160 feet of right of way. It was discussed that only two lanes could be built initially on the full right of way section and the two additional lanes could be added as a future project.

Next was a general discussion of the proposed projects with the following comments:

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MEETING MINUTES

- The GDOT CWP needs to be updated to reflect the current project length
- The east tie of the project needs to go all the way to SR196
- Sonny Timmerman said access control for the project will be a concern to the local governments and would like to see areas of limited access.
- Sonny Timmerman said there was a desire to do away with the flush median on US84 and recommended not having a flush median on the By-pass project
- Jim Simpson said the GDOT now prefers a 24' median in lieu of a 20' median where possible
- Alignment at the intersection of SR119 and Holmestown Road may work best if the through movement was along the proposed by-pass in lieu of a "T" intersection
- There is a desire by the local government to build all four lanes of the Holmestown Road section initially in lieu of building 2-lanes on four lanes of right of way
- Sonny Timmrman mentioned that the travel demand model for Liberty County and Long County would be ready within a few weeks and could be used to identify if 2 or 4 lanes would be necessary on the new location portion of the By-pass.
- Alternate alignments should be reviewed to see if any environmental impacts would be reduced
- Alternate alignments will be required for a Practical Alternative Report (PAR)
- It was recommended that a scooping meeting be held with persons that will be involved with the PAR

With no other items to be discussed, the meeting was closed.

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MEETING MINUTES

Project:	**Hinesville Bypass**
	NH-026-3(56)SP Liberty County
	PI No. 522570
Meeting:	**Concept Revision Meeting**
Location:	**Liberty County BOC Conference Room**
Prepared By:	**Shrujal Amin**

Meeting Date	2/15/07
MA Project No.	LIB001
CC: File	

ATTENDEES	ORGANIZATION
Jerry Brinson	Moreland Altobelli
Sonny Timmerman	Consolidated Planning Commission
Joey Brown	Liberty County
Shrujal Amin	Moreland Altobelli

A meeting for the above referenced project was held on February 15, 2007. The following items were discussed:

- Liberty County would like to see the alignment moved further down Tibet Road going into Long County. The alignment should go beyond the existing church, trailer park, and antique shop.
- MA was requested to shift further away from Holmestown Road and the historically African American community in that vicinity.
- It was noted that there is heavy truck traffic in the area.
- Mr. Timmerman stated that both Liberty and Long County have been modeled for traffic and the information would be made available to MA as needed.
- Jerry Brinson stated that he would work to get the project moved to the Jessup District GDOT office from the Atlanta General Office.
- Mr. Brown asked that the entire alignment become rural since we were moving it away from the city of Walthoursville.
- Mr. Amin committed to providing an alternate alignment for Mr. Brown to take to his board of Commissioners within a two week time frame. Mr. Brown will attempt to get his board to agree on the alignment then take it to the Long County Board of Commissioners to try and get their approval. Once both counties agree, he was planning on taking the concept to Washington DC in April to get his Congressional Representative's input.

Minutes of Final Concept Team Meeting

Project Number: NH000-0026-03 (056)

P. I. Number: 522570 Liberty & Long Counties

Hinesville Bypass

February 11, 2009, 1:30 P.M. Liberty County Courthouse Annex Room 200

112 North Main Street, Hinesville, GA 31313

Attendees are listed below:

Name	Company	Phone	Email
Joseph W. Brown	Liberty County Administrator	912-876-2164	joey.brown@libertycountyga.com
Karla Poshedly	MAAI	770-263-5945	kposhedly@maai.net
Shrujal Amin	MAAI	770-263-5945	samin@maai.net
Jerry Brinson	MAAI	478-552-1779	jbrinson@maai.net
Joe B. Harris III	Dist. 5 Right-of-way	912-427-1981	jbharris@dot.ga.gov
Brad Saxon	Dist. 5 Preconstruction	912-427-5715	bsaxon@dot.ga.gov
Will Murphy	Dist. 5	912-427-5733	wmurphy@dot.ga.gov
Anthony Cook	Dist. 5	912-427-5747	acook@dot.ga.gov
David Acree	Road Design	404-631-1627	dacree@dot.ga.gov
David Powell	Road Design	404-631-1620	dapowell@dot.ga.gov
Ebrahim Nadji	Liberty Consolidated Planning Commission	912-408-2030	enadji@cityofhinesville.org
Mack Cravey	Dist. 5	912-427-5793	mcravey@dot.ga.gov
Christy Lovett	Engineering Services	912-427-5884	clovett@dot.ga.gov
Karon Ivery	Dist. 5 Utilities	912-427-5779	kivery@dot.ga.gov
Rosalind Russell	Dist. 5 Utilities	912-427-5779	rrussell@dot.ga.gov
Durand Standard	Century Telephone	912-408-2106	durand.standard@centurytel.com
R.C. “Butch” Heape	GA Power	770-550-1055	rcheape@southernco.com
Alan Darsey	Century Telephone	912-408-1216	alan.darsey@centurytel.com
Larry Bowman	GDOT – OEL	404-699-4441	lbowman@dot.ga.gov
Henry Barrett	Century Telephone	912-408-1216	henry.barrett@centurytel.com
Bob Bitzer	Coastal EMC	912-880-2258	bob.bitzer@coastalemc.com

Mr. Shrujal Amin opened the meeting with introductions.

Ms. Karla Poshedly began the final concept team meeting by stating the project numbers, need and purpose and traffic volumes projected, Mr. Amin then stated the schedule of the programmed project – 2012 FY for right-of-way and long range for construction. He also spoke about the proposed typical section and location of project, specifically mentioning the physical constraints along the proposed route. Ms. Poshedly then spoke about the environmental concerns and the cost estimates.

Ms. Poshedly then described the concept layout from US 84 through SR 196. Mr. David Powell suggested the investigation of the intersection of SR 196 and the bypass be modified from a signalized intersection to a traffic circle/roundabout.

Ms. Poshedly then asked if there were any questions or comments. She first asked if another PIOH would be required because the alignment had changed since the last PIOH. Mr. David Acree inquired of

Mr. Larry Bowman about the need for another public meeting. Mr. Bowman stated that it would be the recommendation of the Office of Environment and Location to hold one because of changes to the alignment.

Mr. Ebrahim Nadji asked about stormwater drainage. He was concerned about the roadway creating a barrier for some natural streams and wetlands. Mr. Amin said that streams and wetlands will be studied in preliminary design and the drainage will be designed to maintain stream flows and minimize impacts to wetland areas.

Mr. Nadji also asked about if any of the intersections on the proposed project would be signalized. Ms. Poshedly stated that in preliminary design stage, traffic signal warrant studies would be conducted and if warranted, the signals would be installed during construction of the project. She said that all of the major intersections would be designed to allow for future traffic signals if warranted.

Mr. Nadji asked about access to each parcel of land. Mr. Amin said that each parcel would have to be looked at on a case-by-case basis and if parcels were landlocked then some access would have to be provided or the land would have to be purchased. Ms. Poshedly stated that the project goal would be to control the access points to major roadways and have very few individual driveways accessing the roadway.

Ms. Poshedly asked if the representatives of the utility companies would comment about any known utility conflicts. Representatives commented that there are two gas lines that will cross this alignment. There would be telephone conflicts along US 84 and SR 119, which included an encased conduit system. Also, there are copper lines on Dunlevie Road. There is a transmission line with prior rights that is near this alignment. Coastal electric also has some power lines in Walthoursville.

Mr. Amin discussed that the typical section could change depending on the results of a Value Engineering study and urged that a VE study be done as soon as possible. He also commented that there is another realignment that will be studied in the surrounding area of a mobile home park, which maybe closing. The shift would allow for the roadway alignment to use unoccupied areas and avoid taking permanent homes that are being taken as a result of the current alignment.

Mr. Brad Saxon, GDOT District 5 Preconstruction Engineer, stated that on the cover sheet of the concept report, the state route numbers of 119 and 196 should be removed because it gives the reader the impression that the bypass would be a state route. Ms. Poshedly said that she would remove them on the cover and then explain in the concept that a small portion of the project would carry the state route number 119 where the Bypass is aligned on this state route. Mr. Joey Brown said that Liberty County would be petitioning GDOT to make the Bypass a state route.

Mr. Joe Harris, GDOT District 5 Right-of-Way, stated that the alignment of the Bypass clips a section of a lake and it should be avoided if possible. Mr. Amin stated that the alignment would be modified, if possible, to avoid the impact.

After sufficient discussion, Ms. Poshedly adjourned the Concept Team Meeting. It was agreed that a PIOH would be requested after comments from the meeting were implemented.

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MEETING MINUTES

Location: GDOT OES, 16th Floor Large Conference Room
February 6, 2014
9:00 to 10:00 AM

RE: SR 119 Freight Route, Liberty & Long Counties, NH000-0026-03 (056), PI# 522570

Attendees:

Jennifer Giersch, FHWA	404-562-3653	jennifer.giersch@dot.gov
David Hedeen, GDOT Ecology	404-631-1419	dhedeen@dot.ga.gov
Keisha Jackson, GDOT NEPA	404-631-1160	keijackson@dot.ga.gov
Cindy Treadway, GDOT NEPA	404-631-1979	ctreadway@dot.ga.gov
Aghdas Ghazi, GDOT PM (Video Conference)	912-271-7027	aghazi@dot.ga.gov
LN Manchi, MAAI	770-263-5945	lmanchi@maai.net
Mike Wilson, MAAI	770-263-5945	mwilson@maai.net
Matt Chamblee, MAAI	770-263-5945	mchamblee@maai.net
Karla Poshedly, MAAI	770-263-5945	kposhedly@maai.net

The meeting was opened by Mr. L.N. Manchi who provided an overview of the history and the current status of the project. Due to funding for the overall two phase project that was envisioned previously, Liberty County, Long County, & the Hinesville Area Metropolitan Planning Organization (HAMPO) programmed a revised project – Freight 119 Hinesville Bypass and that the right-of-way funding is included in the current Transportation Improvement Program (TIP). He said that although the project has changed in size and scope, the need and purpose still remains the same. The new alignment reduces ecology impacts significantly and does not have any known history impacts. The cost of the new alignment is also considerably less than the original two phase project. The proposed 2-lane roadway on new location can handle the projected traffic. Based on our current proposed alignment that utilized the National Wetland Inventory (NWI) mapping for streams and wetlands, he also informed the attendees that MA does not anticipate a need for an Individual Permit (IP) and a Practical Alternatives Review (PAR) for this project.

Mr. Manchi mentioned that the GDOT concept report comments will be addressed once traffic was approved. He also said that MA will conduct field inventory for the proposed alignment and update all special studies. Ms. Aghdas Ghazi said that she would like MA to catch up and recover the project schedule. She asked that MA send her an updated cost estimate based on the revised alignment. Mr. Manchi said that Mr. Buddy Gratton (MA's President), MA's lead designer, Will Sheehan, will be meeting with Mr. Joey Brown of Liberty County and officials of Long County to make sure that both counties are in agreement with the proposed alignment. Once the alignment is reviewed by both counties, MA will send Ms. Ghazi a revised cost estimate.

Mr. Manchi stated that the current preferred alternative is shorter; however, it is very close to the earlier preferred alternative's Phase I alignment. Therefore, MA anticipates the species effects to remain the same as in the recently

concluded PAR process. Mr. Hedeen and Ms. Giersch were happy to see that the project size was reduced and that the overall length was also shortened as this would only help with reducing the environmental impacts and a lot more palatable to the environmental review agencies.

Next Steps:

- Present the preliminary alignment to Liberty and Long counties for review and comment
- Revise the traffic projections and obtain GDOT Office of Planning approval
- Finalize the preferred alignment and update the concept report to address GDOT comments and updated project description
- Prepare updated cost estimate and submit to GDOT PM
- Complete a logical termini report to be submitted to GDOT OES for review and approval
- Submit the updated logical termini report to FHWA

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE NH000-0026-03 (056) Liberty & Long County
PI No. 522570
US 84 Connector – Hinesville Bypass

OFFICE Materials & Testing
Forest Park, Georgia
DATE August 18, 2014

J. E. T. Fox

FROM Charles A. Hasty, P.E., State Materials Engineer

TO Albert Shelby, Office of Program Delivery
Attention: Aghdas Ghazi, P.E., Project Manager

SUBJECT **Pavement Type Selection**
US 84 Connector from 1 mile south of SR 196/US 84 Intersection to US 84 S Flemington

The Office of Materials and Testing (OMAT) have completed a Pavement Type Selection (PTS) and a pavement design recommendation for the above referenced project.

Project Description and Location

This project is for the proposed bypass which would begin at Oglethorpe Highway (US 84/SR 38) one half mile south of SR 119, just outside of the City of Walthourville in Long County. The alignment would be on new location, parallel to SR 119. The bypass would then cross into Liberty County and continue on new location to the existing alignment of SR 119. The total length of the project is 3.7 miles. The project is located on US 84/SR 38 and SR 119 in Liberty and Long counties near Hinesville, Georgia.

Pavement Design Alternatives Considered

The LCCA analyzed the costs of the project by comparing two alternative pavement types. Alternative A uses full-depth Hot Mix Asphalt (HMA) pavement, while Alternative B uses full-depth Portland Cement Concrete (PCC) pavement.

Pavement Type Recommendation

The LCCA analysis concludes that there is no preferred alternative for pavement type. This conclusion considered the economics of construction costs, mobilization costs, long term pavement performance, maintenance costs and other factors over the analysis period.

Table 1: Pavement Design Alternatives

Design Alternates	Profile	Surface	Intermediate (Binder)	Base	Sub-base
Alternate A, (Full-Depth HMA)	Mainline	9.5 mm Superpave Type II (1.25")	19 mm Superpave (2.00")	25 mm Superpave (4.00")	Graded Aggregate Base (12.00")
Alternate B, (Full-Depth PCC)	Mainline	PCC (9.50")	19 mm Superpave (0.00)	---	Graded Aggregate Base (8.00")

LCCA Factors

The LCCA is based on the following:

- The deterministic approach to LCCA based on the guidelines in the following document:
    - Federal Highway Administration Publication No. FHWA-SA-98-079, "Life-Cycle Cost Analysis in Pavement Design."
- The analysis periods were 40 years and 50 years. Recommendations were based on the 40-year analysis.
- Staging costs and durations for staging were *not* considered.
- A discount Rate of 4 %.
- The service life prior to first major maintenance activities were as follows:
    - 10 years for Asphaltic Concrete Pavements (AC)
    - 20 years for Portland Cement Concrete Pavements (PCC)
- Average Plant Production rates determined from historical project information within the Georgia Department of Transportation as follows:
    - Asphalt Concrete plant production rate of 200 tons per hour.
    - Ready Mix Concrete plant production rate of 6000 square yards per day in addition to the following:
        - A 4000 linear feet of paving for a 12-foot wide lane
        - A 2500 linear feet of paving for a 24-foot wide lane

Table 2 summarizes the total Agency Costs:

Table 2: Agency Costs

Design Alternates	Agency Costs		Total Costs
	Initial Agency Costs (A)	Future Maintenance Costs (B)	(A)+ (B)
Alternate A, Full-Depth HMA	$3,661,162	$798,419	$4,459,581
Alternate B, Full-Depth PCC	$3,914,841	$851,161	$4,766,002

Table 3 summarizes the total User Costs:

Table 3: User Costs

Design Alternates	User Costs		Total Costs
	Initial User Costs (A)	Future User Costs (B)	(A) + (B)
Alternate A, Full-Depth HMA	$0	$10,834	$10,834
Alternate B, Full-Depth PCC	$0	$7,049	$7,049

Table 4 summarizes the Total Scores and Ranking from the Decision Matrix. The scores were determined from the LCCA using a 40-year Analysis Period.

Table 4: Total Score

Design Alternates	Rank	Total Score
Alternate A, Full-Depth HMA	1	93.6
Alternate B, Full-Depth PCC	2	91.8

Copies of the project report summary can be obtained upon request from the Geotechnical Environmental Pavement Bureau.

If additional information is needed, please contact James Turner of the Geotechnical Environmental Pavement Bureau at (404) 608-4776.

CAH: JHT
Attachments

Full Depth Flexible Design
Full Depth Rigid Design
Decision Matrix
Project Location Map

File

Flexible Pavement Design Analysis

PI Number	0522570	**County(s)**	Liberty
Project Number	NH000-0026-03 (056)	**Design Name**	Flexible Pavement - Freight Route 119
Project Description	US 84 CONN FM 1 MI S SR 196/US 84 INT TO US 84 S FLEMINGTON		

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	3,170	**24 Hour Truck %**	20.00	**Lanes in one direction**	1
Final Design Year	2040	**Final AADT, VPD**	4,040	**SU Truck %**	11.00	**Curb & Gutter/Barrier**	No
		Mean AADT, VPD	3,605	**MU Truck %**	9.00		

Design Data					
Lane Distribution Factor (%)	100.00	**Soil Support Value**	4.00	**Single Unit ESAL**	0.40
Terminal Serviceability Index	2.50	**Regional Factor**	1.70	**Multiple Unit ESAL**	1.50
		User Defined 18-KIP ESAL	0.00	**Calculated 18-KIP ESAL**	0.90
Non-Standard Value Comment					

Design Loading (Calculated 18-KIP ESAL)					
Mean AADT, VPD	**LDF (%)**	**Vehicle Type**	**Volume (%)**	**ESAL Factor**	**Daily ESAL**
3,605	100.00	Single Unit Truck	11.00	0.40	159
		Multi Unit Truck	9.00	1.50	487
				Total Daily ESALs	646
				Total Design Period ESALs	4,715,800

Proposed Flexible Full Depth Pavement Structure				
Course	**Material**	**Thickness (inches)**	**Structural Coefficient**	**Structural Value**
Course 1	9.5 mm Type II Superpave	1.25	0.4400	0.55
Course 2	19 mm Superpave	2.00	0.4400	0.88
Course 3	25 mm Superpave	1.25	0.4400	0.55
		2.75	0.3000	0.83
Course 4	Graded Aggregate Base	12.00	0.1600	1.92

Required SN	4.76	**Proposed pavement is 0.81% Underdesigned**	**Proposed SN**	4.73

Design Remarks	

Prepared By — James Turner, SPDE — 8/11/2014 11:27 AM

Recommended By — State Roadway Design Engineer — Date

Approved By — State Pavement Engineer — Date

Filename: Z:\James\01 - PAVEMENT DESIGN\03 - PTS.LCCA\522570_LCCAPTS.xlsm

Rigid Pavement Design Analysis

PI Number	0522570	**County(s)**	Liberty		
Project Number	NH000-0026-03 (056)	**Design Name**	Concrete Design - Freight Route 119		
Project Description	US 84 CONN FM 1 MI S SR 196/US 84 INT TO US 84 S FLEMINGTON				
Section Location	Full Length of Project			**Type Section**	JPCP
Begin Section Station	0+00	**End Section Station**	252+93	**Section Length**	25293

Traffic Data (AADTs are one-way)						**Miscellaneous Data**	
Initial Design Year	2020	**Initial AADT, VPD**	3,170	**24 Hour Truck %**	20.00	**Lanes in one direction**	1
Final Design Year	2040	**Final AADT, VPD**	4,040	**SU Truck %**	11.00	**Curb & Gutter/Barrier**	No
		Mean AADT, VPD	3,605	**MU Truck %**	9.00	**Interstate**	No

Design Loading (Calculated 18-KIP ESAL)

Mean AADT, VPD	LDF (%)	Vehicle Type	Volume (%)	ESAL Factor	Daily ESAL
3,605	100	Other Vehicles	80.00	0.004	12
		Single Unit Truck	11.00	0.500	199
		Multi Unit Truck	9.00	2.680	870
				Total Daily ESALs	1,081
				Total Design Period ESALs	7,891,300

Design Data

Terminal Serviceability Index (P_t)	2.50	**Working Stress (psi)**	450	**Modulus of Elasticity (psi)**	3,200,000		
Soil Support Value	4.00	**Subgrade Modulus (k)**	190	**Subbase Modulus (k_1)**	230	**Subbase Modulus (k_{eff})**	230
Trial Depth of PCC Pavement (inches)	9.50	**Calculated Stress from Equation (psi)**	464.20				
% Overstressed	3.15	**% Underdesigned**	3.06	**Balanced Thickness (inches)**	9.67		
Non-Standard Value Comment							

Proposed Rigid Pavement Structure

Material	Thickness (inches)
JPCP - Jointed Portland Cement Concrete Pavement	9.50
19 mm Superpave Asphaltic Concrete Interlayer	0.00
Graded Aggregate Base	8.00

JPCP - Dowel Bar Size and Spacing

Refer to GDOT Standard 5046H:
Joint Details for Portland Cement Concrete Paving

Design Remarks	

Prepared By — James Turner, SPDE — 8/15/2014 10:38 AM
Date

Recommended By — State Roadway Design Engineer — Date

Approved By — State Pavement Engineer — Date

Filename: Z:\James\01 - PAVEMENT DESIGN\03 - PTS.LCCA\522570_Flexible and Rigid Pavement Designs.xlsm

DECISION MATRIX

	DECISION FACTOR										Total Score	Rank
	Initial Construction Agency Costs	**Maintenance Costs** (nominal / discounted)	**Annualized Agency Costs** (LCC)	**Annualized User Costs** (LCC)	**Salvage Value**	**Expected Life** (Rehabilitation Frequency)	**Construction** (production rate - initial days)	**Ease of Repairing / Maintaining** (production rate - rehab days)	**Constructibility / Traffic Control** (Lifts)	**Proven Design in Agency**		
Relative Importance	50%	25%	5%	5%	2%	2%	2%	2%	2%	5%		
ALTERNATIVE A-HMA Full Depth Mainline	1.00 50.0	1.00 25.0	1.00 5.0	0.65 3.3	0.00 0.0	0.50 1.0	1.00 2.0	0.67 1.3	0.50 1.0	1.00 5.0	**93.6**	**1**
ALTERNATIVE B-PCC Full Depth Mainline	0.94 46.8	0.94 23.5	0.94 4.7	1.00 5.0	0.00 0.0	1.00 2.0	0.47 0.9	1.00 2.0	1.00 2.0	1.00 5.0	**91.8**	**2**

Project Location Map _ 522570