TRAFFIC FORECAST MEMO

MEMORANDUM TO: Keith Dixon, State Traffic Forecast Engineer. NCDOT Transportation Planning Division

FROM: Nita Bhave

DATE: March 7, 2019

SUBJECT: Traffic Forecast for B-5723, Guildford County;
Bridge Replacement on SR 1158 (Jackson Lake Rd) over Two Mile Creek

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North Carolina Department of Transportation (NCDOT) requested a traffic forecast for B-5723 on December 13, 2018. This project replaces Bridge # 400054 on SR 1158 (Jackson Lake Rd) over Two Mile Creek. This project is not in the 2018-2027 State Transportation Improvement Program (STIP).

However, after contracted with this project, a recently completed traffic forecast for this project was discovered (approved in March, 2016). A new traffic count on SR 1158 (Jackson Lake Rd) taken on January 23 &24, 2019, supports the existing forecast and show no major change in traffic.

Location	County	Type of Count	Dates	Day	ATR Group	Seasonal Adjustment Factor	Raw Count	Annualized Daily Count	2016 Forecasted AADT
SR 1158 (Jackson Lake Rd) OVER Two Mile Creek	Guildford	48-hour class	Jan 23 & 24, 2019	Wed & Thurs	4	0.95	982	928	1,100

Similarly, there is no significant change in modeled volumes from the latest version of the Piedmont Triad Regional Model (v4.2).

ROUTE	LOCATION	PTRM Modeled Volumes		Growth Rate
		2013	2040	
Jackson Lake Rd	OVER Two Mile Creek	2,039	2,280	0.4%

WSP recommends no changes from the 2016 approved traffic forecast, attached here. If you have any questions, or I can be of further assistance, please do not hesitate to call me at 919-376-2700, or e-mail me at nita.bhave@wsp.com. Thank you.

cc: FILE (Guildford County, Project B-5723)

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Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

March 24, 2016

MEMORANDUM TO: Pamela R. Williams
Priority Projects Unit
Technical Services Division

FROM: Michael Orr
Western Traffic Forecasting Group
Transportation Planning Branch

SUBJECT: Traffic Forecast for STIP Project B-5723
SR 1158 – Bridge No. 54 over Two Mile Creek,
Guilford County

Please find attached the 2016 / 2040 traffic forecast for project B-5723. This traffic forecast was prepared according to your request dated January 25, 2016.

This forecast includes scenarios for the years 2016 and 2040. Traffic volume for both years represent project No-Build and Build conditions (i.e., travel demand is the same for No-Build and Build conditions). Replacement of the bridge is not expected to substantially change travel demand.

Interpolation: To estimate AADT for intermediate years, straight-line interpolation of traffic volumes may be used between the 2016 and 2040. Traffic volume may also be extrapolated for up to two years beyond 2040.

Certain Assumptions were made during the development of this forecast.

Fiscal Constraint: This project is located within the High Point Metropolitan Planning Organization (MPO) area. For projects located within an MPO area, forecasts are fiscally constrained to the Metropolitan Transportation Plan (MTP). This means that all projects scheduled in the 2040 MTP are considered constructed and open to traffic in the future year. There are no projects in the current MTP which affect travel demand on SR 1158.

Development Activity: There are currently no specific plans for any substantial development near the forecast area.

Forecast Methodology:

The 2016 traffic volume and traffic factor estimates are based upon current counts and historic AADT trends projected to 2016.

The 2040 traffic volume forecast was determined by applying a 1.5% annual growth rate in traffic to the 2016 AADT estimate. Although this rate of traffic growth is greater than the recent historical trend and the travel demand predicted by the Piedmont Triad Regional Travel Demand Model, it considers the location of the project within the relatively high-growth I-85 corridor in Guilford County.

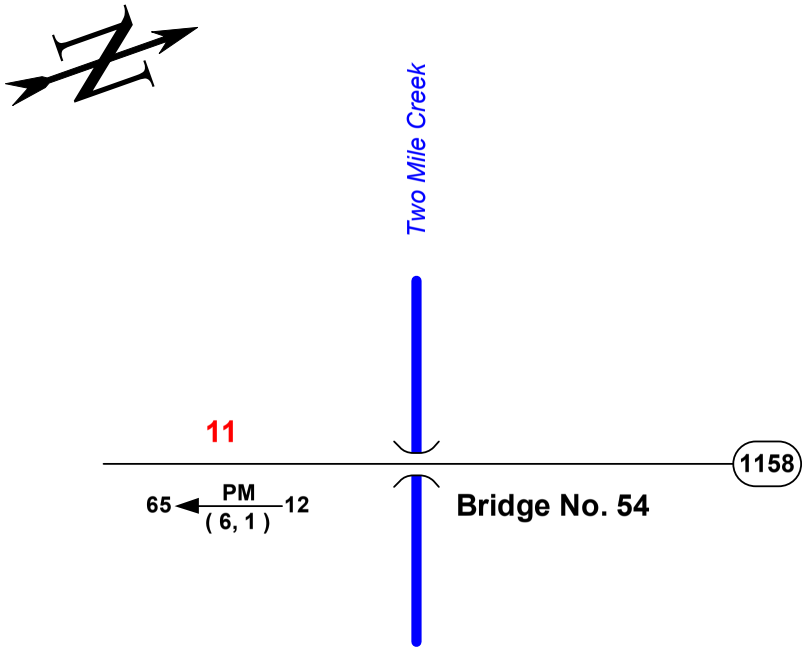
If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request an updated forecast at this location.

For future reference, this forecast will be saved in Project Store under B5723 in the LongRangePlanning\Traffic Forecasts folder.

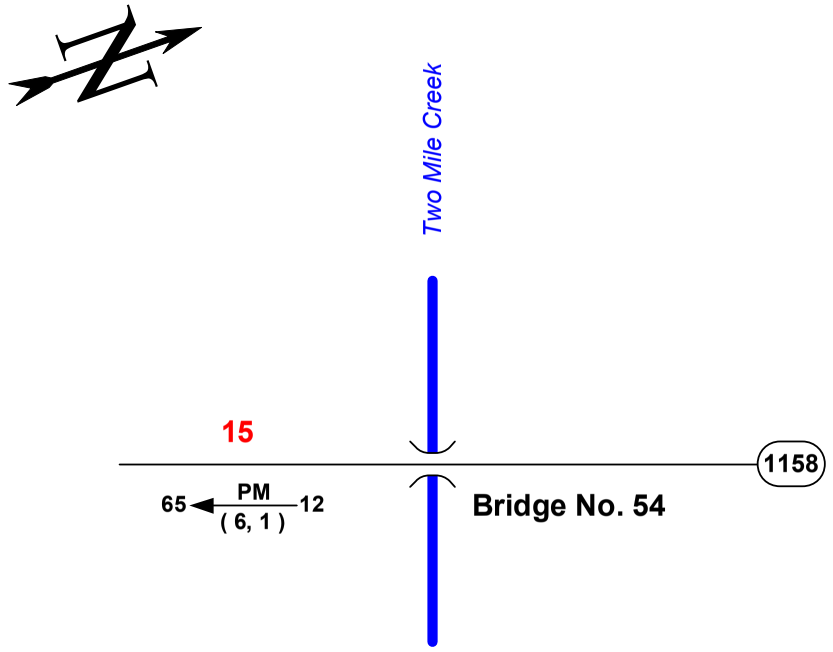
If we can be of any further assistance on this project please do not hesitate to contact me at 919-707-0982 or by email: mlorr@ncdot.gov.

cc: *Final distribution for your records via e-mail. Diagrams as PDF attachment*
Glen Mumford, PE, Highway Design Branch
Wayne Davis, PE, Transportation Planning Branch
James Dunlop, PE, Congestion Management
Clark S. Morrison, Ph.D., PE, Pavement Management
Ed Lewis, Division 7 Planning Engineer
Brian Wert, PE, Transportation Planning Branch

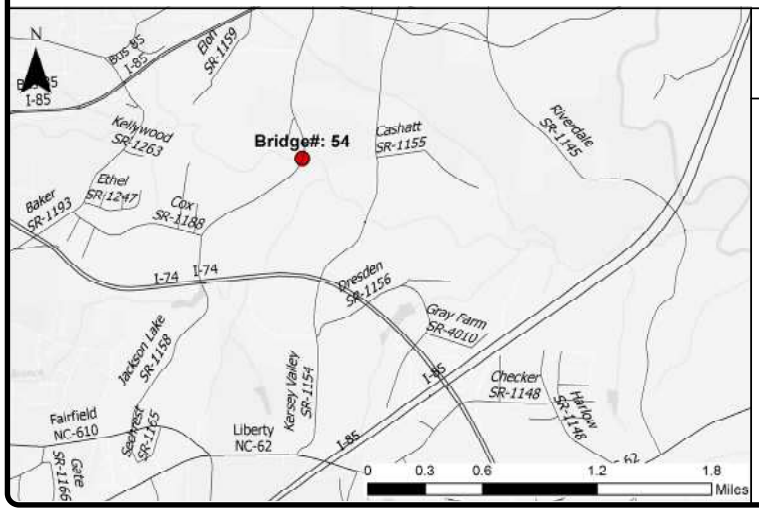
File Copy: B-5723 Guilford County



2016



2040



2016/2040 AVERAGE ANNUAL DAILY TRAFFIC

SHEET 1 OF 1

LEGEND

###	No. of Vehicles Per Day in 100s
1-	Less than 50 vpd
X	Movement Prohibited
K PM (d, t) D	
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split (%)
→	Indicates Direction of D
(d, t)	Duals, TT-STs (%)

TIP:	B-5723	**WBS:**	45679.1.1
County:	Guilford	**Division:**	7
Date:	24-Mar-16		
FORECASTER:	Michael Orr		
PREPARED BY:	Arsalan Sabouri		
LOCATION:	SR 1158		
Project:	Replace Bridge No. 54 on SR 1158 over Two Mile Creek		

Project Level Traffic Forecast
Supplement to Transmittal Letter dated March 24, 2016

TIP PROJECT B-5723

SR 1158 – Jackson Lake Road
Bridge No. 54 over Two Mile Creek
Guilford County

Prepared By: Michael Orr

Forecast History

There is no recent previous forecast for B-5723 or for another project on in the vicinity of this project.

Area Information

The project is located in rural Guilford County, and adjacent to the municipal limits of the City of High Point. Land use is a mixture of undeveloped land, residential and commercial.

Route Information

SR 1158 provides access to the various land uses mentioned above and also serves as a link in the regional road network. SR 1138 connects to Kivett Drive to the north and NC 610 to the south. It has two lanes, paved, and is functionally classified as a 'local' road.

High Point 2040 Metropolitan Transportation Plan (9/22/2015)

The MTP does not include improvements to SR 1158 nor to other roadways which may directly affect travel demand on SR 1158 at bridge 54.

Contacts

- Ed Lewis, Division 7 Planning Engineer – no information provided.
- Justin Westbrook, Senior Planner, City of High Point – knows of no current or future projects in the vicinity which might affect traffic on SR 1158.
- Michael Abuya, Western Planning Group 2, TPB – deferred to HPMPO staff.

Piedmont Triad Regional Travel Demand Model (PTRMv4.1)

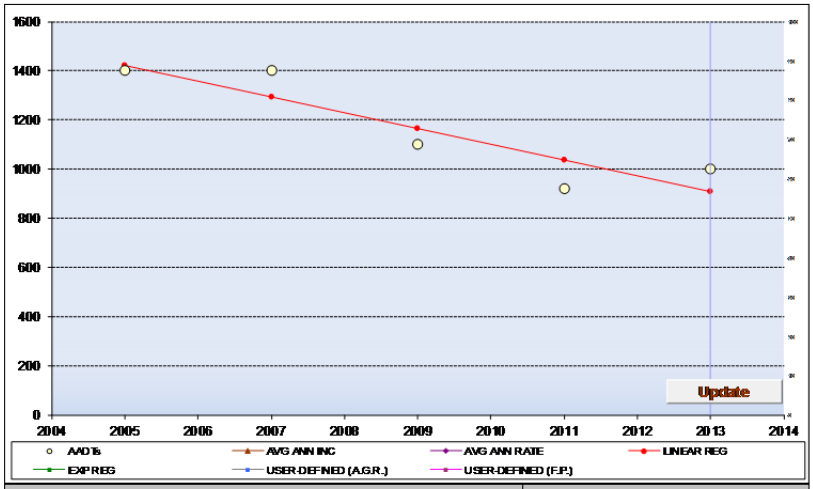
The 2013 and 2040 loaded networks were used during the preparation of this forecast – both are fiscally constrained to the HPMPO MTP.

Highway Link	ID#	raw output		Annual Growth Rate (%)
		2013	2040	
SR 1158	405006 (2013) 421847 (2040)	2067	2068	0.0

Historic AADT

The nearest AADT coverage count station on SR 1158 is approximately 1.5 miles south of bridge 54 and immediately north of NC 610. Traffic volume at that station is similar to that across bridge 54.

AADT TREND ANALYSIS — #2 -- [B-5723-A] SR 1158 (JACKSON LAKE RD), N OF NC 610



HISTORIC DATA	
Year	AADT
2005	1400
2007	1400
2009	1100
2011	920
2013	1000

STATISTICAL RESULTS	
LINEAR REG:	-64.0
LINEAR %:	-5.44%
EXPONENTIAL REG:	-5.32%
R-SQUARED	
LINEAR:	0.8114
EXPONENTIAL:	0.8034
NUMBER OF DATA POINTS:	5

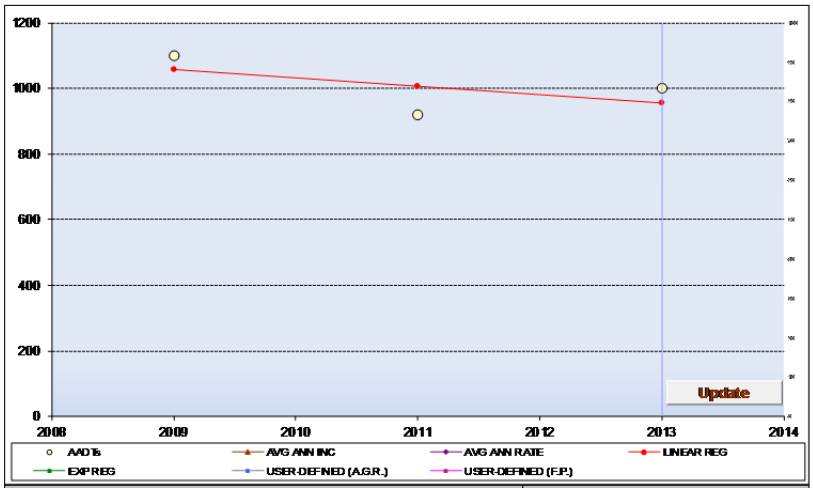
Print All

SHOW HISTORIC DATA:	SHOW FUTURE DATA:	SHOW STATION #:	
☑ LINEAR REGRESSION	☐ LINEAR REGRESSION	2- [B-5723-A] SR 1158 (JACKSON LAKE RD), N	
☐ EXPONENTIAL REGRESSION	☐ EXPONENTIAL REGRESSION	FUTYRS:	2013
	☐ USER-DEFINED (FUT PROJ)	#1	2013
☑ HISTORIC DATA	☐ USER-DEFINED (A.G.R.)	#2	2016
		#3	2030
		#4	2035
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION/TRANSP. PLANNING BRANCH		#5	2040

FUTURE PROJECTIONS:

Avg Ann Inc	Avg Ann Rate	LinearReg	Exp Reg
1000	1000	908	922
1000	1000	908	922
850	881	716	782
150	489	-180	364
-100	396	-500	277
-350	321	-820	211

AADT TREND ANALYSIS — -- [B-5723-A-Post US311] SR 1158 (JACKSON LAKE RD), N OF NC 610



HISTORIC DATA	
Year	AADT
2009	1100
2011	920
2013	1000

STATISTICAL RESULTS	
LINEAR REG:	-25.0
LINEAR %:	-2.45%
EXPONENTIAL REG:	-2.35%
R-SQUARED	
LINEAR:	0.3074
EXPONENTIAL:	0.2841
NUMBER OF DATA POINTS:	3

Print All

SHOW HISTORIC DATA:	SHOW FUTURE DATA:	SHOW STATION #:	
☑ LINEAR REGRESSION	☐ LINEAR REGRESSION	3- [B-5723-A-Post U S311] SR 1158 (JACKSON LA	
☐ EXPONENTIAL REGRESSION	☐ EXPONENTIAL REGRESSION	FUTYRS:	2013
	☐ USER-DEFINED (FUT PROJ)	#1	2013
☑ HISTORIC DATA	☐ USER-DEFINED (A.G.R.)	#2	2016
		#3	2030
		#4	2035
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION/TRANSP. PLANNING BRANCH		#5	2040

FUTURE PROJECTIONS:

Avg Ann Inc	Avg Ann Rate	LinearReg	Exp Reg
1000	1000	957	957
1000	1000	957	957
925	931	882	891
575	667	532	638
450	592	407	567
325	526	282	503

Field Data Collection

Traffic counts were taken for this project by Morton & Morton Design Services, PLLC, a Transportation Mobility & Safety Division contractor.

Location	Type of Count	Date	Count Number
SR 1158 at SR 1188	13-hr. TM	2/2/2016	16-08100

The NCDOT Traffic Survey Group reviewed the manual turning movement counts taken for this project and converted them to 24-hour (daily) traffic estimates. These daily estimates were then converted to AADT.

Location	Daily estimate	Seasonal adjustment*	AADT
SR 1158 north leg at SR 1188	1024	1.07	1096

** Seasonal adjustment factor from ATR Group 1 for Tuesdays in February.*

2016 AADT Methodology

Location	Historic AADT projected to 2016	Project Specific Count Data AADT	2016 AADT Estimate
SR 1158 north leg at SR 1188	882	1096	1100

Determination of Design Factors

TTSTs, duals, D, and Design Hour Volume were determined by analysis of manual turning movement / class counts obtained for this project.

The truck factors are within the range of expected values given the land use served by SR 1158. Design factors are the same for 2016 and 2040 since no substantial change in the function or character of traffic using SR 1158 is expected.

Design Factors (D, K)

Location	D – Directional Distribution		K – Peak Hour Factor	
	Project Count Data	Selected 2016 Value	Project Count Data	Selected 2016 Value
SR 1158 north leg at SR 1188	65% SB PM	65% SB PM	12.4%	12%

Design Factors for Trucks (Duals% / TTSTs%)

Location	Project Count Data	Selected 2016 Value
SR 1158 north leg at SR 1188	5.9 / 0.3	6 / 1

2040 AADT Methodology

Location	2016 AADT Estimate	Historic Growth Rate 2009-2013	MRM predicted growth rate	Applied Rate (*CAGR*)	2040 AADT Forecast
SR 1158 at Bridge 54	1100	-2.5%	0.0%	1.5%	1500

A higher rate of growth than that of the historical trend and model prediction was applied given the moderate AADT and the location of the project within the relatively high-growth I-85 corridor in Guilford County.