June 2, 2021

MEMORANDUM TO: Alison Kluttz, PE
Division Project Development Engineer
NCDOT Division 8

FROM: John Burris, PTP
HNTB North Carolina, PC

SUBJECT: Traffic Forecast for STIP Project U-5976
US 15-501 Traffic Circle & Other Intersection Improvements
From Voit Gilmore Lane (SR 1905) to Page Road (SR 1208)
Moore County

The North Carolina Department of Transportation (NCDOT) Transportation Planning Division (TPD) approves this forecast for U-5976 as of June 1, 2021.

Please find attached the 2045 Project-Level Traffic Forecast for State Transportation Improvement Program (STIP) Project U-5976. STIP Project U-5976 is proposed to upgrade existing US 15-501 from Voit Gilmore Lane (SR 1905) to Page Road (SR 1208), in Pinehurst and Southern Pines, NC (Moore County). STIP Project U-5976 is approximately 2.3 miles long and includes improvements to the Pinehurst Traffic Circle at US 15-501, NC 2 (Midland Road), and NC 211 (Yadkin Road) and improvements to the US 15-501 and Page Road (SR 1208) intersection. The traffic forecast for this project was requested by Alison Kluttz of NCDOT Division 8 in March 2021 as part of the 2018 Traffic Forecasting Limited Services Agreement (LSA) to be performed by HNTB North Carolina, P.C.

STIP Project U-5976 is currently programmed for right-of-way (ROW) to begin in fiscal year 2024 and construction to begin in fiscal year 2026, per the 2020 – 2029 STIP. The 2020 – 2029 STIP was approved by the NCDOT Board of Transportation on September 5, 2019, was most recently revised on April 19, 2021, and received Federal Highway Administration (FHWA) approval in Spring 2020.

The traffic forecast study area for U-5976 includes a total of 9 existing intersections, which includes the five-leg Pinehurst Traffic Circle. The following scenarios are included in this forecast:

- **2021 Base Year (BY):** the 2021 existing road network is assumed only
- **2045 Future Year (FY):** includes all projects programmed for construction in the 2020 – 2029 STIP

This traffic forecast includes two scenarios: Base Year and Future Year. Since this is an intersection / traffic circle improvement project, there are no specific design improvements that would attract additional traffic volumes in the study area. Therefore, the traffic volumes are not expected to change between No-Build and Build scenarios. The Base Year and Future Year forecasts can be used for both No-Build and Build scenarios.

There are no recently completed project-level traffic forecasts that are nearby the U-5976 forecast study area.

Travel Demand Model

The Moore County Travel Demand Model (TDM), most recently updated and effective on June 30, 2014, was used in the development of this forecast. The Moore County TDM has a BY of 2010 and a FY of 2040. The model includes all fiscally-constrained projects contained in the STIP at the time of the model's effective date, as well as socioeconomic data (population, households, employment, etc.) projections. For the purposes of the U-5976 forecast, model runs were completed after ensuring all relevant transportation projects proposed in the latest 2020 – 2029 STIP were included and by modifying the highway network to include projects if they were not originally in the model.

The North Carolina Statewide Model (NCSTM) (Generation 2.3, provided February 14, 2018, TransCAD 5 Build 1880) was also used in the development of this traffic forecast to assess heavy truck vehicle percentages. The NCSTM has a Base Year of 2011 and a Future Year of 2040.

Interpolation

To determine any intermediate years, straight-line interpolation may be used. AADT volumes may be extrapolated for up to two years immediately following 2045.

Certain assumptions were made in the development of the forecast and include the following:

Fiscal Constraint

For projects located within a RPO area, forecasts are fiscally constrained to the STIP. This means that only projects programmed for construction in the 2020 – 2029 STIP are considered constructed and open to traffic in the future year.

Development Activity

All recent and planned developments were reviewed with local planners and engineers and are assumed to be included in the official Base Year and Future Year Moore County TDM socioeconomic data sets.

Forecast Methodology

The 2021 BY traffic estimate volumes and design factors were developed by considering recent historic AADT, the projection of historic AADT to 2021, project specific count data, previously collected traffic count data from 2018, and applying engineering judgement. The traffic count data was collected on a weekday while the Moore County public school system was having in-person instruction (this was confirmed in a site visit on April 15, 2021 during data collection).

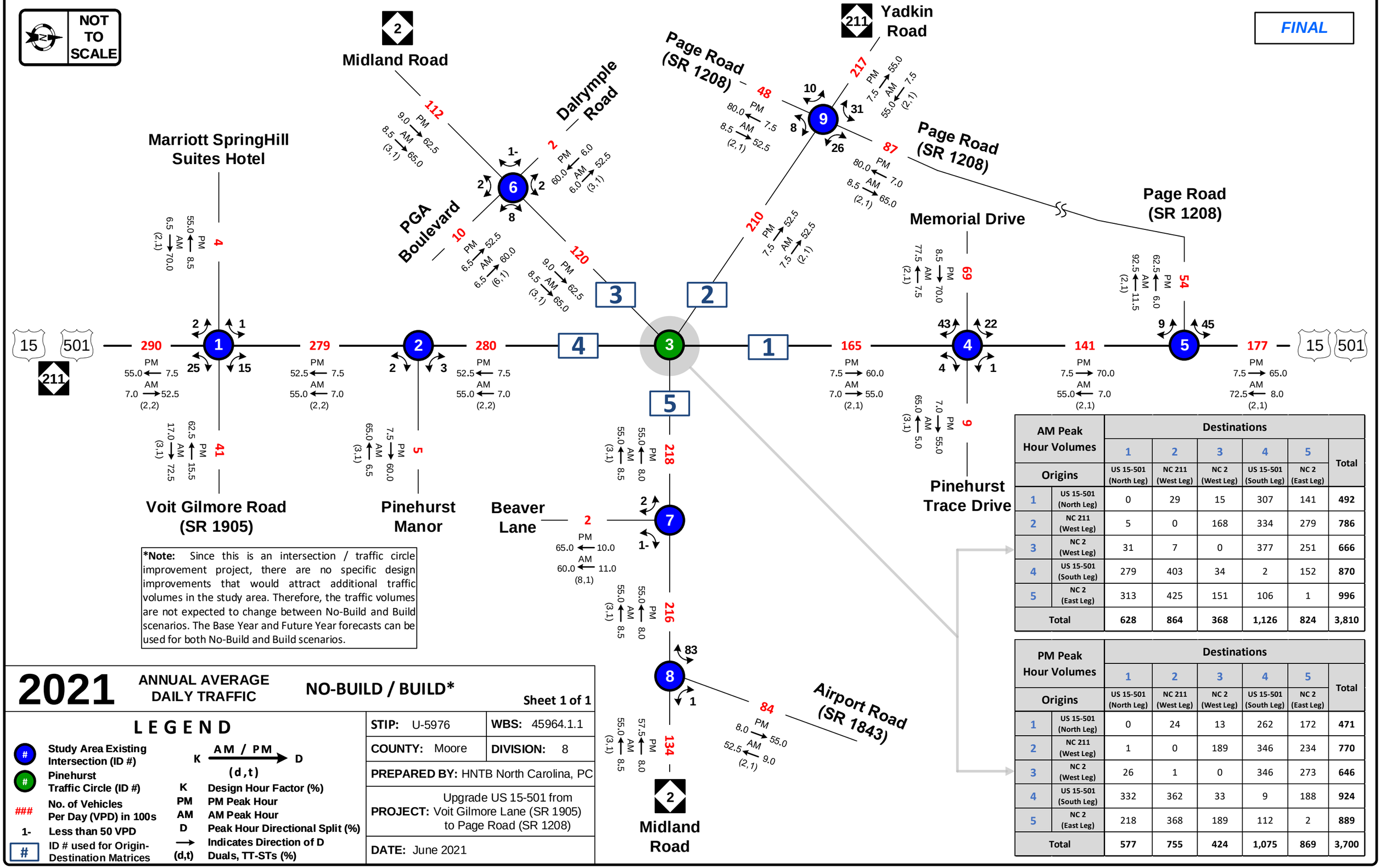
The 2045 FY traffic forecast volumes were developed using historic AADT growth rates, extrapolations of historical AADT volumes, and growth percentages calculated from the Moore County TDM.

If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request updated projections. If you have any questions or I can be of further assistance, please do not hesitate to call me at (919) 424-0483 or e-mail me at jburris@hntb.com.

cc: Keith Dixon (trafficforecast@ncdot.gov), NCDOT Transportation Planning Division
NCDOT Traffic Forecasting GIS Support (trafficforecastinggissupport@ncdot.gov)

NOT TO SCALE

FINAL



***Note:** Since this is an intersection / traffic circle improvement project, there are no specific design improvements that would attract additional traffic volumes in the study area. Therefore, the traffic volumes are not expected to change between No-Build and Build scenarios. The Base Year and Future Year forecasts can be used for both No-Build and Build scenarios.

AM Peak Hour Volumes		Destinations					
		1	2	3	4	5	Total
Origins		US 15-501 (North Leg)	NC 211 (West Leg)	NC 2 (West Leg)	US 15-501 (South Leg)	NC 2 (East Leg)	
1	US 15-501 (North Leg)	0	29	15	307	141	**492**
2	NC 211 (West Leg)	5	0	168	334	279	**786**
3	NC 2 (West Leg)	31	7	0	377	251	**666**
4	US 15-501 (South Leg)	279	403	34	2	152	**870**
5	NC 2 (East Leg)	313	425	151	106	1	**996**
Total		**628**	**864**	**368**	**1,126**	**824**	**3,810**

PM Peak Hour Volumes		Destinations					
		1	2	3	4	5	Total
Origins		US 15-501 (North Leg)	NC 211 (West Leg)	NC 2 (West Leg)	US 15-501 (South Leg)	NC 2 (East Leg)	
1	US 15-501 (North Leg)	0	24	13	262	172	**471**
2	NC 211 (West Leg)	1	0	189	346	234	**770**
3	NC 2 (West Leg)	26	1	0	346	273	**646**
4	US 15-501 (South Leg)	332	362	33	9	188	**924**
5	NC 2 (East Leg)	218	368	189	112	2	**889**
Total		**577**	**755**	**424**	**1,075**	**869**	**3,700**

2021 ANNUAL AVERAGE DAILY TRAFFIC

NO-BUILD / BUILD*

Sheet 1 of 1

LEGEND

- **#** — Study Area Existing Intersection (ID #)
- **#** — Pinehurst Traffic Circle (ID #)
- **###** — No. of Vehicles Per Day (VPD) in 100s
- **1-** — Less than 50 VPD
- **#** — ID # used for Origin-Destination Matrices

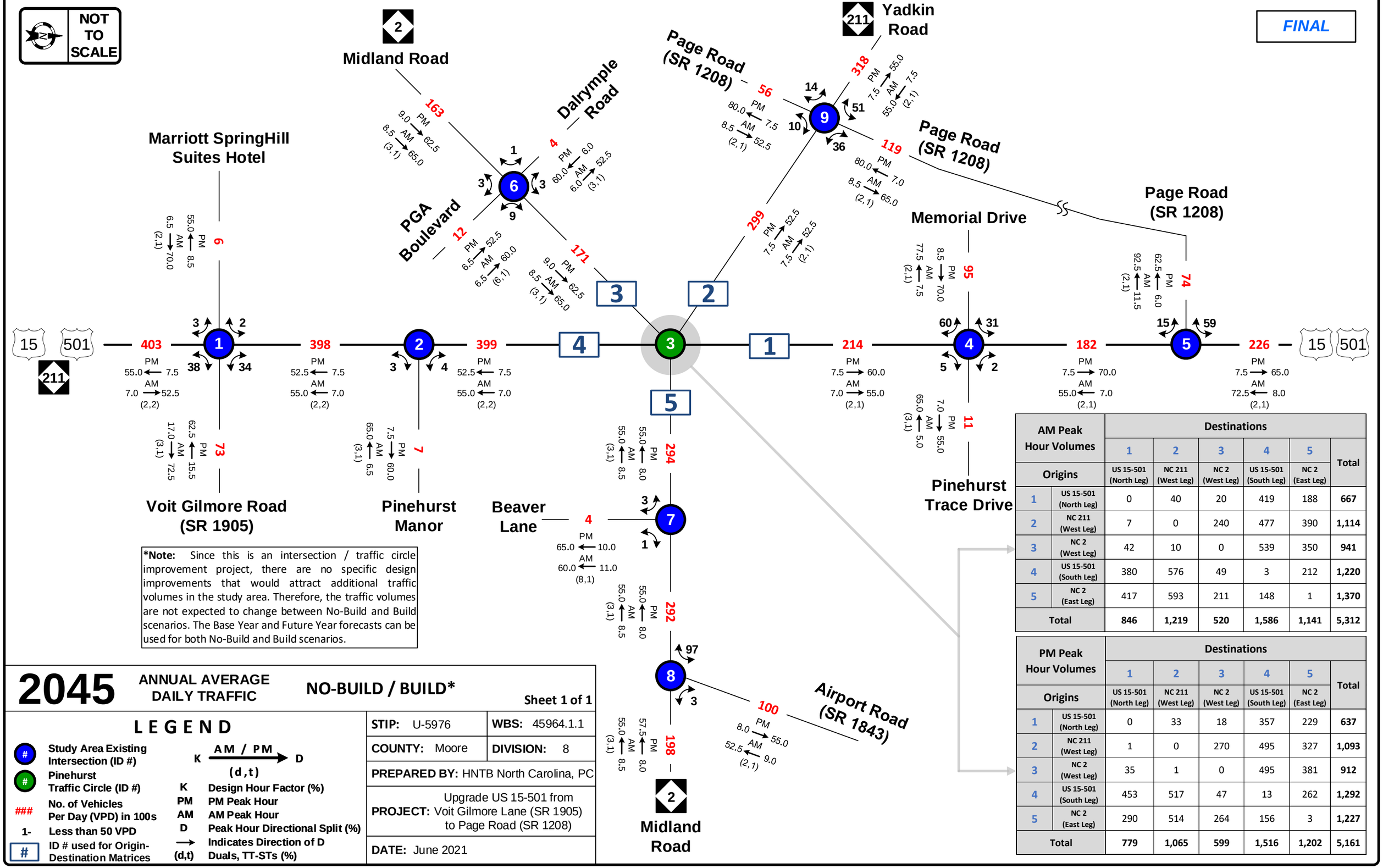
K — AM / PM → D — (d,t)

- **K** — Design Hour Factor (%)
- **PM** — PM Peak Hour
- **AM** — AM Peak Hour
- **D** — Peak Hour Directional Split (%)
- **→** — Indicates Direction of D
- **(d,t)** — Duals, TT-STs (%)

STIP: U-5976	**WBS:** 45964.1.1
COUNTY: Moore	**DIVISION:** 8
PREPARED BY: HNTB North Carolina, PC	
PROJECT: Upgrade US 15-501 from Voit Gilmore Lane (SR 1905) to Page Road (SR 1208)	
DATE: June 2021	

NOT TO SCALE

FINAL



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AM Peak Hour Volumes		Destinations					
		1	2	3	4	5	Total
Origins		US 15-501 (North Leg)	NC 211 (West Leg)	NC 2 (West Leg)	US 15-501 (South Leg)	NC 2 (East Leg)	
1	US 15-501 (North Leg)	0	40	20	419	188	**667**
2	NC 211 (West Leg)	7	0	240	477	390	**1,114**
3	NC 2 (West Leg)	42	10	0	539	350	**941**
4	US 15-501 (South Leg)	380	576	49	3	212	**1,220**
5	NC 2 (East Leg)	417	593	211	148	1	**1,370**
Total		**846**	**1,219**	**520**	**1,586**	**1,141**	**5,312**

PM Peak Hour Volumes		Destinations					
		1	2	3	4	5	Total
Origins		US 15-501 (North Leg)	NC 211 (West Leg)	NC 2 (West Leg)	US 15-501 (South Leg)	NC 2 (East Leg)	
1	US 15-501 (North Leg)	0	33	18	357	229	**637**
2	NC 211 (West Leg)	1	0	270	495	327	**1,093**
3	NC 2 (West Leg)	35	1	0	495	381	**912**
4	US 15-501 (South Leg)	453	517	47	13	262	**1,292**
5	NC 2 (East Leg)	290	514	264	156	3	**1,227**
Total		**779**	**1,065**	**599**	**1,516**	**1,202**	**5,161**

2045 ANNUAL AVERAGE DAILY TRAFFIC

NO-BUILD / BUILD*

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