

July 6, 2023

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 28, 2023.

Please find attached the 2050 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 North Carolina Department of Transportation (NCDOT) Division 8 in April 2023 as part of the 2021 Transportation Planning Division (TPD) 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 May 16, 2023, and received Federal Highway Administration (FHWA) approval in Spring 2020.

The traffic forecast study area for U-5976 includes a total of 7 existing intersections, which includes the five-leg Pinehurst Traffic Circle. The following scenarios are included in this forecast:

- **2023 Base Year (BY):** the 2023 existing road network is assumed only
- **2050 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 induce 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.

The 2021 U-5976 traffic forecast is the only recently completed project-level traffic forecasts that is nearby the U-5976 forecast study area. This forecast uses the same applied growth rates as the 2021 traffic forecast, but with 2023 BY traffic count data.

### **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 4.5, TransCAD 7 Build 12375) was also used in the development of this traffic forecast to assess heavy truck vehicle percentages. The NCSTM has a Base Year of 2017 and a Future Year of 2045.

### **Interpolation**

To determine any intermediate years, straight-line interpolation may be used. AADT volumes may be extrapolated for up to two years immediately following 2050.

### **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 2023 BY traffic estimate volumes and design factors were developed by considering recent historic AADT, the projection of historic average annual daily traffic (AADT) to 2023, project specific count data, 2021 forecast AADT, 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.

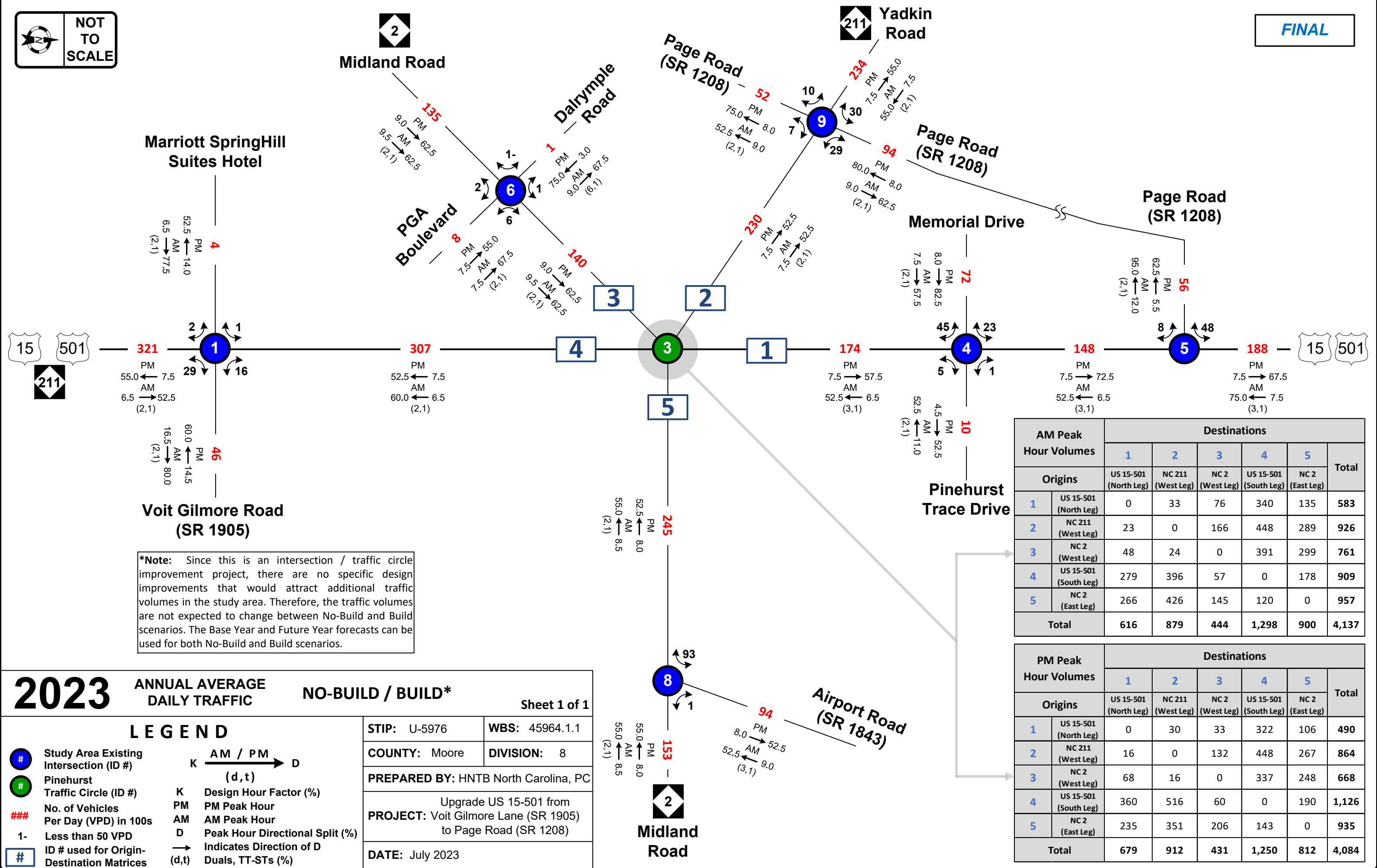
The 2050 FY traffic forecast volumes were developed using historic AADT growth rates, extrapolations of historical AADT volumes, and growth percentages calculated from the Moore County TDM.

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](mailto:jburris@hntb.com).

**cc:** Keith Dixon (trafficforecast@ncdot.gov), NCDOT Transportation Planning Division



**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					Total
		1	2	3	4	5	
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	76	340	135	583
2	NC 211 (West Leg)	23	0	166	448	289	926
3	NC 2 (West Leg)	48	24	0	391	299	761
4	US 15-501 (South Leg)	279	396	57	0	178	909
5	NC 2 (East Leg)	266	426	145	120	0	957
<b>Total</b>		<b>616</b>	<b>879</b>	<b>444</b>	<b>1,298</b>	<b>900</b>	<b>4,137</b>

PM Peak Hour Volumes		Destinations					Total
		1	2	3	4	5	
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	30	33	322	106	490
2	NC 211 (West Leg)	16	0	132	448	267	864
3	NC 2 (West Leg)	68	16	0	337	248	668
4	US 15-501 (South Leg)	360	516	60	0	190	1,126
5	NC 2 (East Leg)	235	351	206	143	0	935
<b>Total</b>		<b>679</b>	<b>912</b>	<b>431</b>	<b>1,250</b>	<b>812</b>	<b>4,084</b>

**2023 ANNUAL AVERAGE DAILY TRAFFIC NO-BUILD / BUILD\* Sheet 1 of 1**

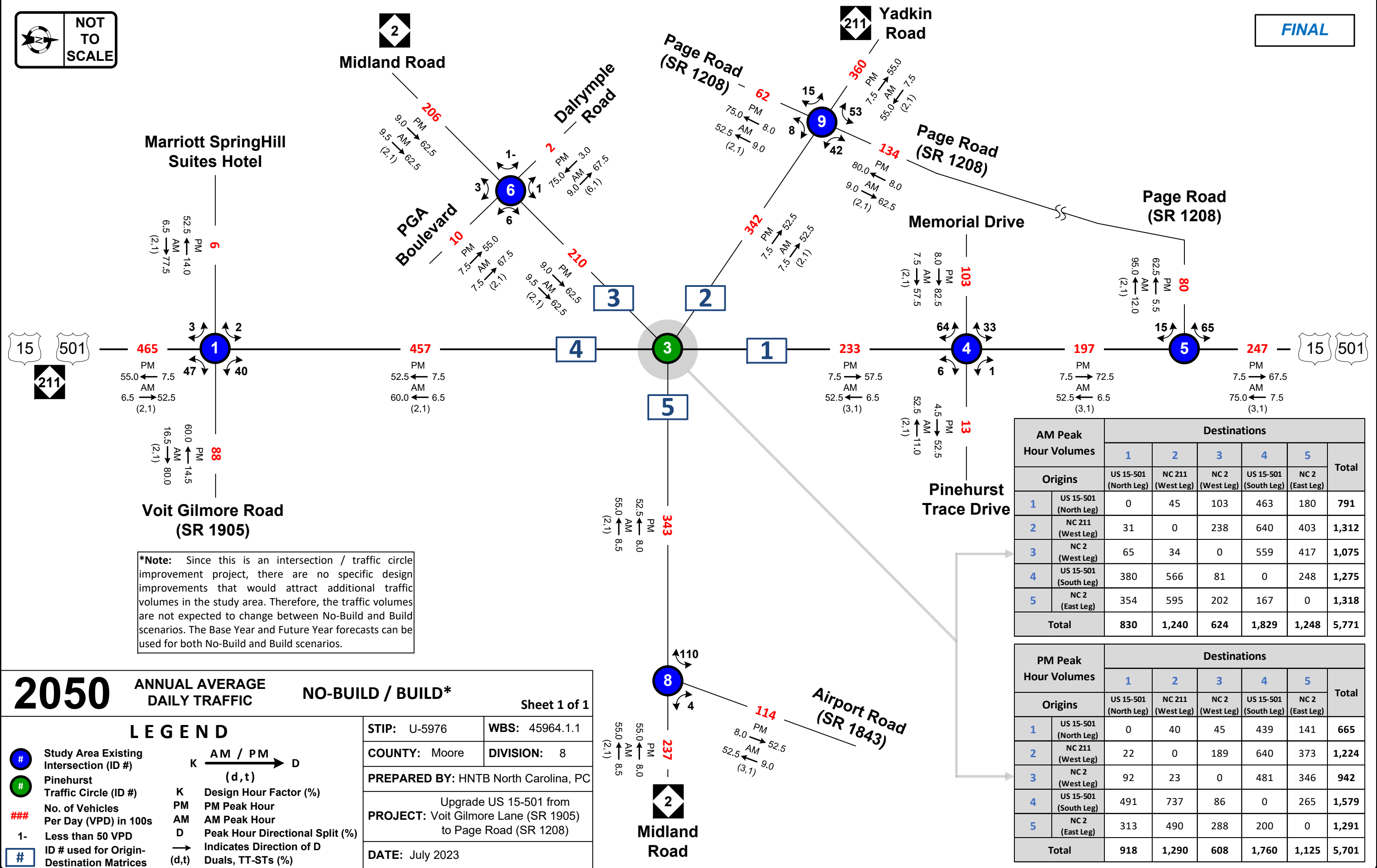
**LEGEND**

- 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  $\frac{AM}{PM} \rightarrow D$  (d,t) Design Hour Factor (%)
- PM PM Peak Hour
- AM AM Peak Hour
- D Peak Hour Directional Split (%)
- $\rightarrow$  Indicates Direction of D (d,t)
- $\rightarrow$  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: July 2023



**FINAL**



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		1	2	3	4	5	
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	45	103	463	180	791
2	NC 211 (West Leg)	31	0	238	640	403	1,312
3	NC 2 (West Leg)	65	34	0	559	417	1,075
4	US 15-501 (South Leg)	380	566	81	0	248	1,275
5	NC 2 (East Leg)	354	595	202	167	0	1,318
<b>Total</b>		<b>830</b>	<b>1,240</b>	<b>624</b>	<b>1,829</b>	<b>1,248</b>	<b>5,771</b>

PM Peak Hour Volumes		Destinations					Total
		1	2	3	4	5	
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	45	439	141	665
2	NC 211 (West Leg)	22	0	189	640	373	1,224
3	NC 2 (West Leg)	92	23	0	481	346	942
4	US 15-501 (South Leg)	491	737	86	0	265	1,579
5	NC 2 (East Leg)	313	490	288	200	0	1,291
<b>Total</b>		<b>918</b>	<b>1,290</b>	<b>608</b>	<b>1,760</b>	<b>1,125</b>	<b>5,701</b>

**2050 ANNUAL AVERAGE DAILY TRAFFIC NO-BUILD / BUILD\*** Sheet 1 of 1

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