

TRAFFIC FORECAST COVER LETTER

November 12, 2024

MEMORANDUM TO: Jeffrey A. Stroder, PE
NCDOT Division 8 Project Engineer

FROM: Peter Trencansky, PE, PTOE, AICP
Patriot Transportation Engineering, PLLC

SUBJECT: Traffic Forecast for I-6055
Richmond County and Scotland County
Upgrade US 74 to interstate from US 74 BUS in Richmond County to US 74 BUS in Scotland County

This forecast has been reviewed and approved by the NCDOT Transportation Planning Division as of November 12, 2024.

Please find attached the 2024 and 2050 traffic forecast for NCDOT STIP Project I-6055 in Richmond and Scotland Counties. The proposed project would upgrade US 74 to an Interstate (I-74) from US 74 BUS in Richmond County to US 74 BUS in Scotland County. The traffic forecast for this project was requested by NCDOT Division 8 in support of project development activities for the project.

The project is located within the boundaries of the Lumber River Rural Planning Organization (LRRPO). The following six scenarios are provided in this forecast:

- 2024 Base Year (Existing Conditions)
- 2024 Base Year Build, Alternative 1
- 2024 Base Year Build, Alternative 2
- 2050 Future Year No-Build
- 2050 Future Year Build, Alternative 1
- 2050 Future Year Build, Alternative 2

Fiscal Constraint

The project is located within the LRRPO boundaries; therefore, there is no MTP for the area and the traffic forecast was developed to match the assumptions of the NCDOT State Transportation Improvement Program (STIP).

The study project is included in the North Carolina Department of Transportation, *2024-2033 State Transportation Improvement Program* (October 2024).

The 2024-2033 STIP includes the following projects in the area which may affect travel patterns on the subject project and are described as follows:

- U-5977 – US 15/US 401 from South Carolina State Line to south of SR 1105 (Turnpike Rd) – widen to multi-lanes.
- HS-2008E – US 74 at NC 144 (Morgan St)/St Johns Church Rd – convert to signalized RCI

Travel Demand Model

The study area is included in two travel demand models. The Rockingham Travel Demand Model (2010/2040, received 9/11/24), provided by NCDOT, was utilized as a tool in the development of the traffic forecast. The Laurinburg Travel Demand Model (2010/2040, received 9/10/24), provided by NCDOT, was also utilized as a tool in the development of the traffic forecast.

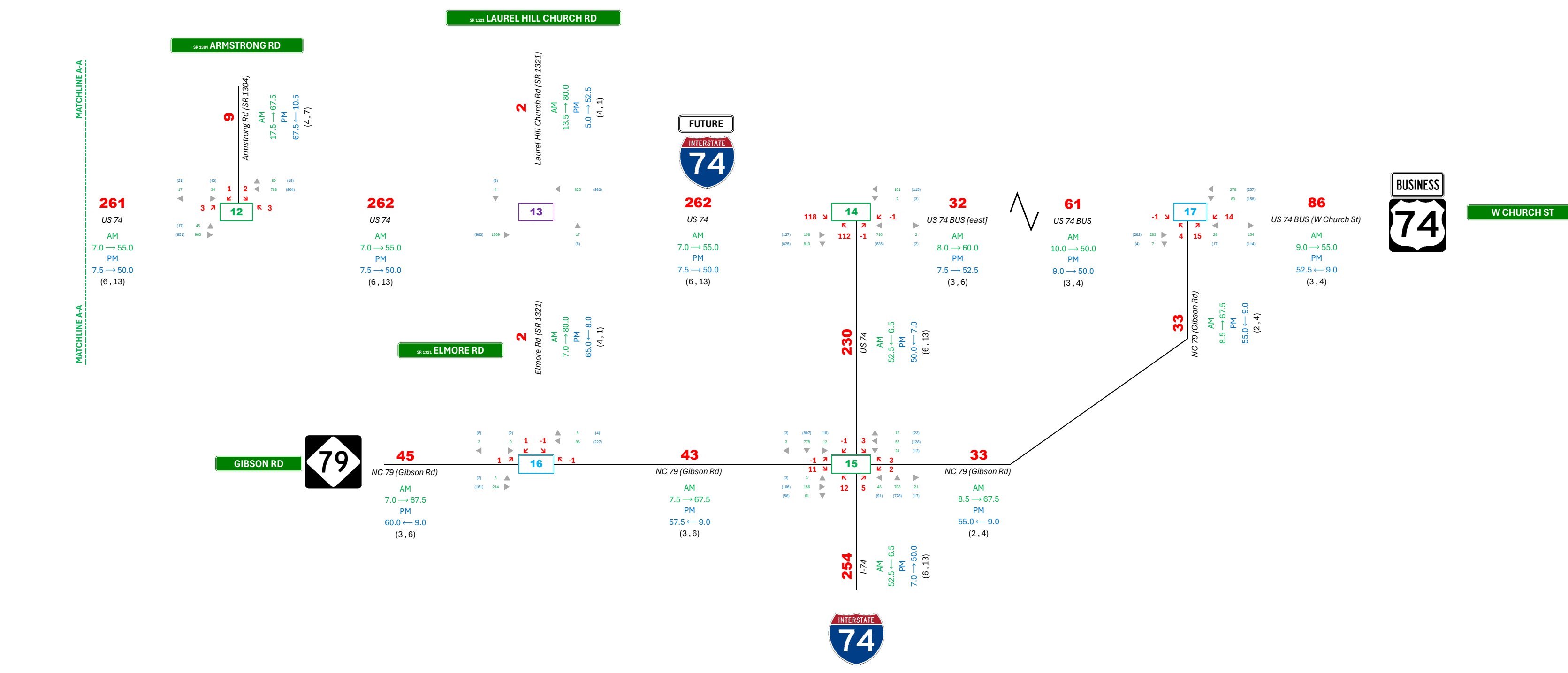
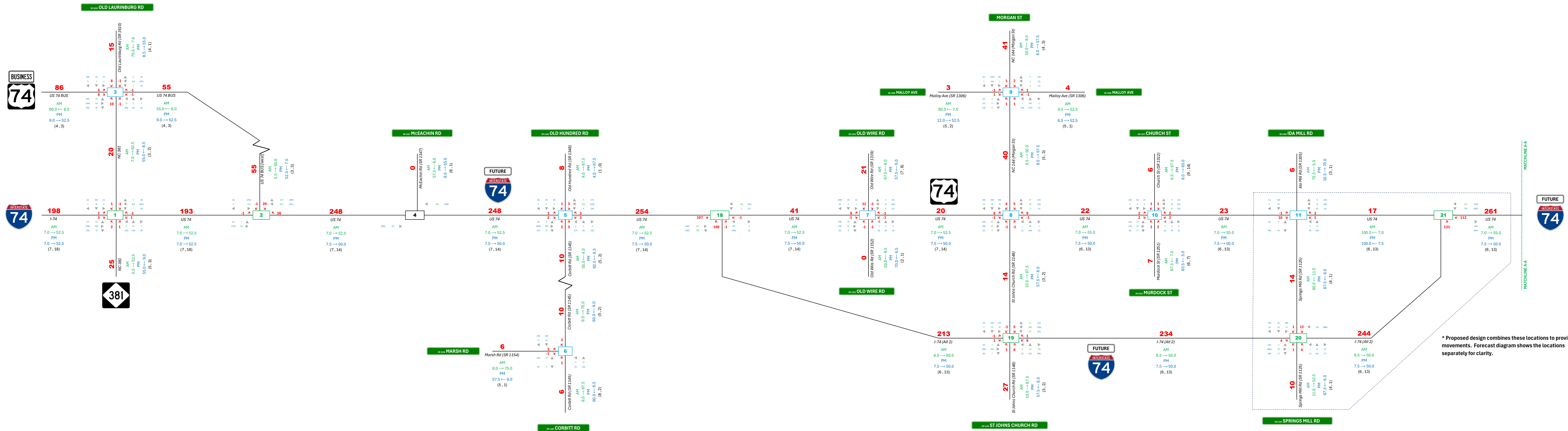
Forecast Methodology

The 2024 Base Year No-Build traffic volumes and design factors were developed based upon current counts, historic counts and historic AADT trend projections. The 2050 future year no-build traffic volumes generally included the development of compound annual growth rates between two model years. The build alternative volumes generally included the development of diversion rates between like model years with different scenarios. The compound annual growth rates or diversion rates were then applied to the AADT volumes from another scenario to develop initial volumes for each scenario. Engineering judgment adjustments were applied as needed in finalizing the volumes in order to develop the forecast.

Interpolation/Extrapolation

To estimate AADT volumes between 2024 and 2050, straight line interpolation between the 2024 and the 2050 scenarios is acceptable. AADT volumes may be extrapolated for up to two years immediately following 2050. If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request updated projections at this location.

cc: Jeffrey Teague, PE, Division 8, Division Project Development Engineer (jlteague@ncdot.gov)
NCDOT Traffic Forecast Engineer (trafficforecast@ncdot.gov)
NCDOT Connect Site



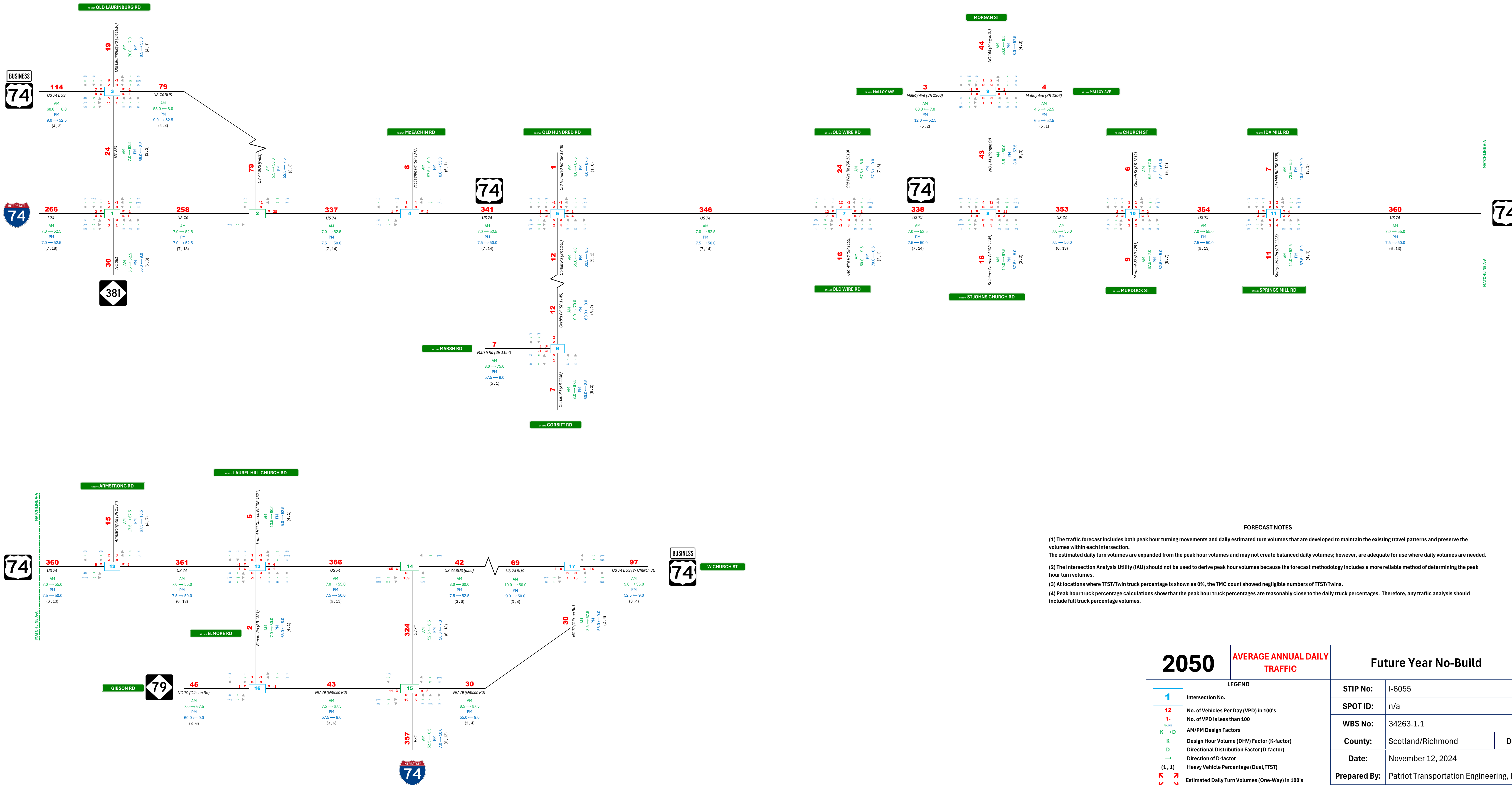
* Proposed design combines these locations to provide all movements. Forecast diagram shows the locations separately for clarity.

FORECAST NOTES

- (1) The traffic forecast includes both peak hour turning movements and daily estimated turn volumes that are developed to maintain the existing travel patterns and preserve the volumes within each intersection. The estimated daily turn volumes are expanded from the peak hour volumes and may not create balanced daily volumes; however, are adequate for use where daily volumes are needed.
- (2) The Intersection Analysis Utility (IAU) should not be used to derive peak hour volumes because the forecast methodology includes a more reliable method of determining the peak hour turn volumes.
- (3) At locations where TTST/Twin truck percentage is shown as 0%, the TMC count showed negligible numbers of TTST/Twins.
- (4) Peak hour truck percentage calculations show that the peak hour truck percentages are reasonably close to the daily truck percentages. Therefore, any traffic analysis should include full truck percentage volumes.

2024 AVERAGE ANNUAL DAILY TRAFFIC		Base Year Build - Alternative 2		SHEET 1 OF 1
LEGEND		STIP No:	I-6055	
1	Intersection No.	SPOT ID:	n/a	
12	No. of Vehicles Per Day (VPD) in 100's	WBS No:	34263.1.1	
1-	No. of VPD is less than 100	County:	Scotland/Richmond	Division: 8/8
K	AM/PM Design Factors	Date:	November 12, 2024	
K	Design Hour Volume (DHV) Factor (K-factor)	Prepared By:	Patriot Transportation Engineering, PLLC	
D	Directional Distribution Factor (D-factor)	Location:	US 74 (Andrew Jackson Hwy) - Laurinburg/Rockingham	
→	Direction of D-factor	Project:	Upgrade to Interstate	
(1, 1)	Heavy Vehicle Percentage (Dual, TTST)			
↔	Estimated Daily Turn Volumes (One-Way) in 100's			
▲	Peak Hour Turn Volumes [AM/PM]			
▼	Peak Hour Turn Volumes [AM/PM]			

Intersection
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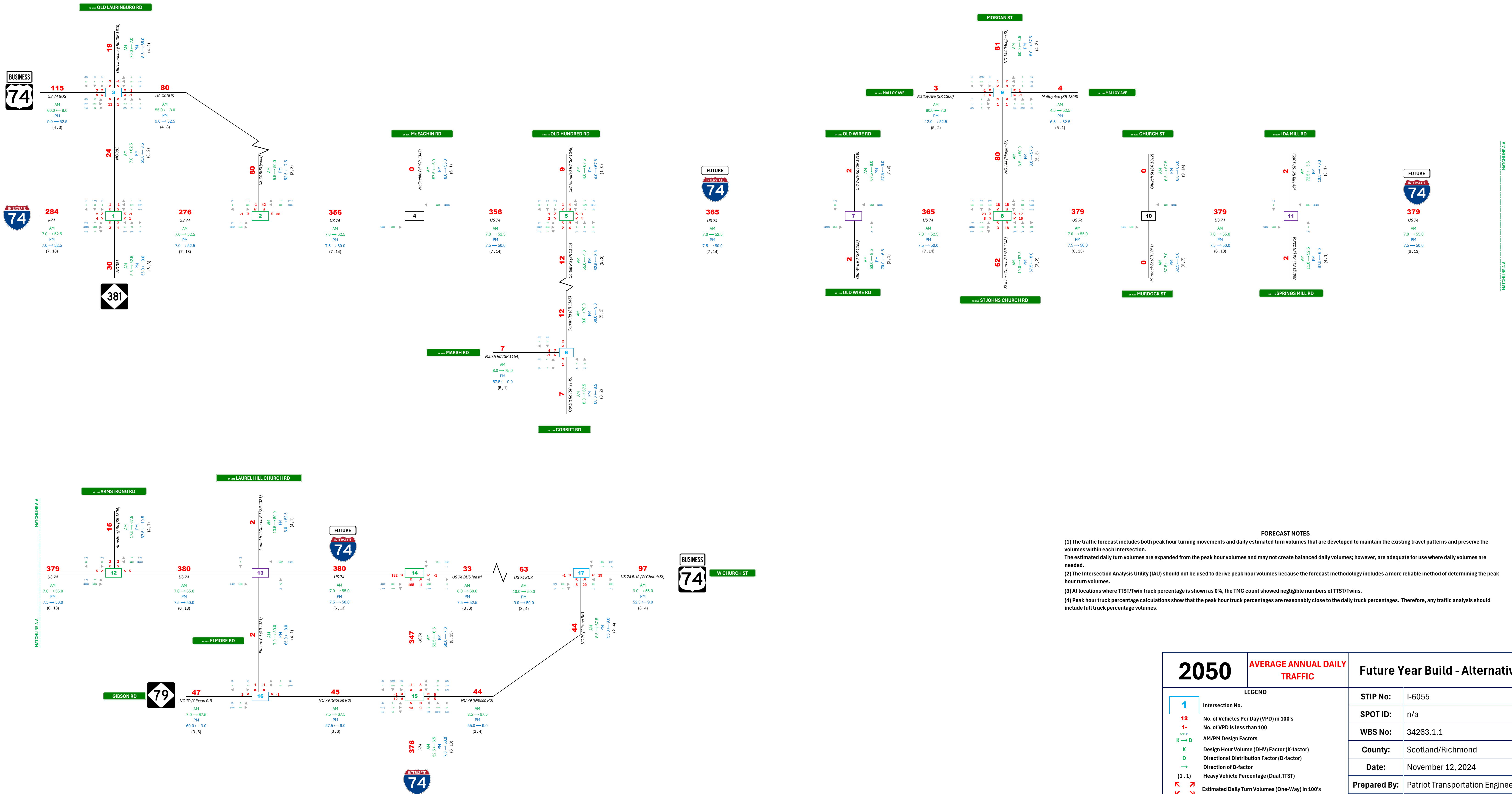


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2050 AVERAGE ANNUAL DAILY TRAFFIC		Future Year No-Build		SHEET 1 OF 1
LEGEND				
1	Intersection No.	STIP No:	I-6055	
12	No. of Vehicles Per Day (VPD) in 100's	SPOT ID:	n/a	
1-	No. of VPD is less than 100	WBS No:	34263.1.1	
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(1, 1)	Heavy Vehicle Percentage (Dual, TTST)	Project:	Upgrade to Interstate	
↔	Estimated Daily Turn Volumes (One-Way) in 100's			
▲	0 (0)			
◀	0 (0)			
▼	0 (0)			

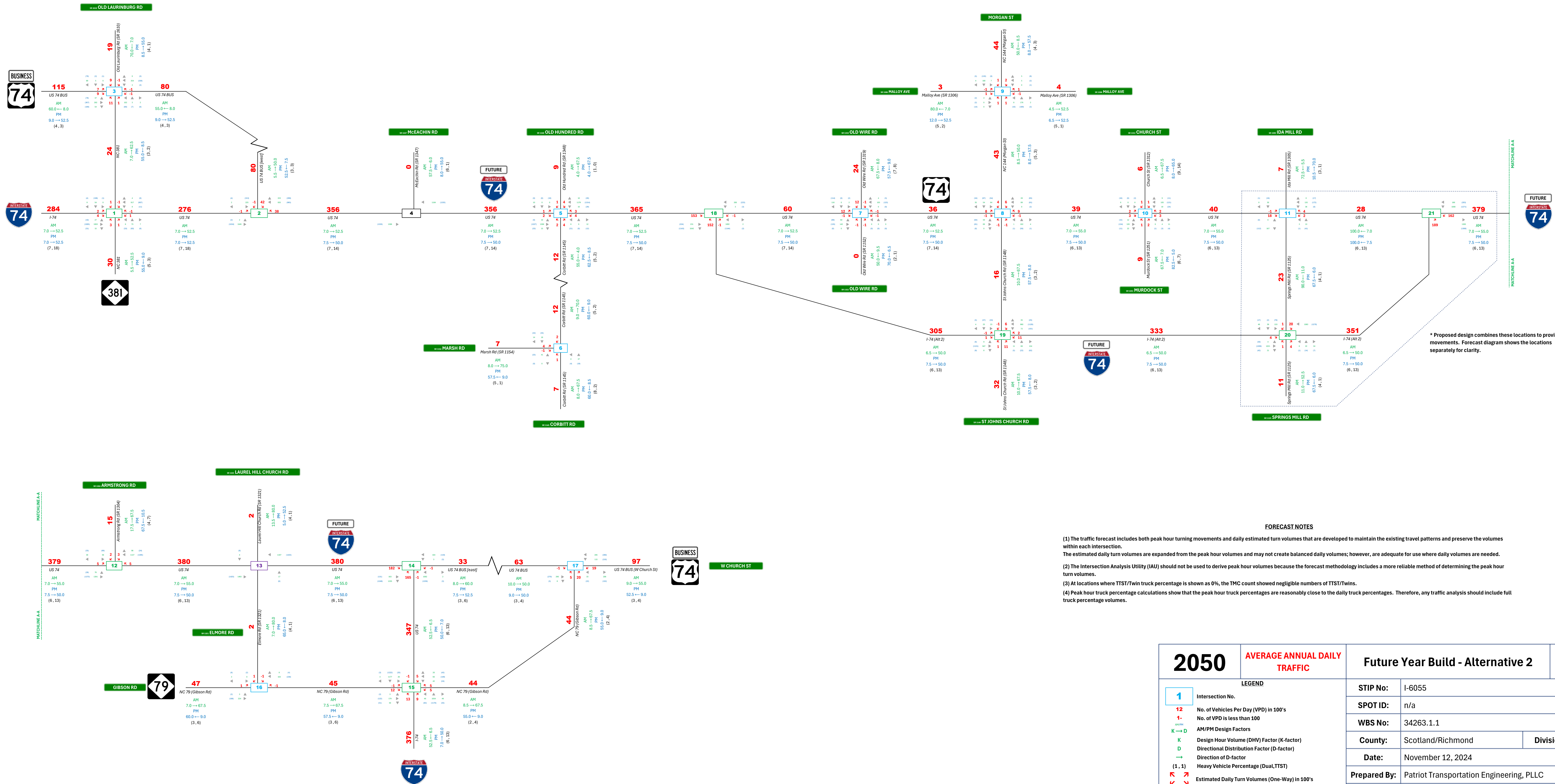
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2050	AVERAGE ANNUAL DAILY TRAFFIC	Future Year Build - Alternative 1		SHEET 1 OF 1
	LEGEND			
1	Intersection No.	STIP No:	I-6055	
12	No. of Vehicles Per Day (VPD) in 100's	SPOT ID:	n/a	
1-	No. of VPD is less than 100	WBS No:	34263.1.1	
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→	Direction of D-factor	Location:	US 74 (Andrew Jackson Hwy) - Laurinburg/Rockingham	
(1, 1)	Heavy Vehicle Percentage (Dual, TTST)	Project:	Upgrade to Interstate	
K → D	Estimated Daily Turn Volumes (One-Way) In 100's			
▲ (0, 0)				
● (0, 0)	Peak Hour Turn Volumes [AM/PM]			
▼ (0, 0)				

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2050	AVERAGE ANNUAL DAILY TRAFFIC	Future Year Build - Alternative 2		SHEET 1 OF 1
	LEGEND			
1	Intersection No.	STIP No:	I-6055	
12	No. of Vehicles Per Day (VPD) in 100's	SPOT ID:	n/a	
1-	No. of VPD is less than 100	WBS No:	34263.1.1	
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