

Traffic Forecast Report

STIP U-5518

*Improve US 70 (Glenwood Avenue) from
SR 3067 (TW Alexander Drive) to I-540*

Wake and Durham Counties, NC

WBS No: 43612.1.1

February 2023

PREPARED FOR:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PROJECT MANAGEMENT UNIT

PREPARED BY:

STV ENGINEERS, INC.
900 WEST TRADE STREET, SUITE 715
CHARLOTTE, NC 28202





Traffic Forecast Cover Letter

February 2023

TO: Elmo Vance
Project Manager – Divisions 5 & 8, NCDOT Project Management Unit

FROM: Cory Steiss, PE
STV Engineers, Inc.

SUBJECT: STIP Project U-5518, Division 5, Durham/Wake Counties

The NCDOT Transportation Planning Division has reviewed and approved this Traffic Forecast for U-5518 as of February 14, 2023.

Please find attached the 2022/2050 traffic forecast for State Transportation Improvement Program (STIP) project number U-5518. The project proposes to improve US 70 (Glenwood Avenue) from SR 3067 (TW Alexander Drive) to I-540 with three build alternatives. The project is located within the boundaries of the Capital Area Metropolitan Planning Organization (CAMPO) and the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHCMPO). Included in the traffic forecast is the analysis for four base year scenarios for year 2022 and four future year scenarios for year 2050. All three build alternatives propose an interchange at US 70 (Glenwood Avenue) and SR 3109 (Brier Creek Parkway). The evaluated scenarios are:

- 2022 Base Year No-Build (BY NB)
- 2022 Base Year Build Alternative 1 (BYB Alt 1) – Full Interchange for US 70 (Glenwood Avenue) at SR 3067 (TW Alexander Drive)
- 2022 Base Year Build Alternative 2 (BYB Alt 2) – Grade Separation for US 70 (Glenwood Avenue) at SR 3067 (TW Alexander Drive)
- 2022 Base Year Build Alternative 3 (BYB Alt 3) – Partial Interchange for US 70 (Glenwood Avenue) at SR 3067 (TW Alexander Drive)
- 2050 Future Year No-Build (FY NB)
- 2050 Future Year Build Alternative 1 (FYB Alt 1) – Full Interchange for US 70 (Glenwood Avenue) at SR 3067 (TW Alexander Drive)
- 2050 Future Year Build Alternative 2 (FYB Alt 2) – Grade Separation for US 70 (Glenwood Avenue) at SR 3067 (TW Alexander Drive)
- 2050 Future Year Build Alternative 3 (FYB Alt 3) – Partial Interchange for US 70 (Glenwood Avenue) at SR 3067 (TW Alexander Drive)

The following individuals were consulted during the development of this forecast:

- David Keilson, PE – Division Planning Engineer, NCDOT Division 5
- Sara Young – Planning Director, Durham County
- Bo Dobrzanski, AICP, CZO – Assistant Planning Director, City of Durham
- Phil Geary, PE – TPD Contact for CAMPO
- Julie E. Bogle, PE – TPD Contact for DCHCMPO



Fiscal Constraint: The 2020-2029 STIP, 2050 CAMPO Metropolitan Transportation Plan (MTP), and 2050 DCHCMPO MTP were utilized in determining projects in the vicinity that may have impacts to traffic. Projects that are anticipated to directly affect the proposed project and are assumed to be complete and open to traffic by 2050 are listed below:

- U-5720 – Upgrade US 70 to a controlled access facility from Lynn Road to east of Page Road Extension; Convert US 70 at Miami Boulevard to an interchange
- Leesville Road Extension (MTP ID number 53 - DCHCMPO) – Page Road Extension extends to Leesville Road on the north side of US 70
- Aviation Parkway Extension (Project F17 - CAMPO)– Aviation Parkway extended to US 70 from Globe Road
- Northern Durham Parkway (MTP ID number 83.11 – DCHCMPO) – Northern Durham Parkway from the Aviation Parkway connection with US 70 to NC 98
- TW Alexander Drive Extension (Project A155c/A86b - CAMPO) – TW Alexander Drive extends from current termination east of Passage Way to Leesville Road

Development Activity: Local Planners noted that there are multiple developments occurring along US 70 within the project area. One development was noted to be located south of US 70 and west of Page Road Extension. At the time of this forecast, a specific land use was not known for this development. A multi-family development was also noted on Lumley Road south of I-540. At the intersection of ACC Boulevard and SR 3067 (TW Alexander Drive), there is a planned multi-family development. Available development information was reviewed and considered when projecting growth in the area for the future forecasts.

Travel Demand Model: The Triangle Regional Travel Demand Model was utilized in TransCAD® v6 r2 Build 9195 in development of forecasting values. The model has a base year of 2016 and a design year of 2050. The base year model did not include SR 2095 (Page Road Extension) from US 70 (Glenwood Avenue) to Leesville Road. This portion was added to the future model to be consistent with the DCHCMPO Metropolitan Transportation Plan (MTP). The model represents daily highway trips for each link as a part of the analysis.

Forecast Methodology: The 2022 Base Year No-Build traffic volumes and design factors were developed based upon current counts, historic AADT, and previous forecasts. The 2050 Future Year No Build traffic volumes included the development of compound annual growth rates between 2022 and 2050 utilizing linear regression projection of historical AADT data and the Triangle Regional Travel Demand Model. The three base year build alternatives and three future year build alternatives include the build out of U-5518 as summarized above.

The travel demand model in both the base and future year was modified to include the planned improvements for each build alternative. With the build out of each build alternative, model values between the no-build and build scenarios were compared to summarize a percentage increase/decrease for each roadway link. These differences in model values were reviewed to ensure consistency with the anticipated traffic diversion as a result of the proposed improvements. The percentage change between model values was applied to the no-build traffic estimate for the base scenario to develop each base year build forecast. Additionally, the percentage change between model values was applied to the future year no-build traffic forecast to develop each future year build forecast. Adjustments were applied using engineering judgment as needed in finalizing the volumes in order to develop balanced forecasts.



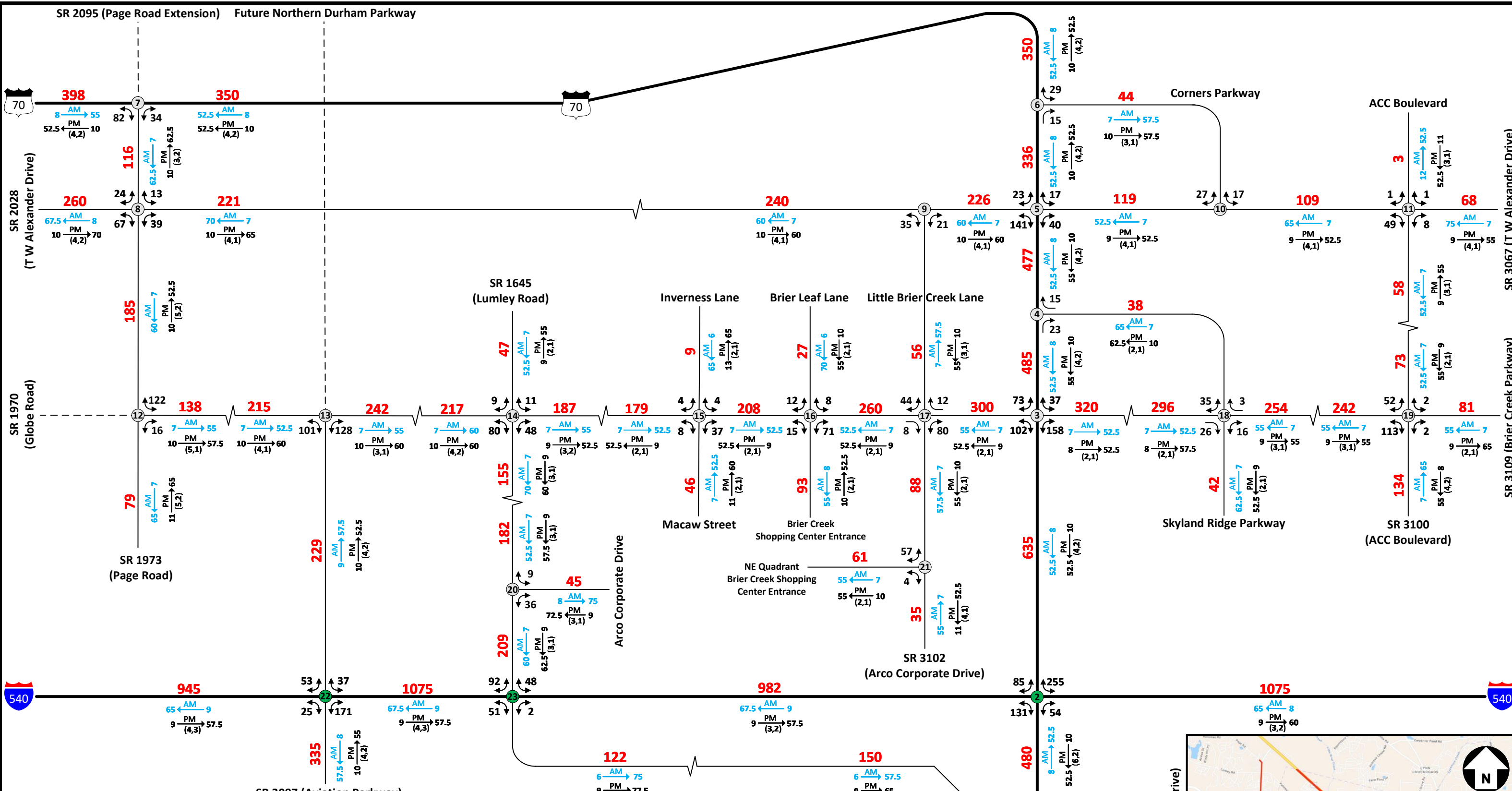
Interpolation/Extrapolation: To estimate AADT volumes between 2022 and 2050, straight line interpolation may be used. AADT volumes may be extrapolated for up to two years immediately following 2050. If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request updated projections at this location.

cc (with Attachments):

Traffic Forecast@ncdot.gov

Keith Dixon, Transportation Planning Division

File Copy: U-5518 Durham/Wake Counties



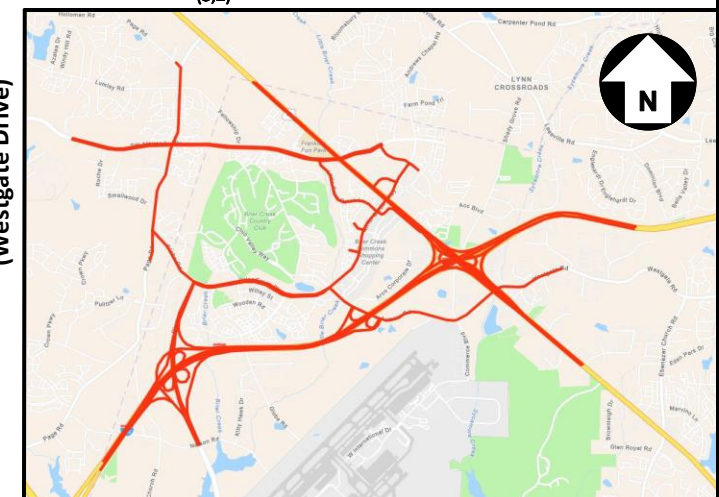
2022 AVERAGE ANNUAL DAILY TRAFFIC

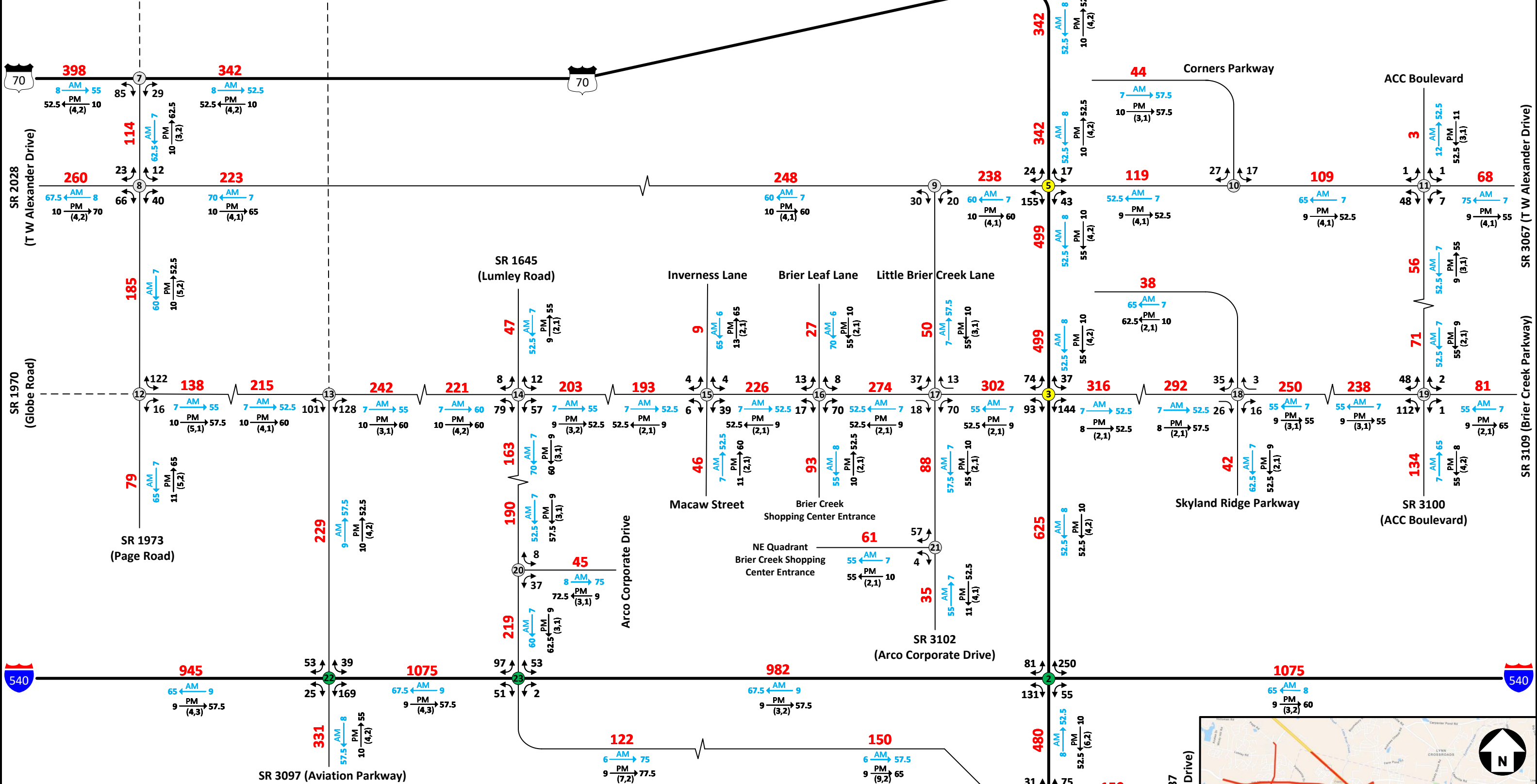
LEGEND

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

BASE YEAR NO BUILD SHEET 1 OF 1

TIP: U-5518	WBS: 43612.1.1	PREPARED BY: STV Engineers, Inc.
COUNTY: Wake & Durham	DIVISION: 5	LOCATION: US 70 near Durham/Wake County Line
DATE: February 2023		PROJECT: Improve US 70 from SR 3067 to I-540





2022 AVERAGE ANNUAL DAILY TRAFFIC

LEGEND

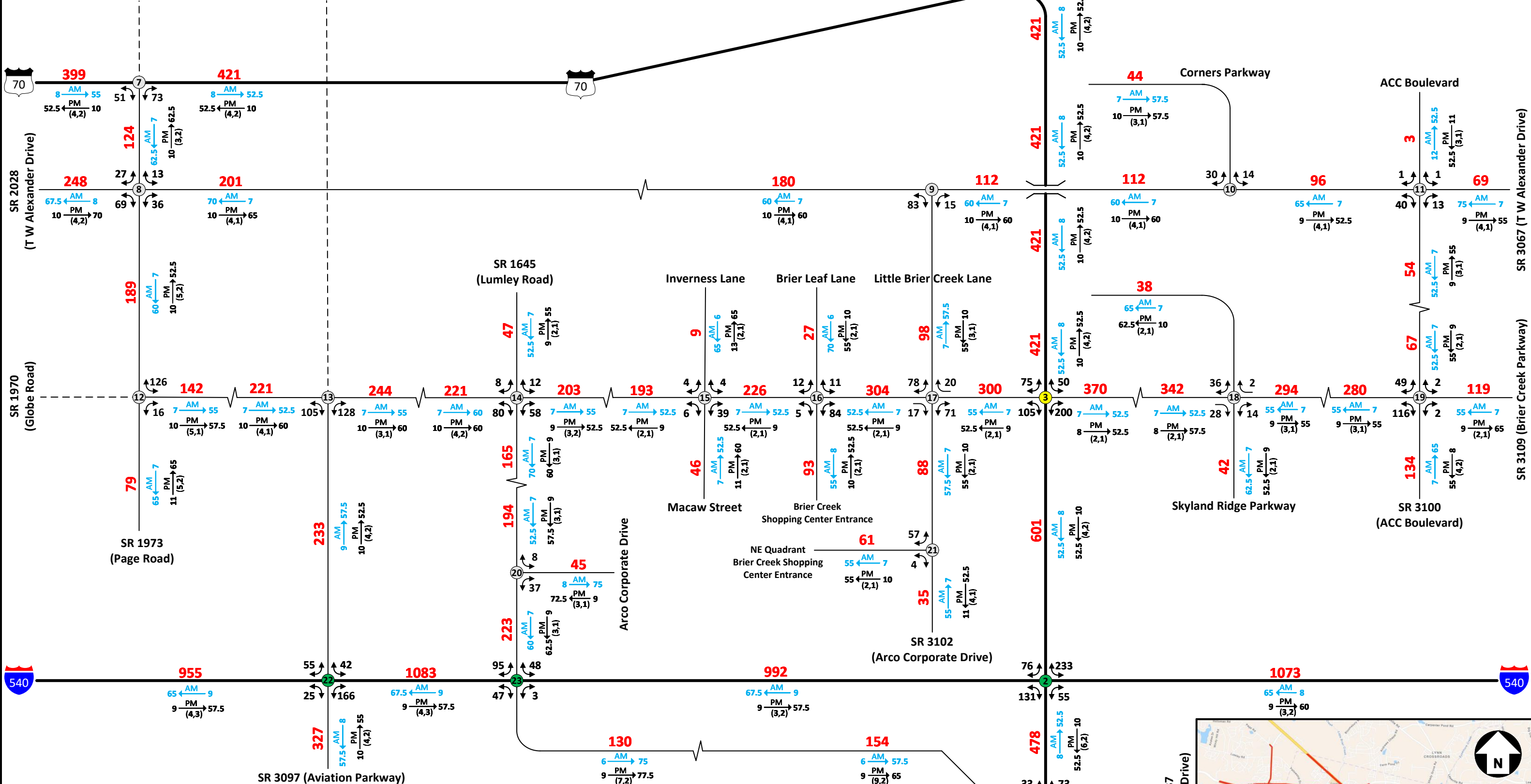
No. of Vehicles Per Day (VPD) in 100s
 1- Less than 50 VPD
 X Movement Prohibited
 - Roadway
 - Proposed Roadway
 ● Existing Interchange

K Design Hour Factor (%)
 AM/PM AM/PM Peak Period
 D Peak Hour Directional Split
 → Indicates Direction of D
 (d,t) Duals, TT-STs (%)
 ● Proposed Interchange

**BASE YEAR BUILD ALTERNATIVE 1
SHEET 1 OF 1**

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2022

AVERAGE ANNUAL DAILY TRAFFIC

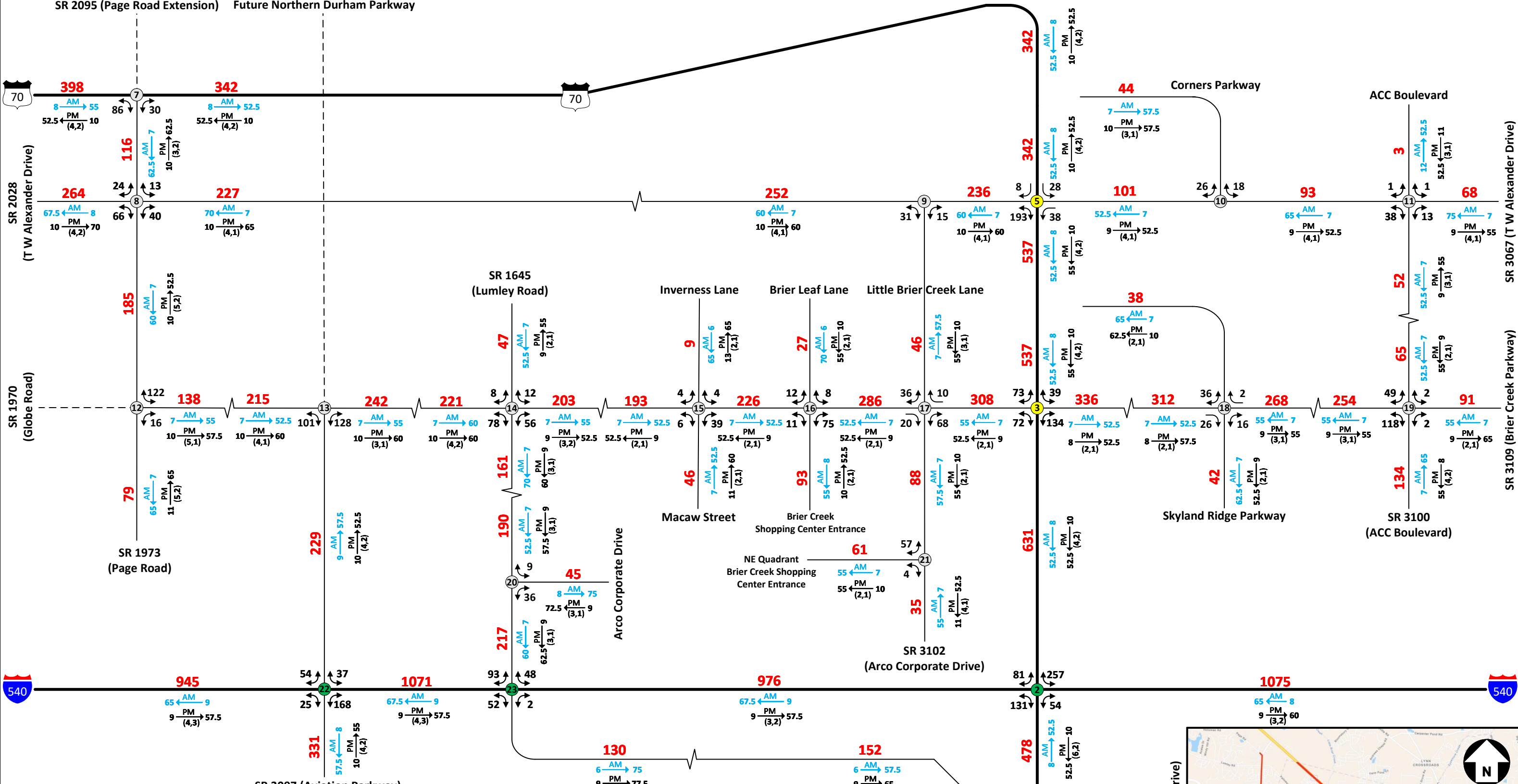
BASE YEAR BUILD ALTERNATIVE 2 SHEET 1 OF 1

LEGEND

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1-	Less than 50 VPD	AM/PM	AM/PM Peak Period
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—	Roadway	→	Indicates Direction of D
- - - -	Proposed Roadway	(d,t)	Duals, TT-STs (%)
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2022

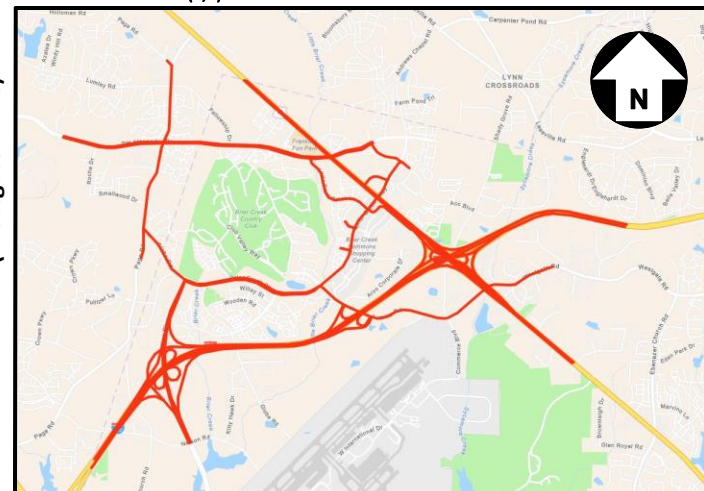
AVERAGE ANNUAL DAILY TRAFFIC

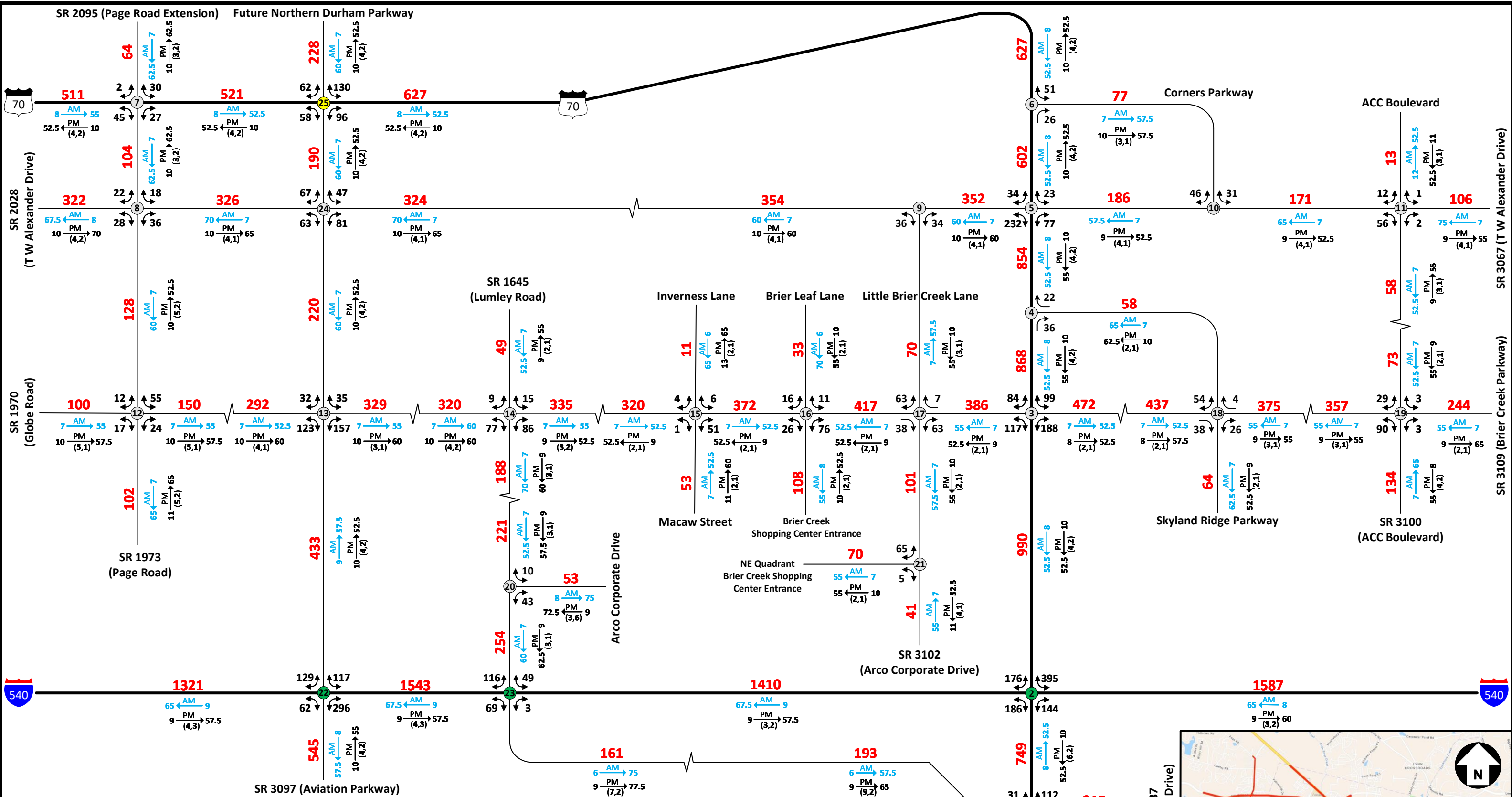
BASE YEAR BUILD ALTERNATIVE 3 SHEET 1 OF 1

LEGEND

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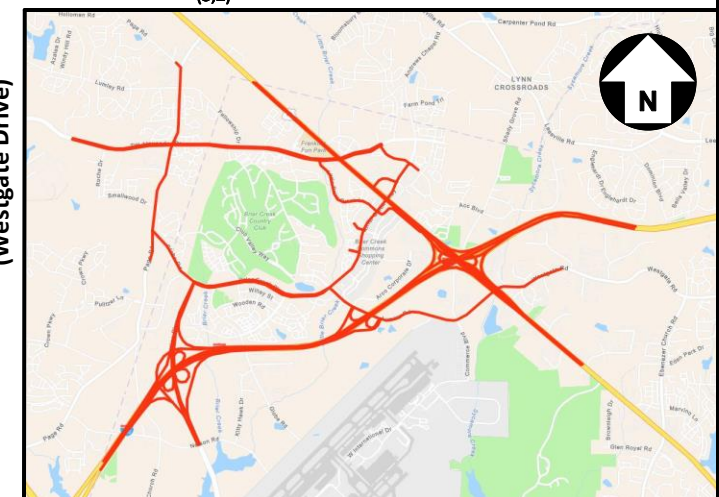
2050 AVERAGE ANNUAL DAILY TRAFFIC

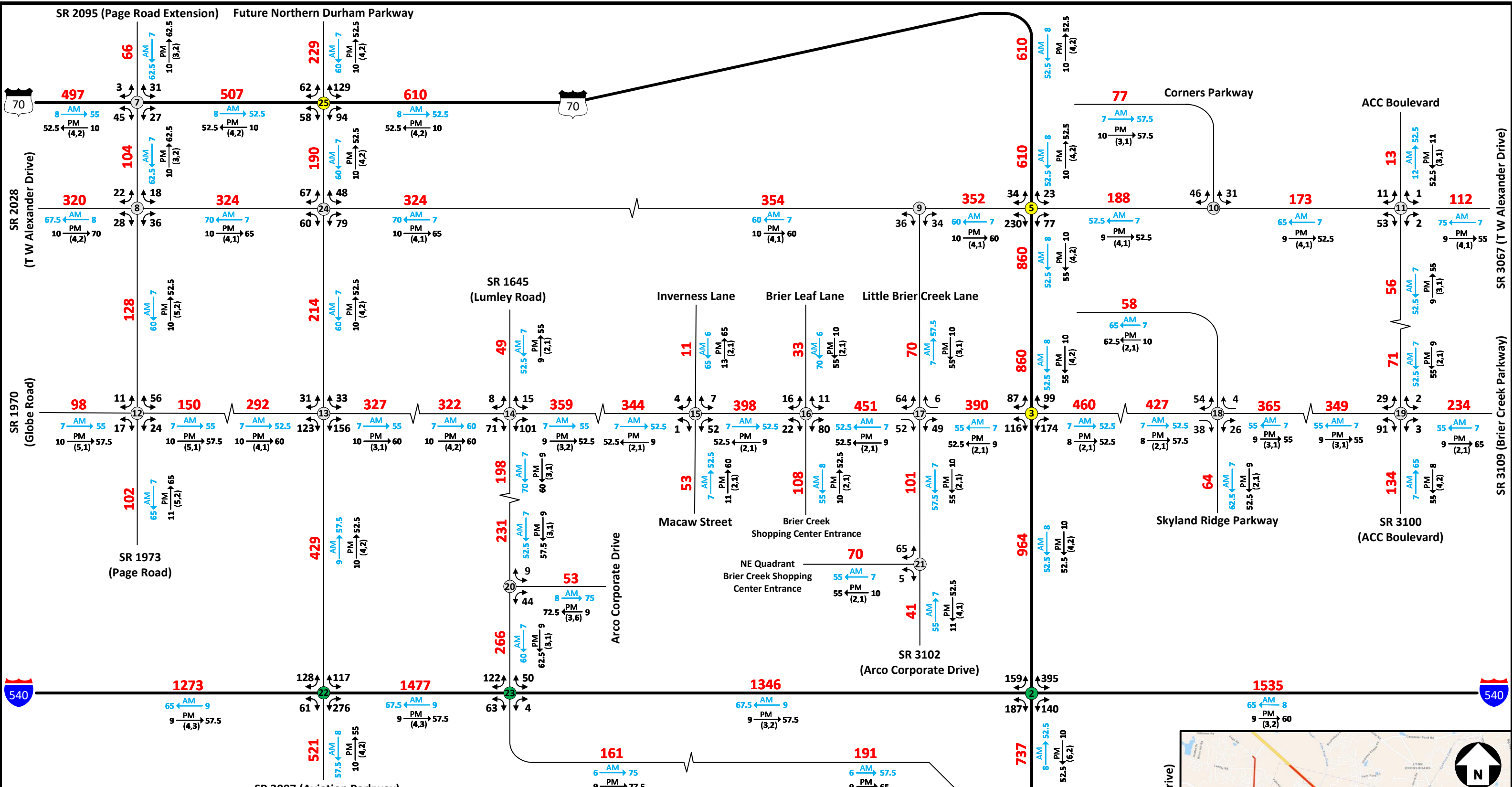
LEGEND

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FUTURE YEAR NO BUILD SHEET 1 OF 1





2050

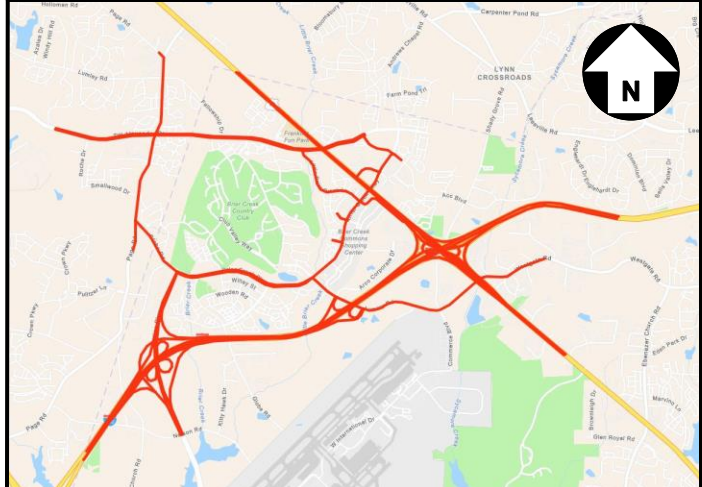
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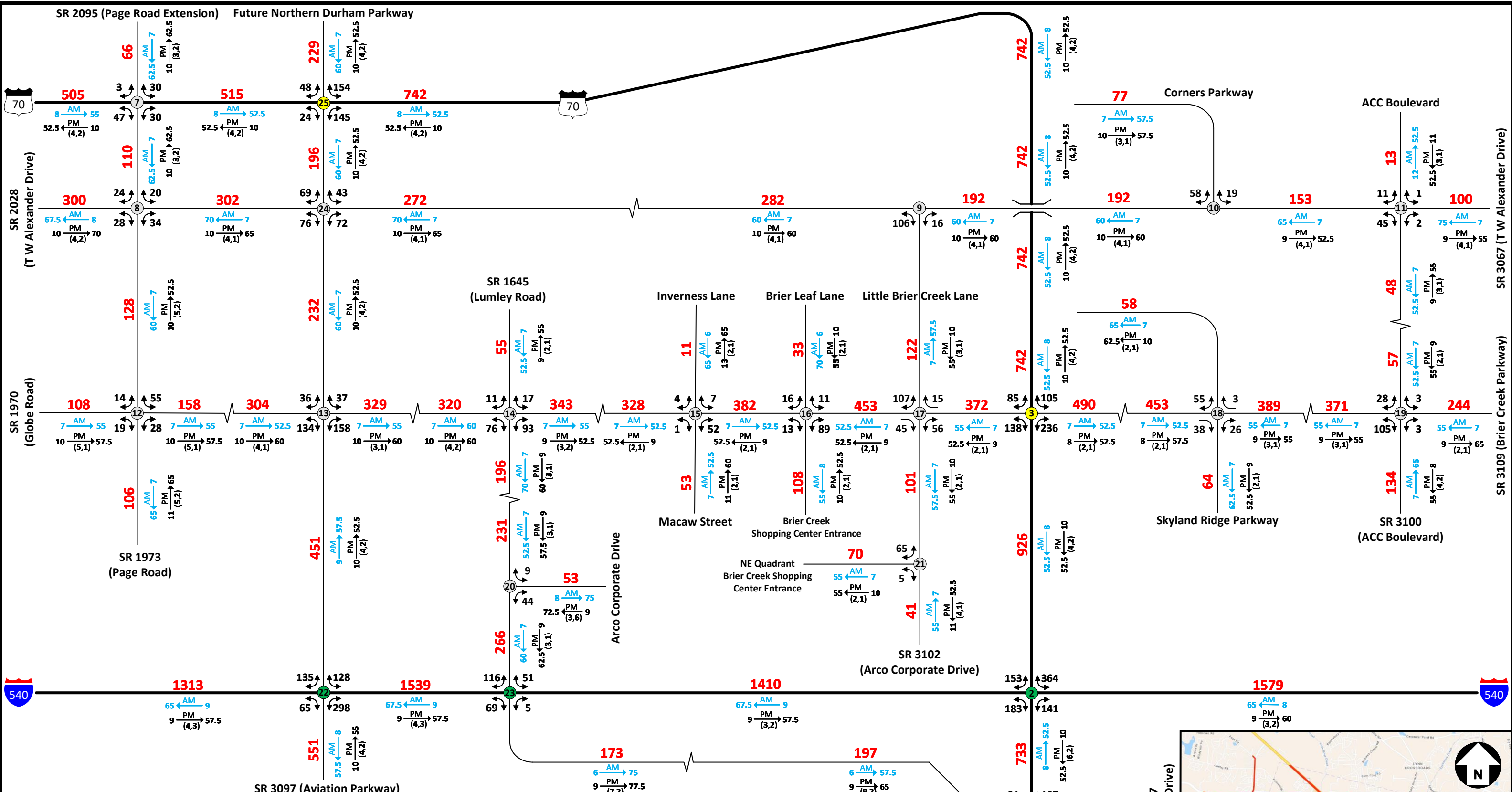
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FUTURE YEAR BUILD ALTERNATIVE 1 SHEET 1 OF 1

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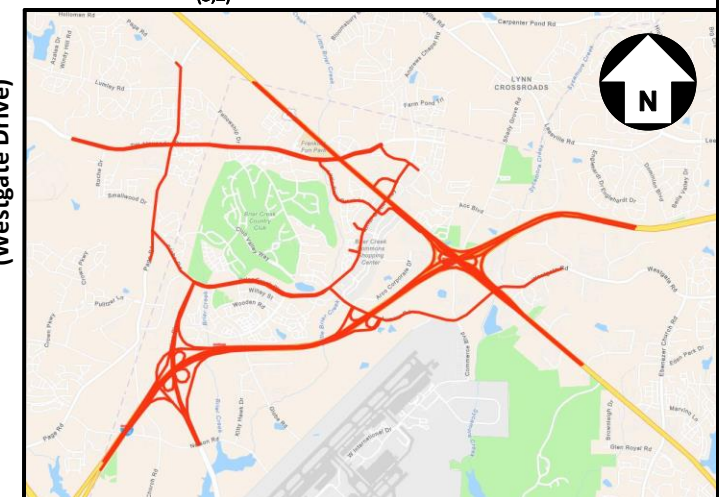
2050

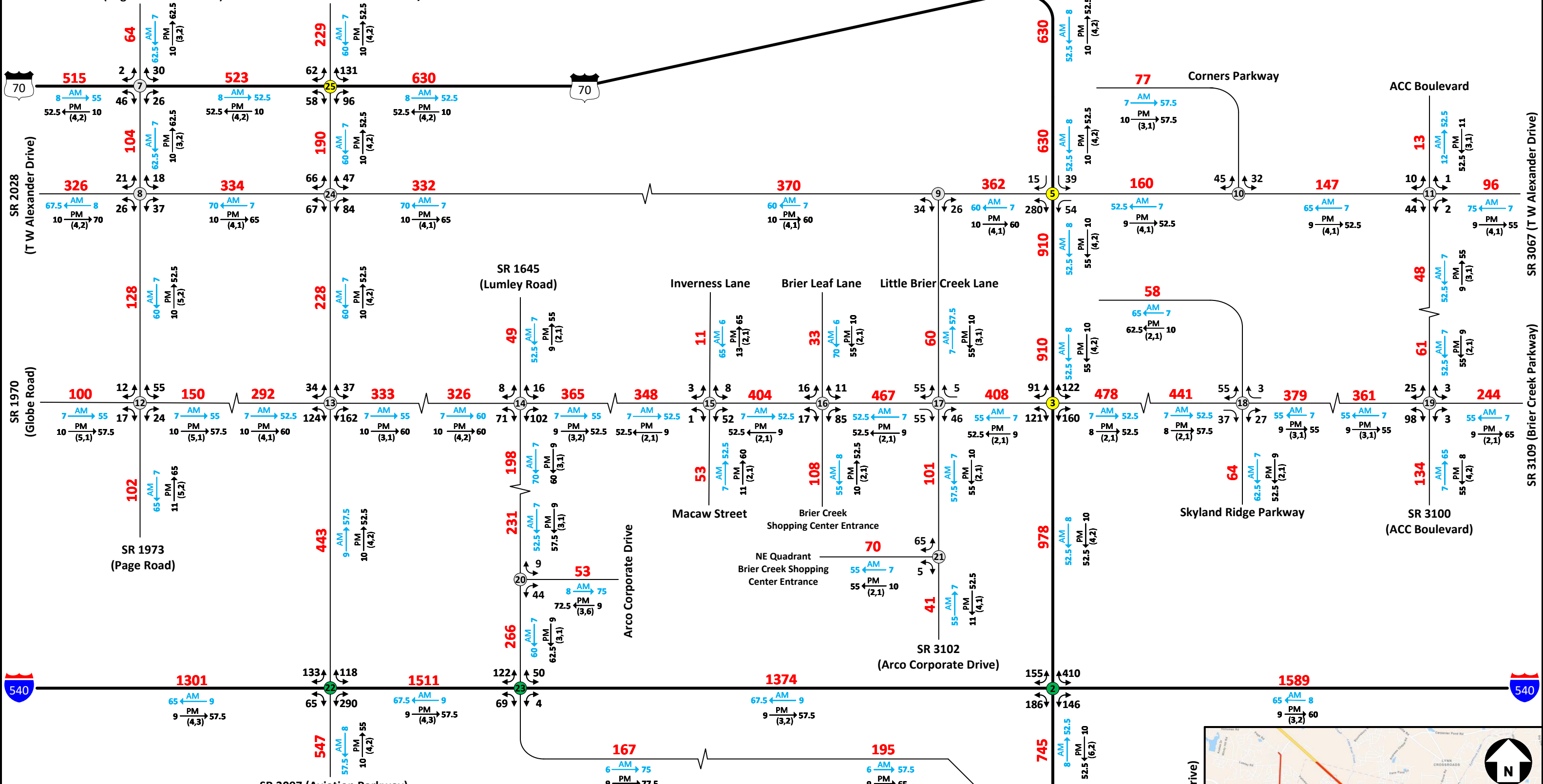
AVERAGE ANNUAL DAILY TRAFFIC

FUTURE YEAR BUILD ALTERNATIVE 2 SHEET 1 OF 1

LEGEND	
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2050

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