



May 31, 2019

MEMORANDUM TO: Michael Haley
Central Corridor Development Engineer
NCDOT Planning and Programming / Corridor Studies Division

FROM: Matthew Quesenberry, PE
HNTB North Carolina, PC

SUBJECT: Final Traffic Forecast for STIP Project I-6054A / STI Project H172245
I-40 Widening to a 6-Lane or 8-Lane Interstate, from Exit 31 to Exit 27
Haywood County

The NCDOT Transportation Planning Division (TPD) has reviewed and approved this traffic forecast for I-6054A / H172245 for delivery as of May 30, 2019.

Please find attached the 2019 / 2040 Project-Level Final Traffic Forecast for State Transportation Improvement Program (STIP) I-6054A, also known as Strategic Transportation Investments (STI) Project H172245. STIP Project I-6054A / STI Project H172245 includes the widening of I-40 to either a 6-lane or 8-lane interstate facility from Exit 31 / NC 215 (Champion Drive) / Buckeye Cove Road (SR 1582) to Exit 27 / US 74 (Great Smoky Mountains Expressway) in Haywood County. The traffic forecast for this project was requested by Michael Haley of the NCDOT Planning and Programming / Corridor Studies Division in January 2019.

STIP Project I-6054A / STI Project H172245 is not currently programmed in the 2018 – 2027 STIP, approved by the NCDOT Board of Transportation on August 3, 2017 and most recently revised May 2, 2019. STIP Project I-6054A / STI Project H172245 is included in the Draft 2020 – 2029 STIP (released on January 10, 2019), but it is currently programmed as an “Unfunded Future Year” project.

The traffic forecast study area for I-6054A / H172245 includes a total of 3 interchanges, 2 intersections (at non-interchange locations), and 5 grade separated facilities that traverse I-40. The following scenarios are included in this forecast:

- 2019 Base Year No-Build (BYNB)
- 2040 Future Year No-Build (FYNB) With I-6054 B & C 6-Lane
- 2040 FYNB Excluding I-6054 B & C
- 2040 Future Year Build (FYB) 6-Lane With I-6054 B & C 6-Lane
- 2040 FYB 8-Lane With I-6054 B & C 8-Lane

Two 2040 FYNB scenarios were completed in this traffic forecast – one with and one without the neighboring I-6054 B & C STIP Project assumed complete (the I-40 widening to a 6-lane interstate facility from Monte Vista Road to Exit 31 / NC 215 (Champion Drive) / Buckeye Cove Road (SR 1582)). The 2040 FYB scenarios in this traffic forecast assume that I-40 will be widened to either a 6-lane or 8-lane interstate facility from Exit 27 / US 74 (Great Smoky Mountains Expressway) to Exit 31 / NC 215 (Champion Drive) / Buckeye Cove Road (SR 1582), and to either a 6-lane or 8-lane interstate facility from Exit 31 / NC 215 (Champion Drive) / Buckeye Cove Road (SR 1582) to Monte Vista Road as part of STIP Project I-6054 B & C. It is assumed in both 2040 FYB scenarios that I-40 would be widened to the same number lanes for both the I-6054A / H172245 and I-6054 B & C projects.

Previously completed project-level traffic forecasts that are nearby the I-6054A / H172245 traffic forecast study area and considered relevant include the U-6048 (modernization), B-5982 (bridge replacement), B-5541 (bridge replacement), and B-3168 (bridge replacement) traffic forecasts.

Additionally, the traffic forecast for STIP Project I-6054 B & C is currently being developed by HNTB in coordination with the development of this traffic forecast.

Travel Demand Model

The 2010 FBRMPO Travel Demand Model, (v1.2, adopted on September 27, 2018) was used in the development of this traffic forecast. The model has a Base Year of 2010 and a Future Year of 2040. Additionally, the North Carolina Statewide Model (NCSTM) Generation 2.3, delivered on February 14, 2018, was used in the development of this traffic forecast. The model has a 2011 Base Year and a 2040 Future Year.

Interpolation

To determine any intermediate years, straight-line interpolation may be used. AADT volumes may be extrapolated for up to two years immediately following 2040.

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

Fiscal Constraint

Within a Metropolitan Planning Organization (MPO), future year traffic forecasts assume construction of projects listed within an MPO's Metropolitan Transportation Plan (MTP). This traffic forecast is consistent with the current French Broad River Metropolitan Planning Organization (FBRMPO) 2040 MTP, which was adopted on September 24, 2015 and most recently amended on May 24, 2018.

Development Activity

There are multiple potential developments in the study area, but none are anticipated to substantially affect traffic volumes in the study area. All recent and planned developments are assumed to be included in the official Base Year and Future Year FBRMPO TDM socioeconomic data sets.

Forecast Methodology

The 2019 BYNB traffic estimate volumes and design factors were developed by considering recent historic AADT, the projection of historic AADT to 2019, project specific count data, and applying engineering judgement. The 2040 FYNB With I-6054 B & C 6-Lane traffic forecast volumes were developed using historic AADT growth rates, extrapolations of historical AADT volume, and growth percentages calculated from the FBRMPO TDM. The 2040 FYNB Excluding I-6054 B & C scenario and the 2040 FYB scenarios were developed using diversion rates derived from FYB model runs relative to the FYNB With I-6054 B & C 6-Lane model run and engineering judgement.

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) 424-0449 or e-mail me at mquesenberry@hntb.com.

cc:

Keith Dixon, NCDOT Transportation Planning Division

James Upchurch, NCDOT Transportation Planning Division

Hannah K. Cook, NCDOT Division 13

Steve Williams, NCDOT Division 14

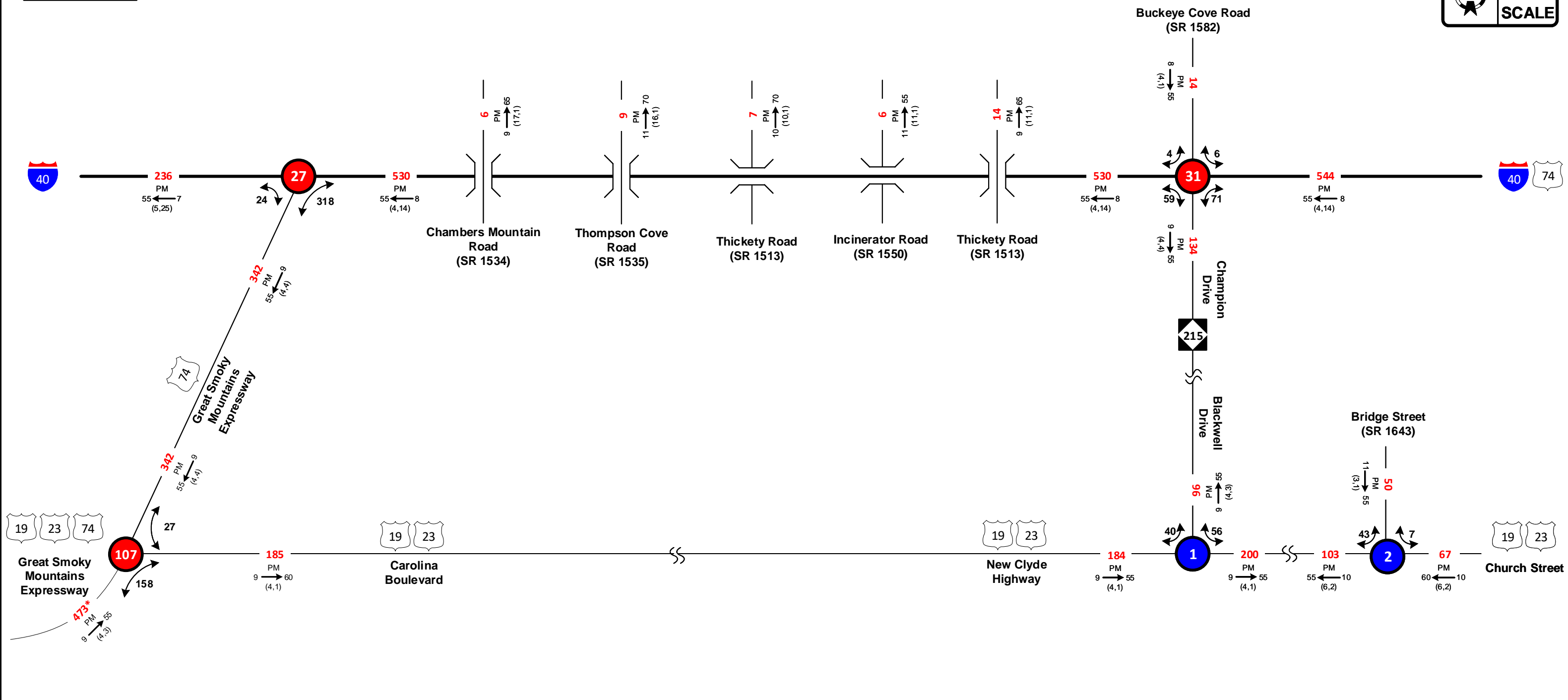
Jim Dunlop, PE, NCDOT Congestion Management Section

Brenda Moore, PE, CPM, NCDOT Roadway Design Unit

Clark Morrison, PhD, PE, NCDOT Pavement Management Unit

Tristan Winkler, FBRMPO

NCDOT Traffic Forecasting GIS Support



***Note:** Roadway segment is a calculated traffic volume that separates Jones Cove Road (SR 1532) from the unique US 19 / US 23 & US 74 interchange. 2019 BYNB Selected AADT is between Jones Cove Road (SR 1532) and US 19 / US 23 and was selected by reviewing neighboring roadway and interchange ramp VSC traffic count AADT estimates, 2017 traffic segment ramp AADT data, and neighboring historic AADT.

2019 ANNUAL AVERAGE DAILY TRAFFIC

Base Year No-Build With PM Peak Hour Design Factors Sheet 1 of 1

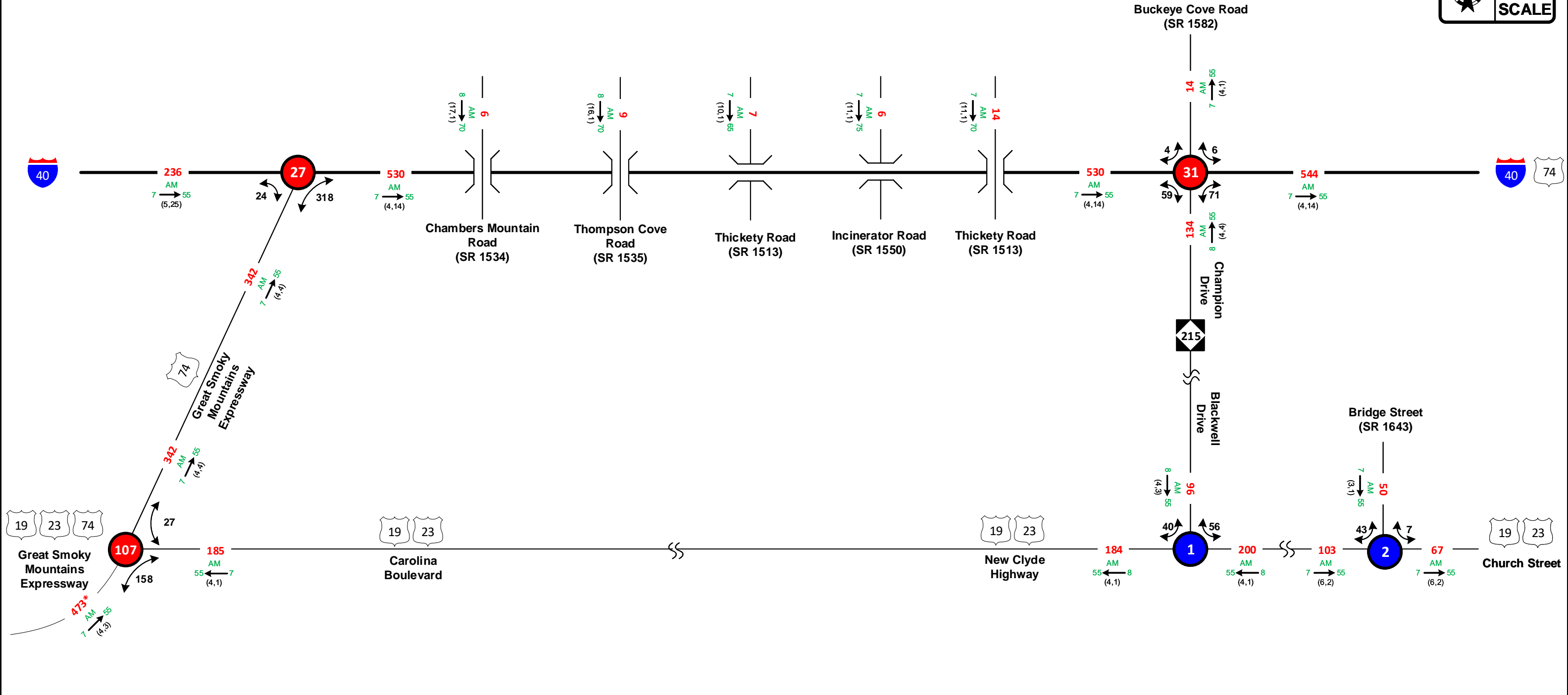
LEGEND

- # = Study Area Intersection ID
- # = Study Area Interchange (ID # Corresponds to Exit #)
- = Overpass
- = Underpass

- ### No. of Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- X Movement Prohibited

- $K \xrightarrow{\text{PM}} D$
(d, t)
- K Design Hour Factor (%)
- PM PM Peak Hour
- D Peak Hour Directional Split (%)
- \rightarrow Indicates Direction of D
- (d,t) Duals, TT-STs (%)

STIP: I-6054A / H172245	WBS: 34263.1.1
COUNTY: Haywood	DIVISION: 14
PREPARED BY: HNTB North Carolina, PC	
PROJECT: I-40 Widening from NC 215 to US 74	
LOCATION: NC 215 (Exit 31) to US 74 (Exit 27)	
DATE: May 2019	



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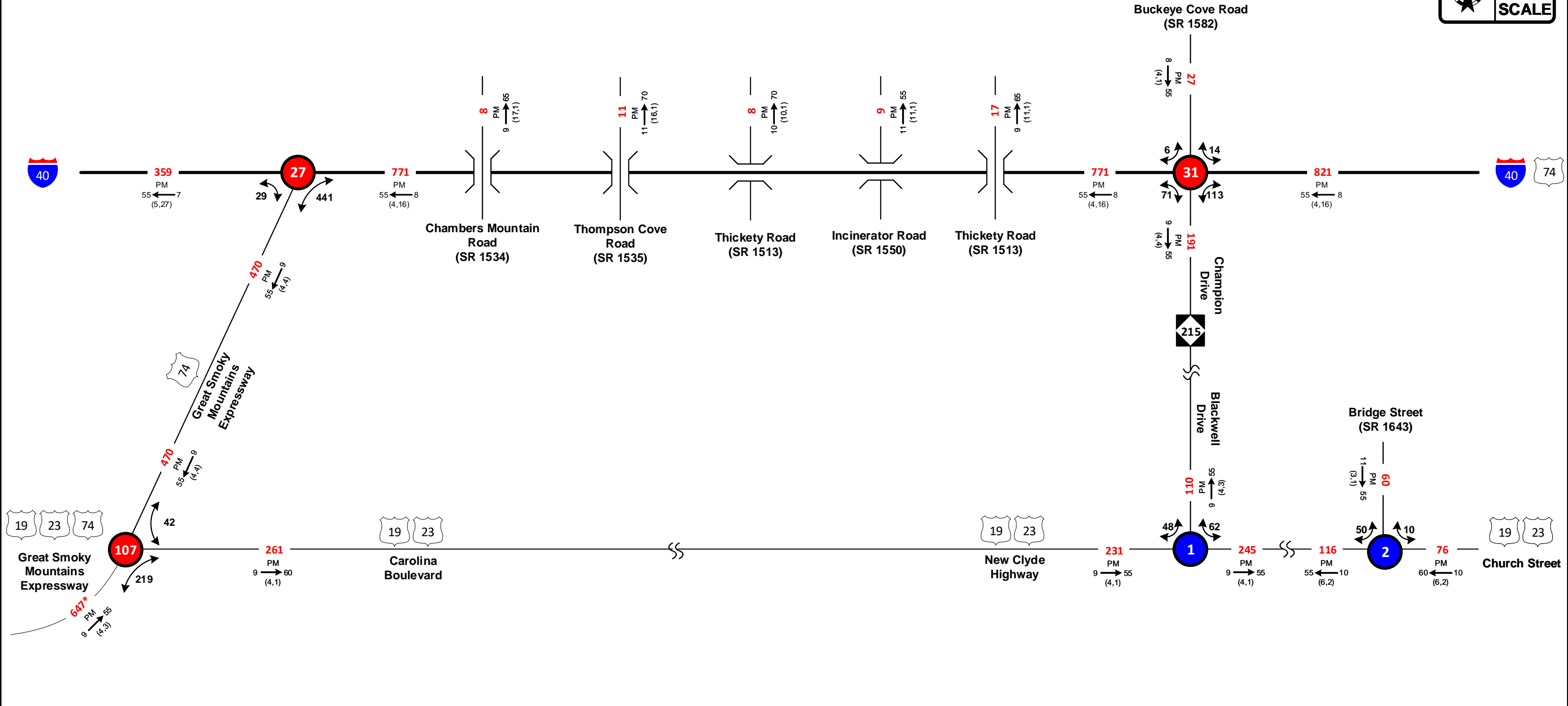
2019 ANNUAL AVERAGE DAILY TRAFFIC

Base Year No-Build
With AM Peak Hour Design Factors Sheet 1 of 1

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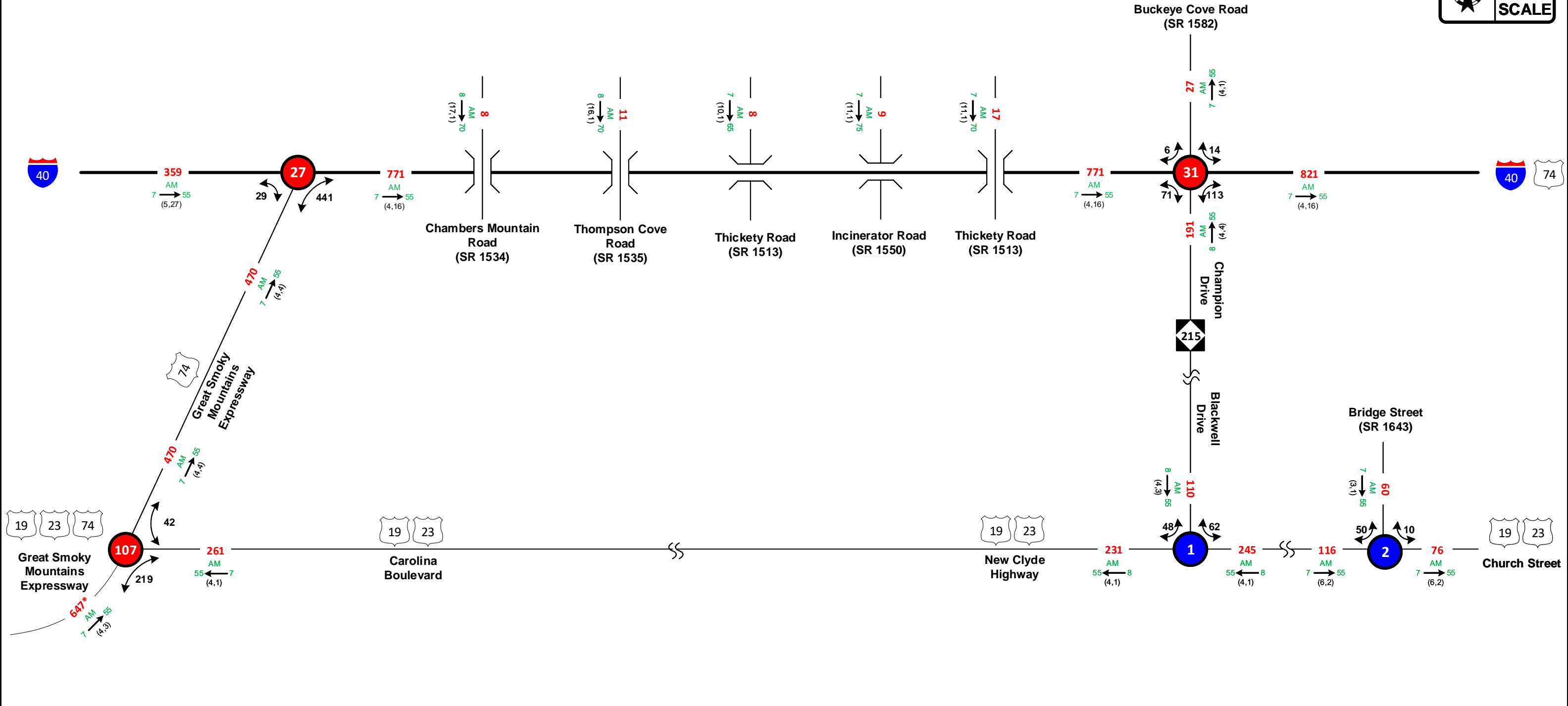
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2040 ANNUAL AVERAGE DAILY TRAFFIC **Future Year No-Build With I-6054 B & C 6-Lane With PM Peak Hour Design Factors** Sheet 1 of 1

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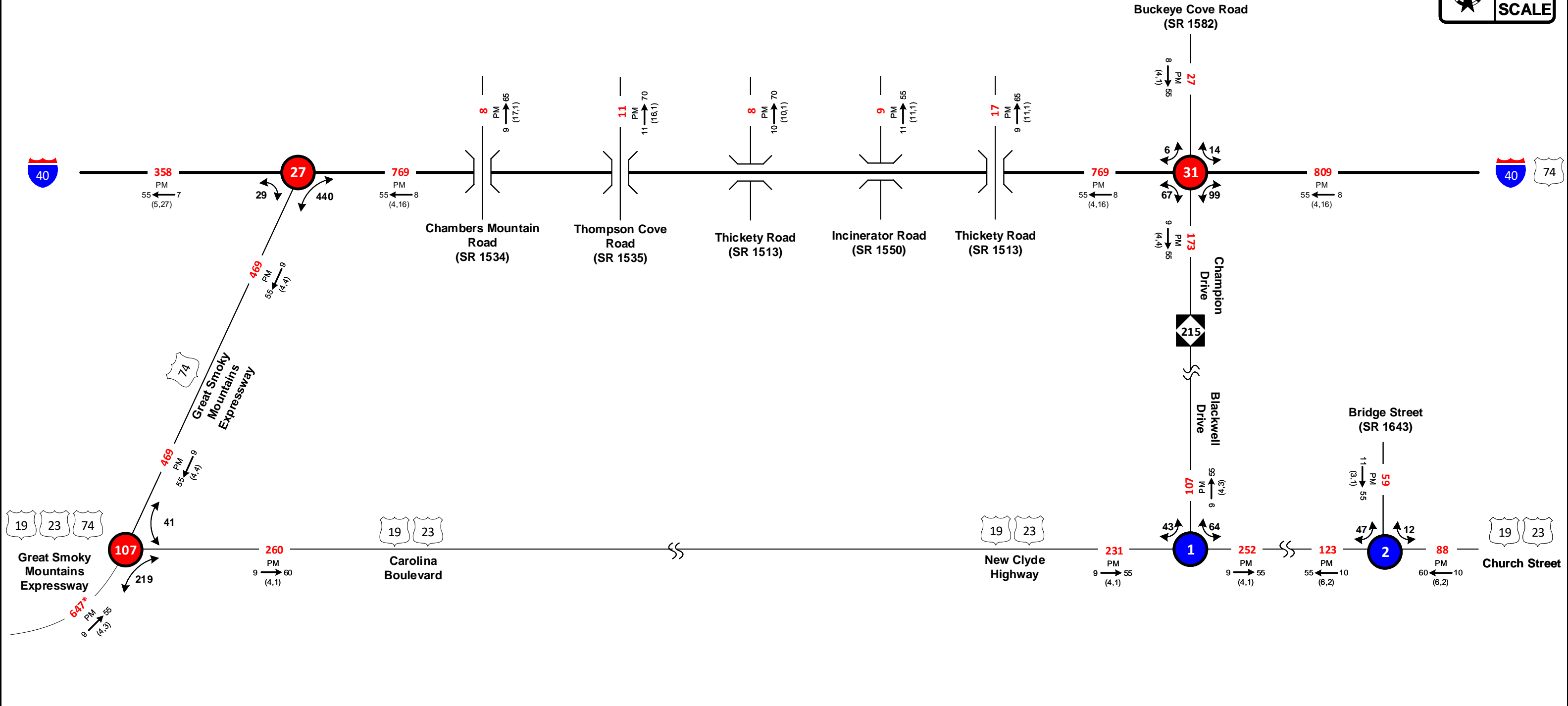
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Future Year No-Build With I-6054 B & C 6-Lane With AM Peak Hour Design Factors

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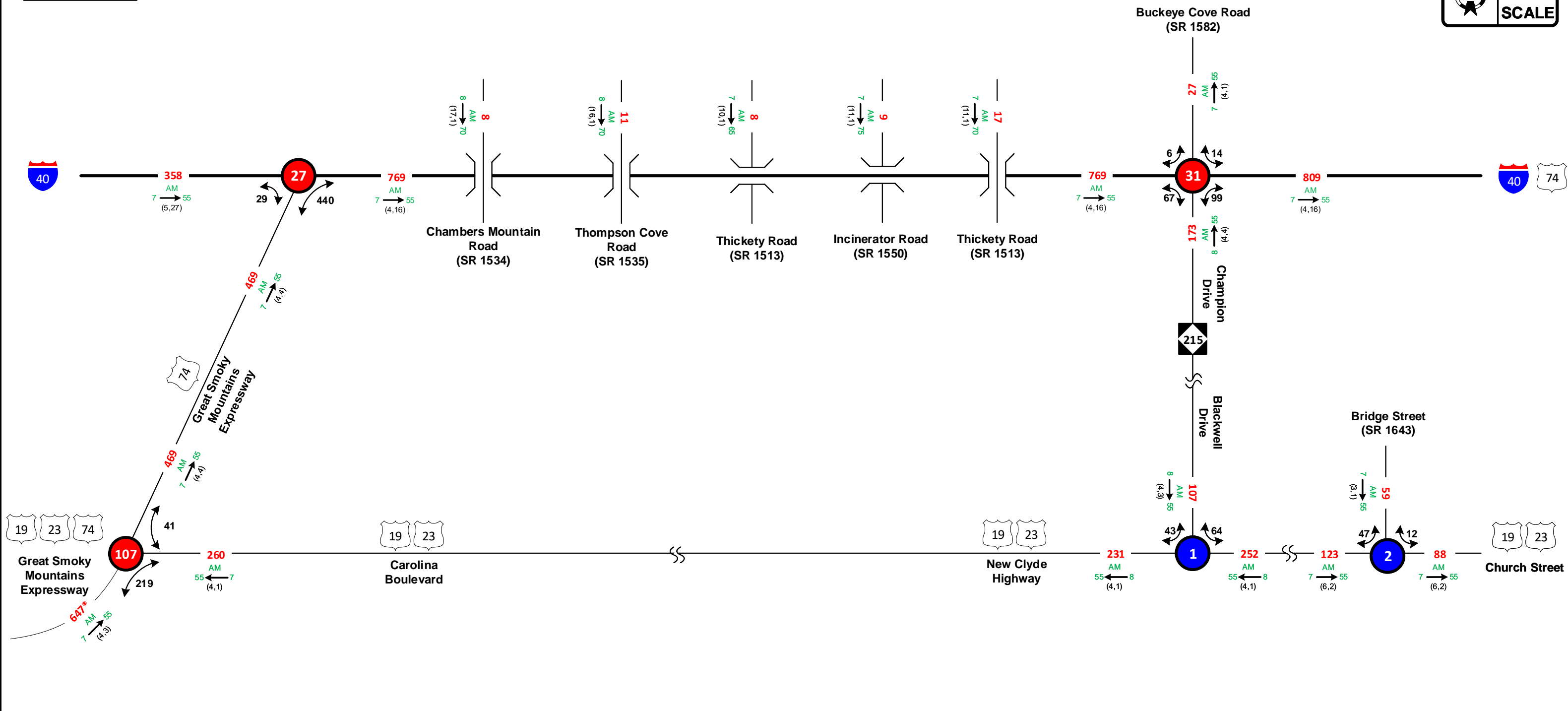
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With PM Peak Hour Design Factors Sheet 1 of 1

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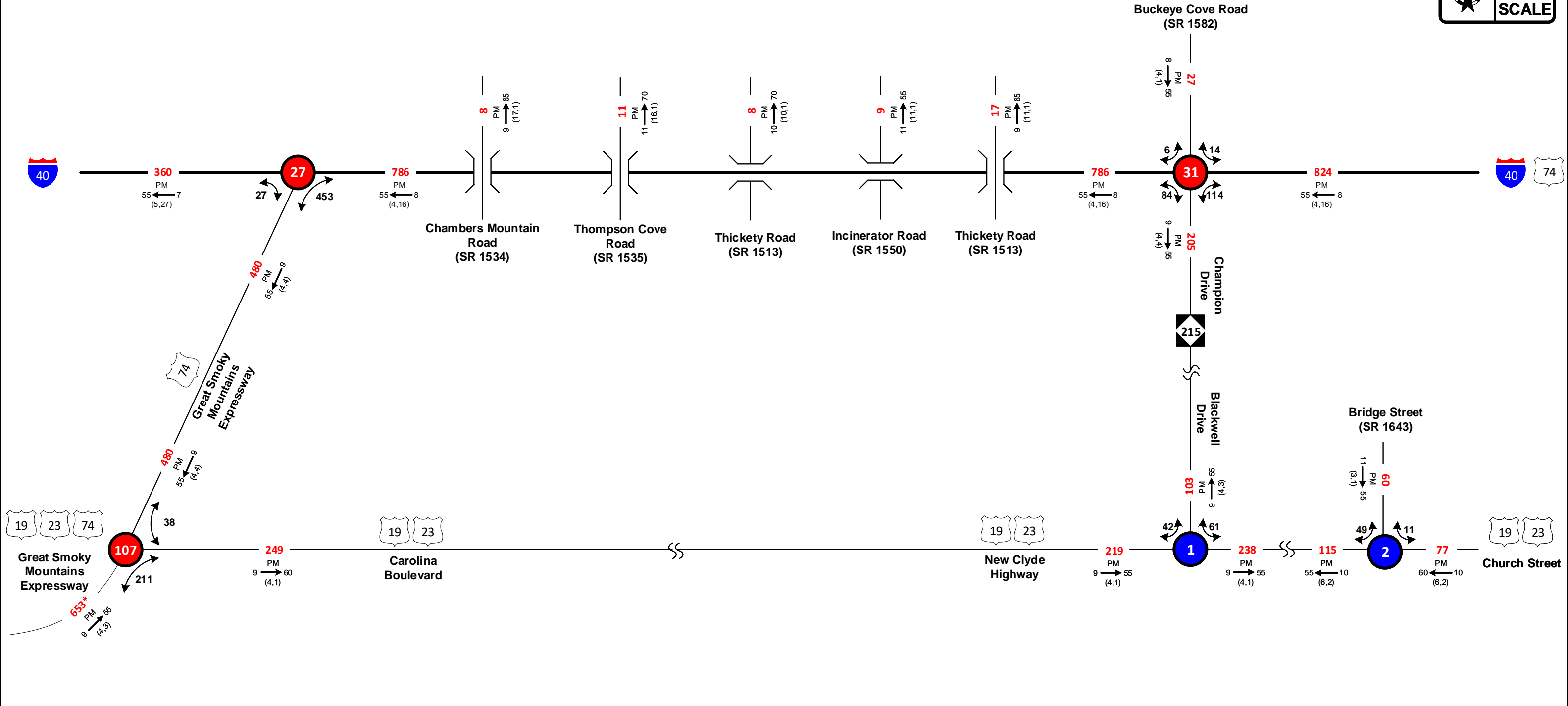
2040 ANNUAL AVERAGE DAILY TRAFFIC

Future Year No-Build Excluding I-6054 B & C With AM Peak Hour Design Factors

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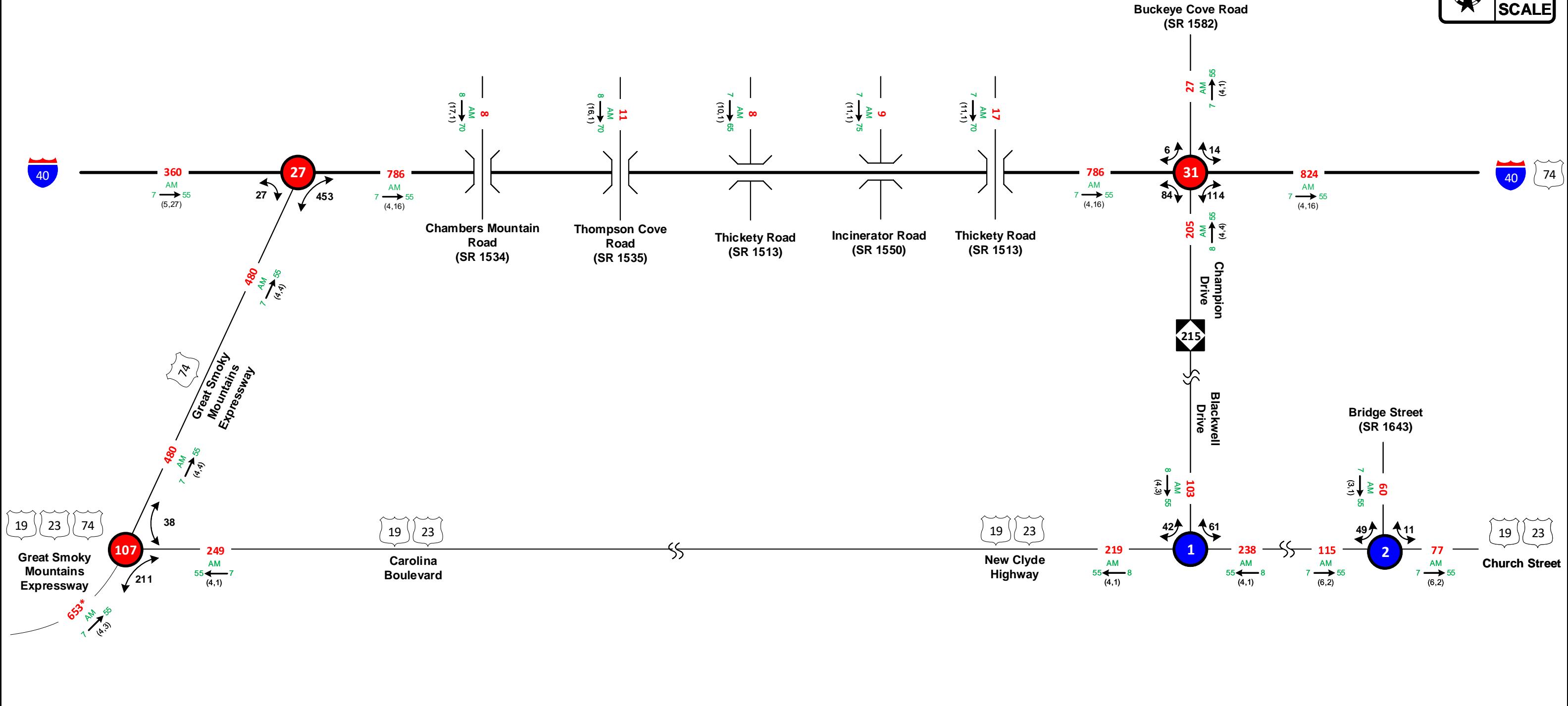
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2040 ANNUAL AVERAGE DAILY TRAFFIC **Future Year Build 6-Lane With I-6054 B & C 6-Lane**
With PM Peak Hour Design Factors Sheet 1 of 1

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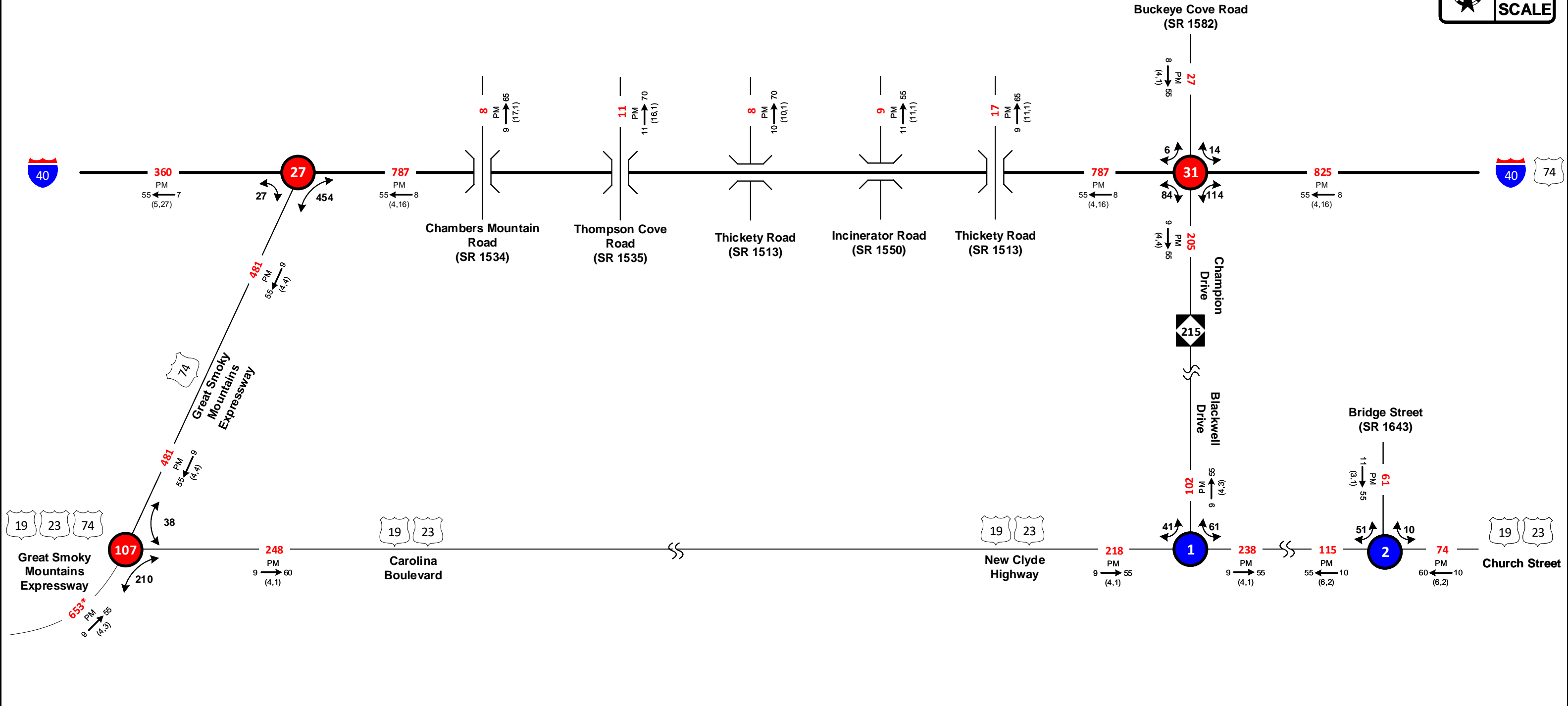
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2040 ANNUAL AVERAGE DAILY TRAFFIC **Future Year Build 6-Lane With I-6054 B & C 6-Lane With AM Peak Hour Design Factors** Sheet 1 of 1

LEGEND

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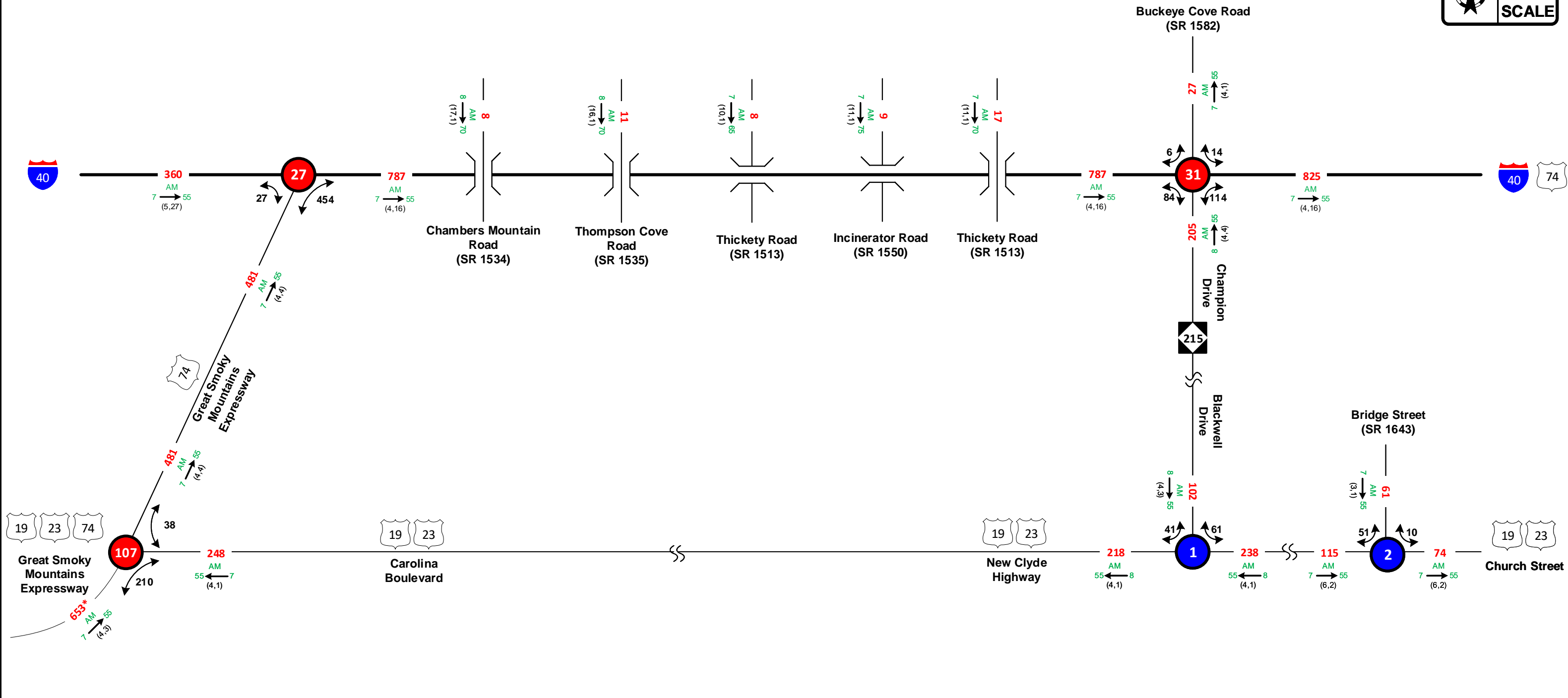
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2040 ANNUAL AVERAGE DAILY TRAFFIC		Future Year Build 8-Lane With I-6054 B & C 8-Lane With PM Peak Hour Design Factors		Sheet 1 of 1
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	Movement Prohibited		Peak Hour Directional Split (%)	
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2040 ANNUAL AVERAGE DAILY TRAFFIC

Future Year Build 8-Lane With I-6054 B & C 8-Lane

With AM Peak Hour Design Factors

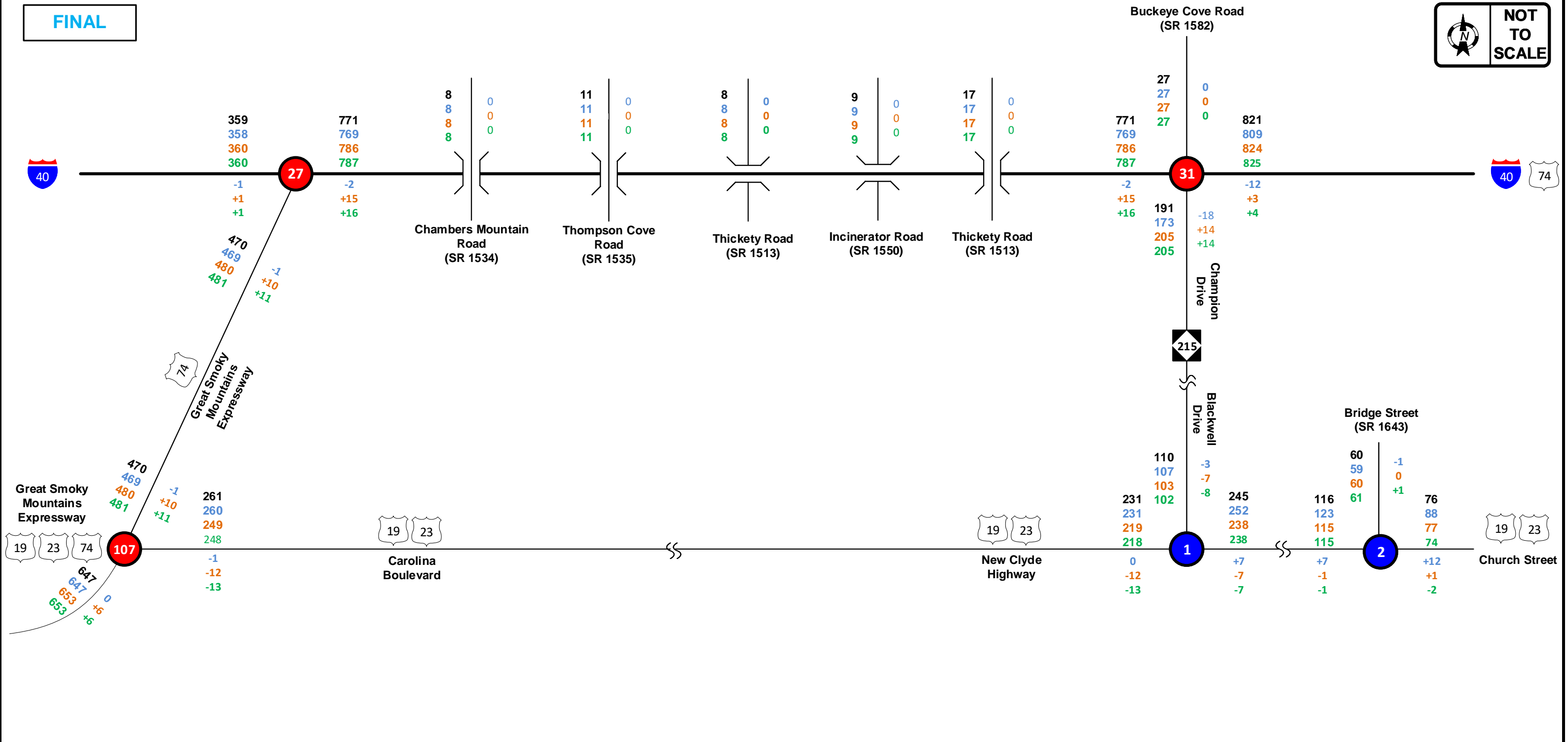
Sheet 1 of 1

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FINAL



2040 ANNUAL AVERAGE DAILY TRAFFIC

Traffic Forecast Scenario

Volume Comparison

Sheet 1 of 1

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- = Overpass
- = Underpass

LEGEND

- ### No. of Vehicles Per Day (VPD) (in 100s) – 2040 FYNB With I-6054 B & C 6-Lane Scenario
- ### VPD (in 100s) – 2040 FYNB Excluding I-6054 B & C Scenario
- ### VPD (in 100s) – 2040 FYB 6-Lane With I-6054 B & C 6-Lane Scenario
- ### VPD (in 100s) – 2040 FYB 8-Lane With I-6054 B & C 8-Lane Scenario
- ## Difference in VPD (in 100s) between 2040 FYNB With I-6054 B & C 6-Lane and 2040 FYNB Excluding I-6054 B & C Scenarios
- ## Difference in VPD (in 100s) between 2040 FYNB With I-6054 B & C 6-Lane and 2040 FYB 6-Lane With I-6054 B & C 6-Lane Scenarios
- ## Difference in VPD (in 100s) between 2040 FYNB With I-6054 B & C 6-Lane and 2040 FYB 8-Lane With I-6054 B & C 8-Lane Scenarios

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