TRAFFIC FORECAST COVER LETTER

January 25, 2016

MEMORANDUM TO: Zahid Baloch, PE
Project Development and Environmental Analysis Branch (PDEA)

Brian Wert, PE
Transportation Planning Branch (TPB)

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

SUBJECT: Traffic Forecast for R-2307/I-5717
Catawba and Iredell Counties
NC 150 Improvements from NC 16 to west of US 21 Interchange

Please find attached the 2015/2040 traffic forecast for STIP Project Numbers R-2307 and I-5717 in Catawba and Iredell Counties. The proposed project will widen existing NC 150 from NC 16 to west of the US 21 interchange and upgrade the I-77/NC 150 interchange. This forecast was requested for use in the project development activities associated with the project, including the NEPA documentation and Preliminary Roadway Design.

This is the second forecast for this project, with the first being completed in the July 2013. This forecast was initially approved in May 2015 was updated to include an additional build alternative, Alternative 2. The project is located within the boundaries of both the Charlotte Regional Transportation Planning Organization (CRTPO) and the Greater Hickory Metropolitan Planning Organization. The following four scenarios are provided in this forecast:

- 2015 Base Year No-Build
- 2015 Base Year Build (Alternative 1 and Alternative 2)
- 2040 Future Year No-Build
- 2040 Future Year Build (Alternative 1 and Alternative 2)

The previous forecasts for R-2307 (1994), R-3833B (2006), R-2206 (2008), and I-3311C/I-5405/I-4750AA (2013) were reviewed during the development of this forecast. John Marshall (Greater Hickory MPO), Matthew Todd (Iredell County), Neil Burke (Charlotte Regional TPO), Kelsie Anderson (Town of Mooresville), Daniel Sellers (NCDOT Greater Hickory MPO Coordinator), David Keilson (Division 12 Planning Engineer), John Cook (NCDOT Division 12, District 2 Supervisor), Jacky Eubanks (Catawba County), Anil Panicker (NCDOT CRTPO Coordinator) and Brian Wert (NCDOT State Traffic Forecast Engineer) were consulted during the development of this forecast.

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Fiscal Constraint

The project is located within the boundaries of the CRTPO and the Greater Hickory Metropolitan Planning Organization; therefore, the travel demand model and traffic forecasts are fiscally constrained to match the assumptions of the corresponding Metropolitan Transportation Plan (MTP) or Long Range Transportation Plan (LRTP).

The *Greater Hickory MPO 2040 Long Range Transportation Plan* includes a discussion of the proposed project, including the following:

> NC 150 is a major east-west route between Shelby, Lincolnton, and Mooresville (I-77). A small portion of NC 150 goes through the southeast corner of Catawba County. NC 150 is recommended to be widened from 2-lanes to multi-lanes from NC 16 in Catawba County to I-77 (R-2307). Currently, it is unfunded in the STIP.

The following projects that directly affect the proposed project are assumed to be constructed prior to 2040:

- TIP Project R-3100A/B - NC 16 widening to a mixture of 4-lane divided or 5-lane boulevards from the Newton-Conover East Loop to SR 1895.

The CRTPO *2040 Metropolitan Transportation Plan* includes portions of the proposed project in the fiscally constrained projects list including the NC 150 Widening from Wadell Road to Perth Road (Project ID 26), the NC 150 Widening from Perth Road to Ervin Road (Project ID 43), the NC 150 Widening from Ervin Road to I-77 (Project ID 44), the NC 150 Widening from I-77 to US 21 (Project ID 55) and the I-77/NC 150 interchange conversion (Project ID 47). Additionally, the following projects that directly affect the proposed project are included in the 2040 MTP and are assumed to be constructed prior to 2040:

- NC 150/Talbert Road Intersection Improvements (Project ID 305)
- I-77 Improvements from West Catawba Avenue to NC 150 (Project ID 280) – Add 1 HOT Lane in each direction
- Midnight Lane/Oates Road (Project ID 50) – New 3-lane roadway including grade separation over I-77
- Williamson Road Widening (Project ID 51) – Widen from 3-lanes to 4-lanes with median, sidewalks and bike lanes
- I-77 Improvements – West Catawba Avenue to NC 150 (Project ID 72) – Widen from 4 lanes to 6 lanes

Travel Demand Model

The Metrolina Regional Travel Demand Model (MRM 14v1.0) was utilized as a tool in the development of the forecast. The Hickory/Unifour Travel Demand Model was also reviewed and it was determined that the MRM would be the most appropriate model for use in developing the forecast.

Forecast Methodology

The 2015 base year no-build traffic volumes and design factors were developed based upon current counts and historic AADT trend projections. The 2015 base year build generally included the development of diversion rates between like model years with different scenarios. The future year volumes for each scenario generally included the development of compound annual growth rates between two model years. The compound annual growth rates or diversion rates were then applied to the AADT

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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 a balanced forecast.

Interpolation/Extrapolation

To estimate AADT volumes between 2015 and 2040 straight line interpolation between matching 2015 and 2040 scenarios is acceptable. To estimate AADT volumes between 2040 and 2045 straight line extrapolation using matching 2015 and 2040 scenarios is acceptable. It is never acceptable to interpolate or extrapolate using non-matching scenarios.

cc: (via e-mail as PDF attachments):
Glenn Mumford, PE, Roadway Design Unit
Jamal Alavi, PE, Transportation Planning Branch
Michael Orr, AICP, Transportation Planning Branch
Pamela Cook, Transportation Planning Branch
Brian Wert, PE, Transportation Planning Branch
James Dunlop, PE, Congestion Management Section
Anil Panicker, Division 12 Planning Engineer
Zahid Baloch, PE, Project Development and Environmental Analysis Branch

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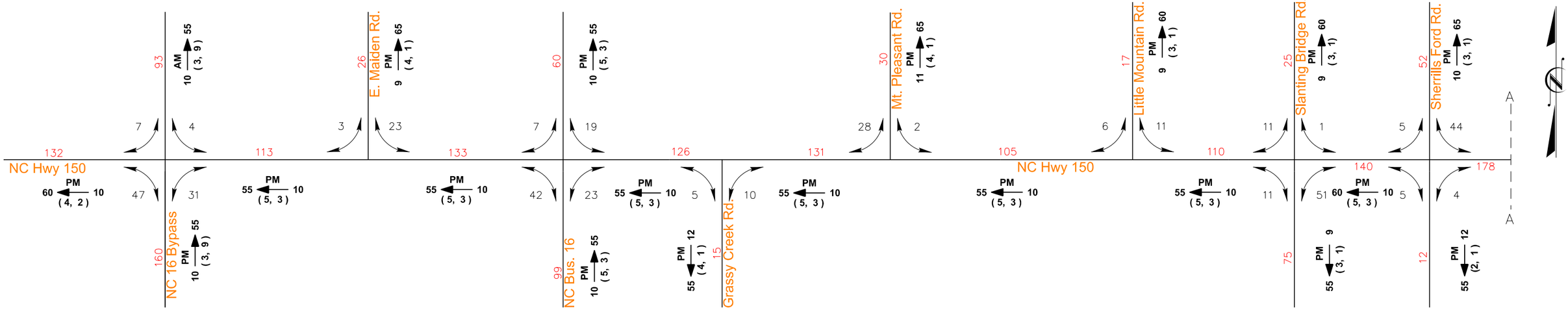
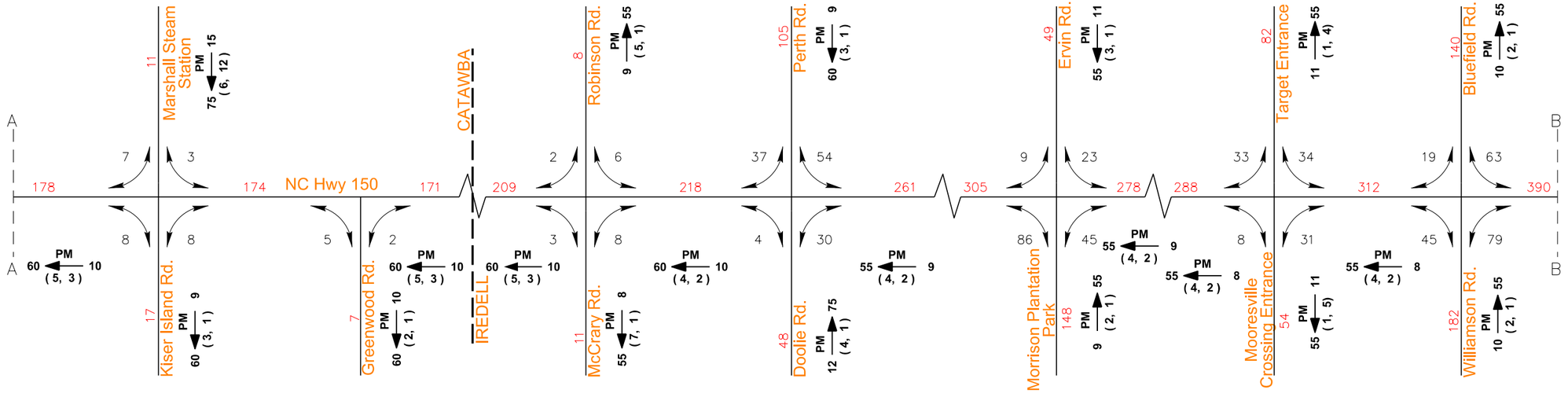




2015

AVERAGE ANNUAL DAILY TRAFFIC

No-Build

Sheet 1 of 2

LEGEND

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

TIP: R-2307 & I-5717 | **WBS:** 37944.1.1

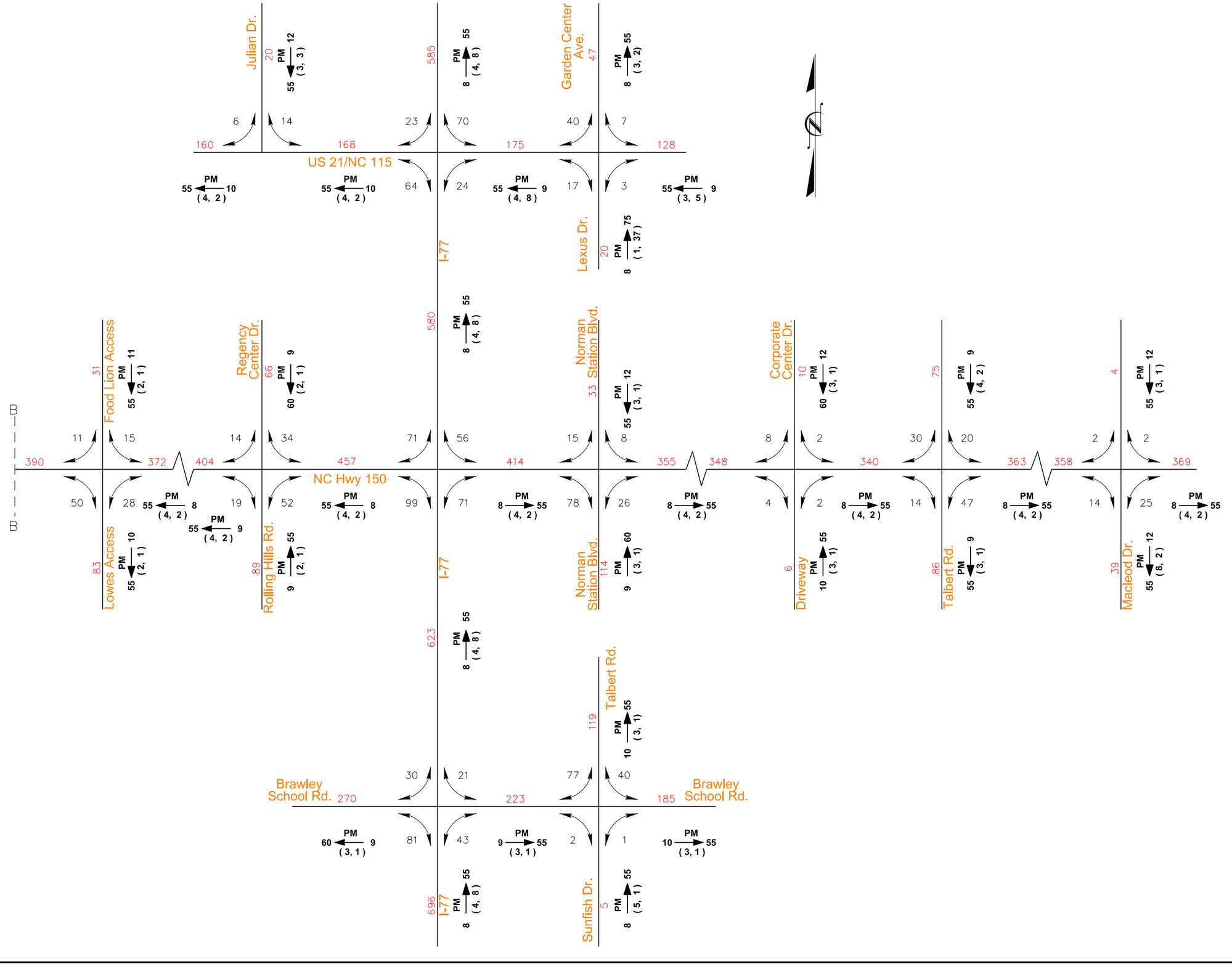
COUNTY: Catawba / Iredell | **DIVISION:** 12

DATE: JANUARY 2016

PREPARED BY: Stantec Consulting

LOCATION:
NC 150 from NC 16 to just west of the US 21 / NC 150 Interchange

PROJECT: Widen NC 150 to Multi-lanes



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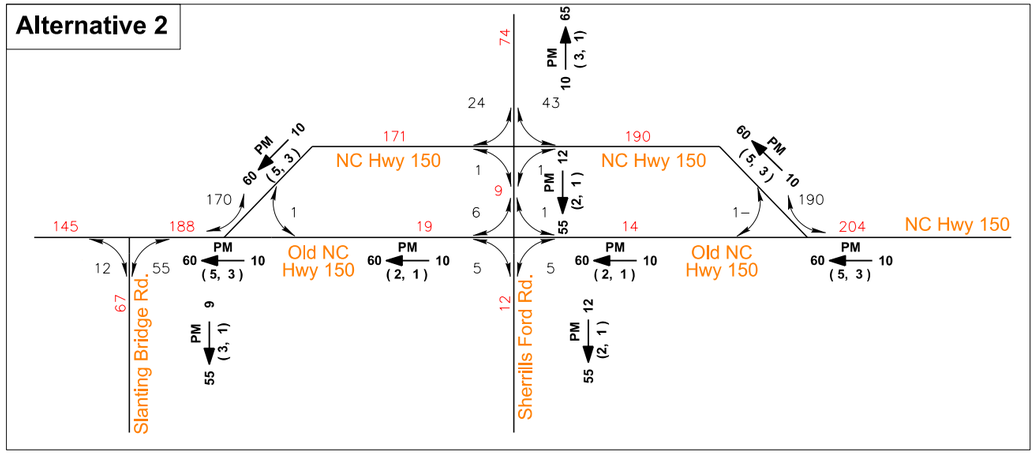

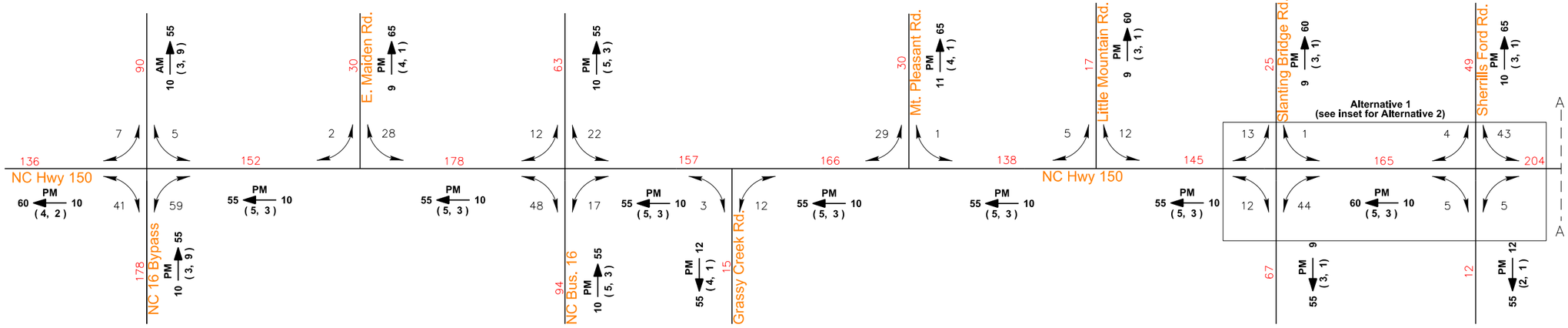

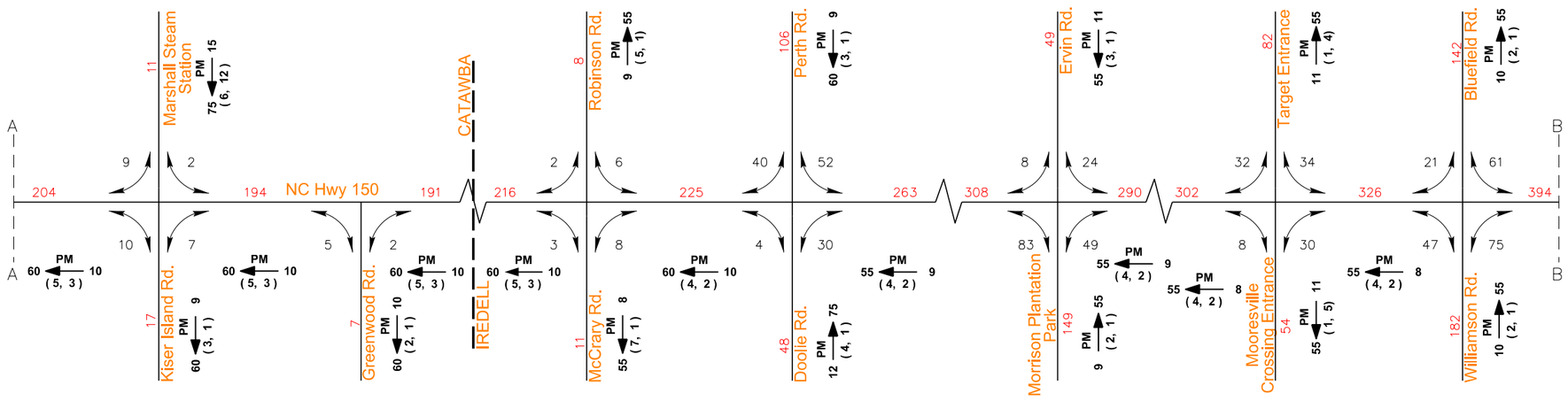

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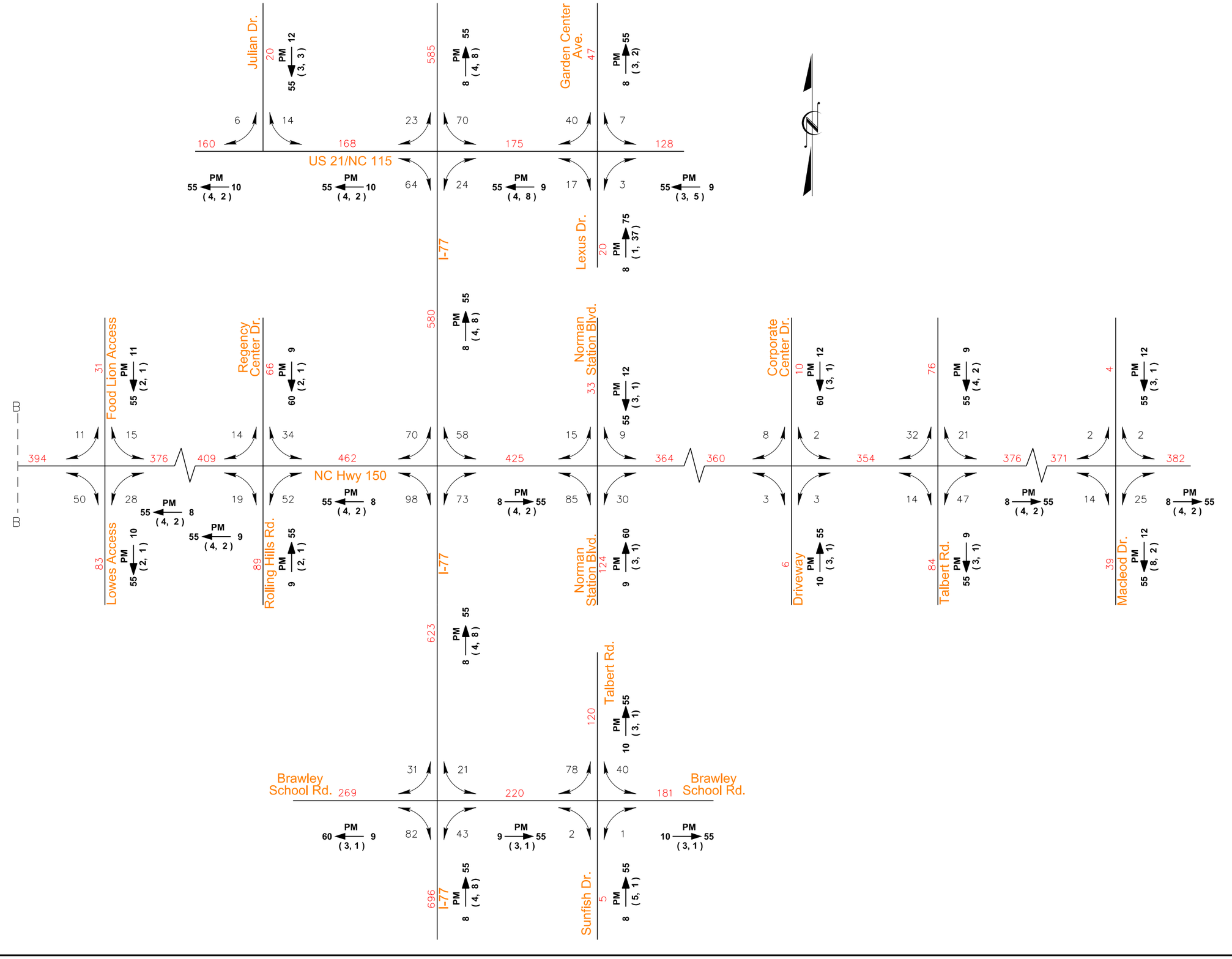

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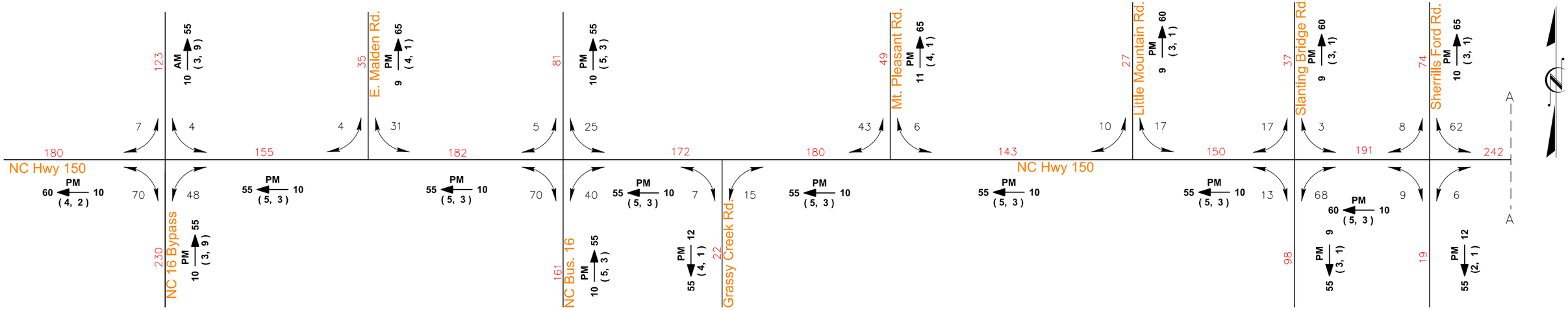

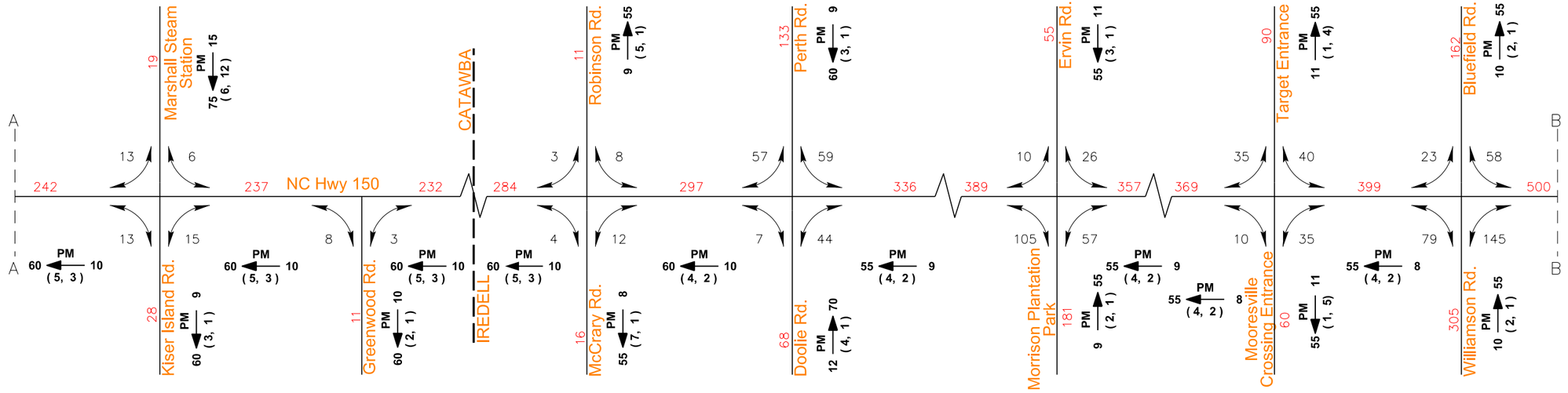

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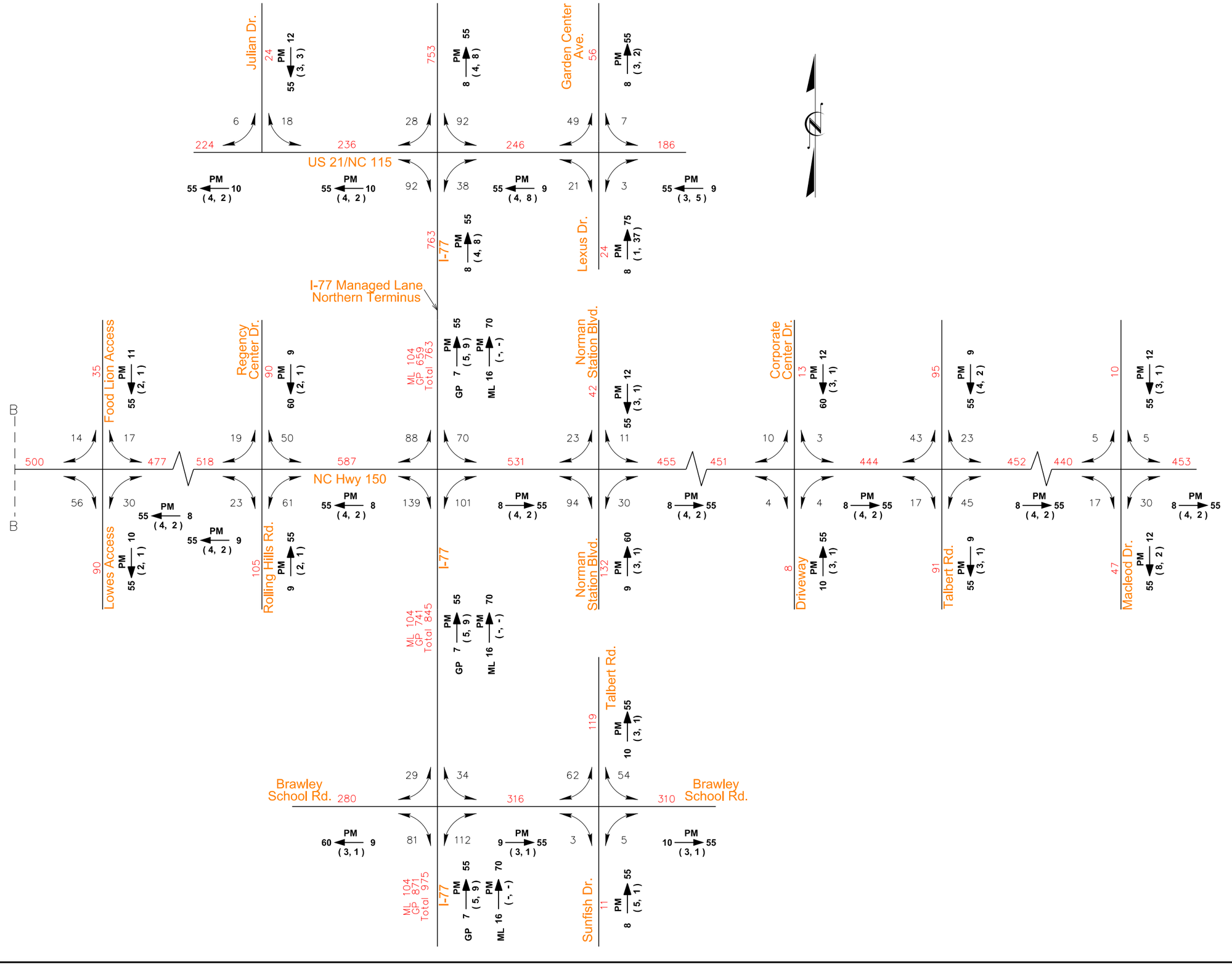

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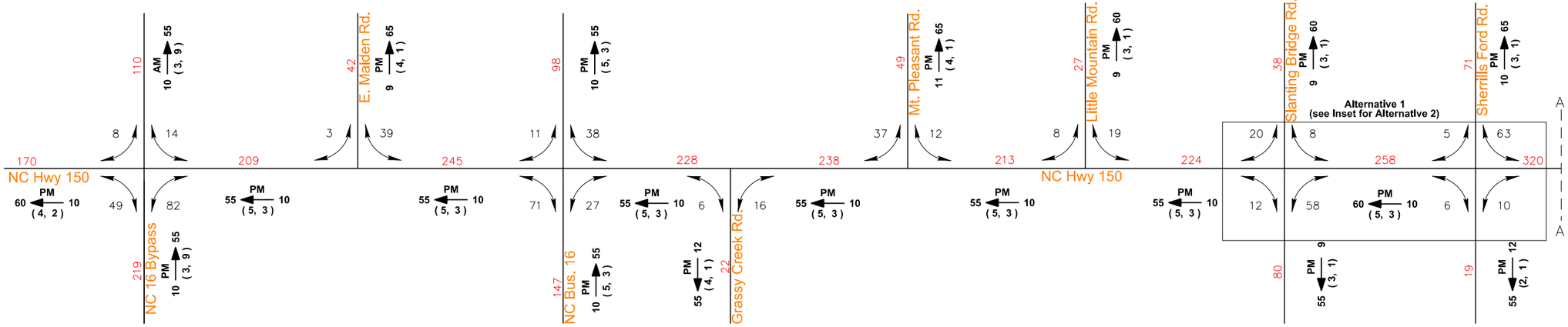

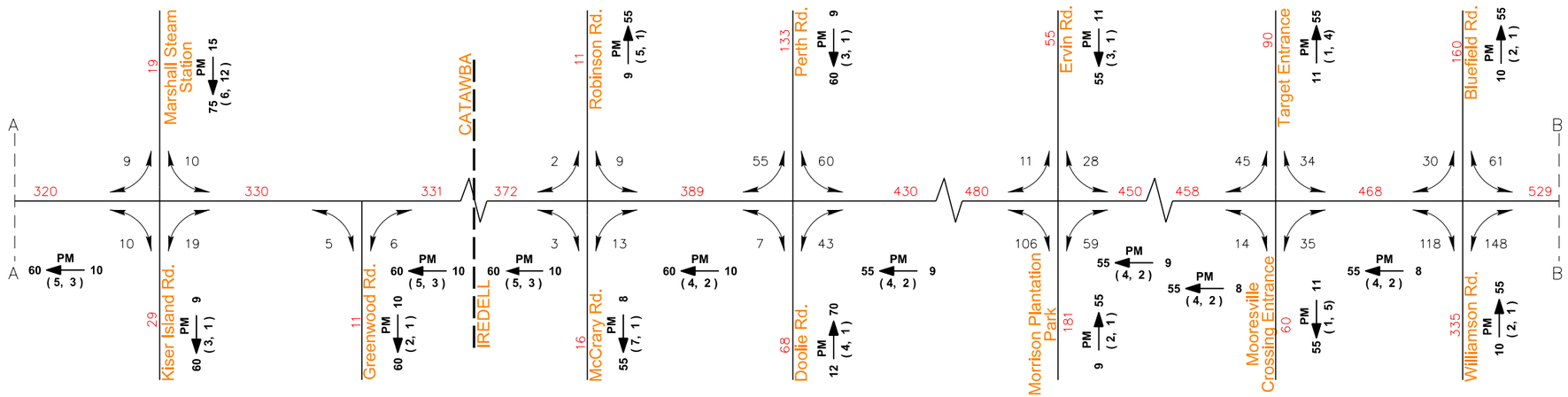

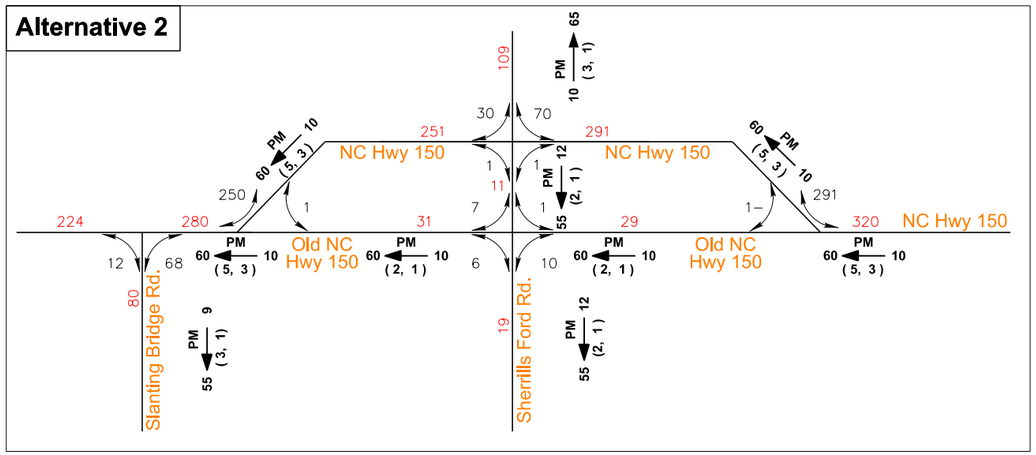

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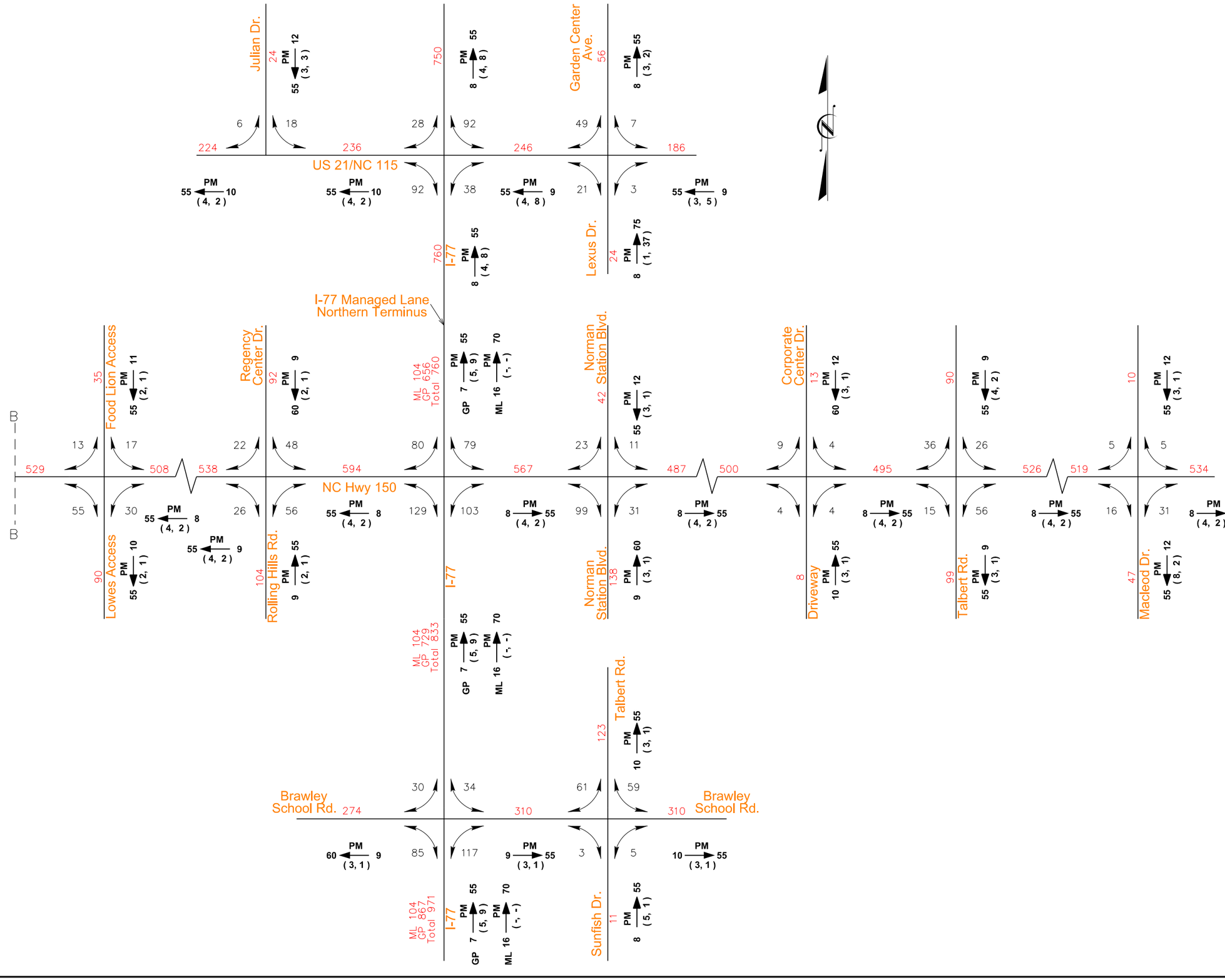

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