



Carbon Monoxide Traffic Air Quality Analysis

I-35 Capital Express North Project

Travis and Williamson Counties, Texas
Austin District
CSJs: 0015-10-062 & 0015-13-389

December 2020

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by FHWA and TxDOT.

Table of Contents

1.0	Project Description	1
	Modeled Scenarios	1
2.0	Background Information.....	1
3.0	Analysis Methodology.....	1
4.0	Receptor Locations.....	3
5.0	Analysis Results.....	4

List of Tables

Table 1:	Projected AADT and DHV.....	2
Table 2:	Emission Rates and Projected Vehicle Speeds	3
Table 3:	Receptor Descriptions	4
Table 4:	1-Hour and 8-Hour CO Concentrations (ETC Year)	5
Table 5:	1-Hour and 8-Hour CO Concentrations (Design Year)	5

Appendices

Appendix A: Project Location Map

Appendix B: Traffic Data

Appendix C: CO Receptor Locations

1.0 Project Description

The Texas Department of Transportation (TxDOT) Austin District proposes improvements to Interstate 35 (I-35) from State Highway 45 North (SH 45N) in Williamson County to US Highway 290 East (US 290E) in Travis County. The proposed improvements would add one non-tolled managed lane in each direction, reconstruct intersections and bridges to increase bridge clearances and east/west mobility, and improve bicycle and pedestrian accommodations along I-35 frontage roads and at east/west crossings. The project length is approximately 11.5 miles (see **Appendix A** for a Project Location Map).

Modeled Scenarios

The Build Alternative for the estimated time of completion (ETC) year (2025) and design year (2045) were modeled for the carbon monoxide (CO) analysis in accordance with TxDOT's *Environmental Guide: Volume 2 Activity Instructions (January 2020)*.

2.0 Background Information

CO is a primary pollutant from motor vehicles that is largely emitted from a vehicle's exhaust system; thus, there is a federal requirement to model localized CO concentrations for proposed highway projects. Projects that are adding capacity may result in an increase of CO emissions; therefore, TxDOT requires the completion of a project-level CO analysis for added capacity projects that exceed an annual average daily traffic (AADT) volume of 140,000 vehicles per day (vpd).

Since the project would add capacity and the design year traffic volume is above 140,000 vpd (see **Table 1** below), a CO traffic air quality analysis (TAQA) is required to assess whether the project would adversely affect local air quality by contributing to CO levels that exceed the 1-hour or 8-hour CO National Ambient Air Quality Standard (NAAQS).

3.0 Analysis Methodology

CO concentrations for the Build Alternative were modeled for the ETC and design years using the CAL3QHC dispersion model. The traffic data used in the analysis was obtained from TxDOT's Transportation Planning & Programming (TPP) Division. The supplied traffic data included the years of 2030 and 2050, so a compound annual growth rate was used to calculate the appropriate traffic data for the ETC and Design (No Build) scenarios. Detailed traffic data for the 2045 Build scenario was also provided. Traffic for the ETC and design year is shown by section in **Table 1**. See **Appendix B** for the complete TPP Traffic Data.

Table 1: Projected AADT and DHV

I-35 Sections: Mainlanes	AADT		DHV	
	2025 (ETC)	2045 (Design)	2025 (ETC)	2045 (Design)
Section 2: S of William Cannon to N of Rundberg	232,009	289,444	13,688	17,077
Section 3: N of Rundberg to N of Howard*	195,405	256,461	13,874	18,209
I-35 Sections: Frontage Roads	AADT		DHV	
	2025 (ETC)	2045 (Design)	2025 (ETC)	2045 (Design)
Section 7: S of US 290 Ramps to N of US 290 Ramps	56,224	68,411	3,992	4,857
Section 8: N of US 290 Ramps to N of US 183 Ramps	78,398	88,676	5,566	6,296
Section 9: N of US 183 Ramps to S of Howard Ramps	89,055	116,543	6,323	8,275
Section 10: S of Howard Ramps to N of Howard*	78,497	102,934	5,573	7,308

*North of Howard to the northern project limits.

DHV – Design Hourly Volume

The segments modeled in the CO analysis were chosen based on the areas of the project with the highest AADT and narrowest ROW. The modeled segment limits and their respective traffic sections are as follows:

- Segment 1: South of SH 45N to north of Greenlawn Blvd (within Traffic Section 3 (Mainlanes) and Section 10 (Frontage Roads))
- Segment 2: South of Howard Ln to north of Center Ridge Dr (within Traffic Section 3 (Mainlanes) and Section 9 (Frontage Roads))
- Segment 3: North of Park Plz to north of Powell Ln (within Traffic Section 2 (Mainlanes) and Section 7 (Frontage Roads))
- Segment 4: North of US 290E to south of Atkinson Rd (within Traffic Section 2 (Mainlanes) and Section 7 (Frontage Roads))

Background CO concentrations of 1.6 parts per million (ppm) (1-hour) and 1.3 ppm (8-hour) were used for the model in accordance with Appendix B of TxDOT's *Environmental Guide: Volume 2 Activity Instructions (January 2020)*.

The emission rates used in the analysis were based on the MOVES2014 model, gathered from the TxDOT Emission Rates Lookup Table (ERLT) for TAQA (*TxDOT Air Quality Toolkit, June 2016*) and identified in **Table 2** below. Because the current ERLTs do not extend to the design year of 2045, the rates for the year 2040 were used as a surrogate. The use of these rates represents a worst-case

analysis, since emission rates decline over time. The speeds for the model represent the posted, free flow movement of vehicles, which would allow for a worst-case analysis.

Table 2: Emission Rates and Projected Vehicle Speeds

Facility Type	Facility Type	Emission Rates (Grams/Mile)		Posted Speed
		2025	2045	
Mainlanes	Urban Freeway	1.35	0.66	70
Direct Connectors	Urban Freeway	1.01	0.47	60
Collector-Distributor	Urban Arterial	1.09	0.52	65
Frontage Roads	Urban Arterial	1.05	0.48	55
Ramps	Urban Freeway	1.01	0.45	55

The following adverse meteorological conditions are the worst-case assumptions and input parameters used in the analysis, in accordance with Appendix D of TxDOT's *Environmental Guide: Volume 2 Activity Instructions (January 2020)*:

- Averaging time of 60 minutes
- Atmospheric Stability Class of 4 (stable)
- Mixing height of 1,000 meters
- Wind speed of 1 meter per second
- Winds blowing parallel to the roadway

4.0 Receptor Locations

Receptors were modeled on the right-of-way (ROW) line along areas with the highest AADT and narrowest ROW for each segment. A standard height of 5.9 feet was given to the receptors for all models to simulate the average height of a person. As **Table 3** indicates, there's a variation of facility types amongst the segments. They all contain mainlanes and frontage roads, but Segment 2 & 3 contain collector-distributors and Segment 4 contains direct connectors as additional emission factors. Furthermore, the ROW width and traffic is also relatively consistent amongst the modeled receivers. The ROW width varies by 6 feet to 18 feet, while the total AADT at each of the receptors is consistently above 273,000 vpd to approximately 406,000 vpd. Segment 4's wider ROW, 545 feet, can be attributed to the US 290E direct connectors. Aerial maps depicting the receptor locations along the project ROW are found in **Appendix C**.

Table 3: Receptor Descriptions

Name	Segment	Distance from Roadway	ROW Width	2025 Total DHV	2045 Total DHV	2025 Total AADT	2045 Total AADT	Speed
Receptor 1 (R1)	Segment 1	31 ft	338 ft	19,447	25,517	273,902	359,395	ML: 70 FR: 55
Receptor 2 (R2)	Segment 1	27 ft	338 ft	19,447	25,517	273,902	359,395	ML: 70 FR: 55
Receptor 3 (R3)	Segment 2	30 ft	344 ft	19,447	25,517	273,902	359,395	ML: 70 FR: 55 CD: 65
Receptor 4 (R4)	Segment 2	26 ft	344 ft	19,447	25,517	273,902	359,395	ML: 70 FR: 55 CD: 65
Receptor 5 (R5)	Segment 3	42 ft	356 ft	22,796	25,325	321,064	405,987	ML: 70 FR: 55 CD: 65
Receptor 6 (R6)	Segment 3	38 ft	356 ft	22,796	25,325	321,064	405,987	ML: 70 FR: 55 CD: 65
Receptor 7 (R7)	Segment 4	16 ft	545 ft	20,465	25,408	288,233	357,855	ML: 70 FR/DC: 55
Receptor 8 (R8)	Segment 4	36 ft	545 ft	20,465	25,408	288,233	357,855	ML: 70 FR/DC: 55

5.0 Analysis Results

The 1-hour CO NAAQS is 35 ppm, while the 8-hour NAAQS is 9 ppm, which are not to be exceeded more than once in a year. Modeling results indicate that local concentrations of CO are not expected to exceed national standards at any time along any segment of the project; furthermore, CO concentrations are expected to slightly decrease from the ETC to the design year because of decreasing CO emission rates in the Austin area. The modeled 1-hour CO concentrations along the project range from 1.8 ppm to 1.9 ppm for 2025, and 1.6 ppm to 1.8 ppm for 2045. The highest CO concentration result and percent of the 1-hour and 8-hour NAAQS along the I-35 project is recorded in **Table 4** and **Table 5**. Receptors 1 through 5 and 8 had the highest modeled CO concentration in 2025, while Receptors 1 through 3 and 6, in Segments 1 through 3, had the highest modeled CO concentrations in 2045. These results directly correlate with each segment's ROW width and DHV; Segment 1 through 3 have a combination of a moderately high DHV and a narrow ROW width.

The associated input and output CAL3QHC files have been submitted with this technical report for inclusion in the project files.

Table 4: 1-Hour and 8-Hour CO Concentrations (ETC Year)

ETC Year: 2025							
Receptor	Modeled Segment	1-Hour CO Concentration (Grams/Mile)	1-Hour CO Background Concentration (Grams/Mile)	8-Hour CO Background Concentration (Grams/Mile)	8-Hour CO Concentration (Grams/Mile)	1-Hour % NAAQS	8-Hour % NAAQS
Receptor 1 (SB)	Segment 1	1.9	1.6	1.3	1.5	5.4%	16.8%
Receptor 2 (NB)	Segment 1	1.9	1.6	1.3	1.5	5.4%	16.8%
Receptor 3 (SB)	Segment 2	1.9	1.6	1.3	1.5	5.4%	16.8%
Receptor 4 (NB)	Segment 2	1.9	1.6	1.3	1.5	5.4%	16.8%
Receptor 5 (SB)	Segment 3	1.9	1.6	1.3	1.5	5.4%	16.8%
Receptor 6 (NB)	Segment 3	1.8	1.6	1.3	1.4	5.1%	16.0%
Receptor 7 (SB)	Segment 4	1.8	1.6	1.3	1.4	5.1%	16.0%
Receptor 8 (NB)	Segment 4	1.9	1.6	1.3	1.5	5.4%	16.8%

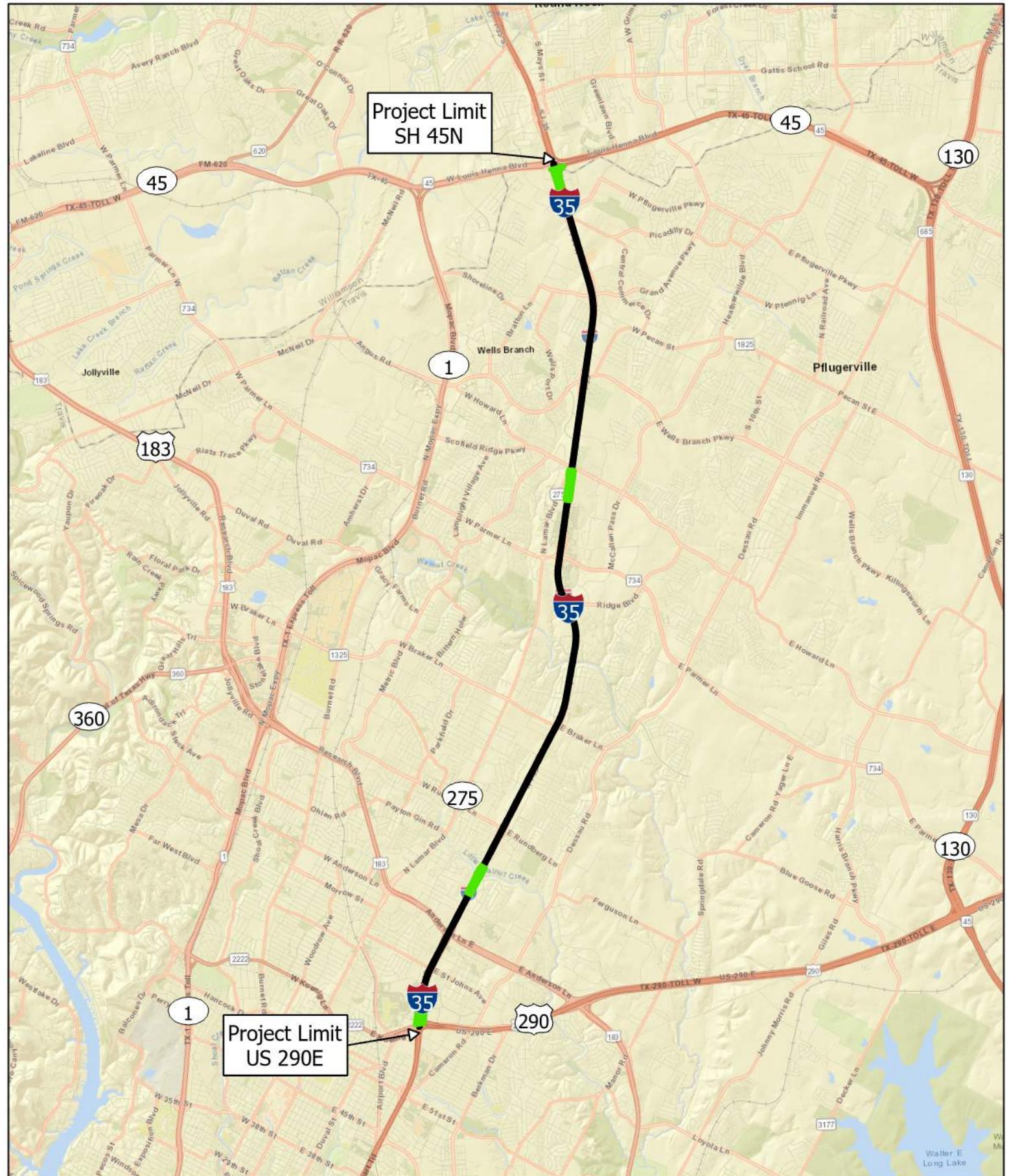
Note: 8-Hour CO Concentrations have been rounded to the nearest tenth decimal. 8-Hour % NAAQS are based on the non-rounded 8-Hour CO Concentration.

Table 5: 1-Hour and 8-Hour CO Concentrations (Design Year)

Design Year: 2045							
Receptor	Modeled Segment	1 Hour CO Concentration (Grams/Mile)	1 Hour CO Background Concentration (Grams/Mile)	8 Hour CO Background Concentration (Grams/Mile)	8 Hour CO Concentration (Grams/Mile)	1-Hour % NAAQS	8-Hour % NAAQS
Receptor 1 (SB)	Segment 1	1.8	1.6	1.3	1.4	5.1%	16.0%
Receptor 2 (NB)	Segment 1	1.8	1.6	1.3	1.4	5.1%	16.0%
Receptor 3 (SB)	Segment 2	1.8	1.6	1.3	1.4	5.1%	16.0%
Receptor 4 (NB)	Segment 2	1.7	1.6	1.3	1.4	4.9%	15.2%
Receptor 5 (SB)	Segment 3	1.7	1.6	1.3	1.4	4.9%	15.2%
Receptor 6 (NB)	Segment 3	1.8	1.6	1.3	1.4	5.1%	16.0%
Receptor 7 (SB)	Segment 4	1.6	1.6	1.3	1.3	4.6%	14.4%
Receptor 8 (NB)	Segment 4	1.7	1.6	1.3	1.4	4.9%	15.2%

Note: 8-Hour CO Concentrations have been rounded to the nearest tenth decimal. 8-Hour % NAAQS are based on the non-rounded 8-Hour CO Concentration.

APPENDIX A
Project Location Map



I-35 Capital Express North

From SH 45N to US 290E
 Travis & Williamson County, TX
 CSJ: 0015-10-062 & 0015-13-389



CO Modeling Area



Project Limits



APPENDIX B

Traffic Data

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

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Austin District

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Austin District

August 22, 2019

August 22, 2011

										Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050)								
Description of Location		Average Daily Traffic	Base Year	ATHWLD	Percent Tandem Axles in ATHWLD													
		2030	2050			Dir Dist %	K Factor	Percent Trucks		Flexible Pavement	S N	Rigid Pavement	SLAB					
I-35 (Frontage Roads)								ADT	DHV									
Frontage Road Cutline Section 6	Travis County	84,400	104,500	51 - 49	5.9	2.6	2.0	0	0	0	3	0	8"					
Data for Use in Air & Noise Analysis										Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)								
Vehicle Class		Base Year		% of ADT		% of DHV												
Light Duty		97.4		98.0						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)								
Medium Duty		2.3		1.7														
Heavy Duty		0.3		0.3														
Description of Location											ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)					
Average Daily Traffic		Dir Dist %		K Factor		Percent Trucks												
		2030	2060			ADT	DHV											
I-35 (Frontage Roads)	Travis County	84,400	112,550	51 - 49	5.9	2.6	2.0	0	0	0	3	0	8"					

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

Description of Location										Base Year				ATHWLD				Percent Tandem Axles in ATHWLD				Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050)												
<u>I-35 (Frontage Roads)</u>		Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ADT	DHV	ATHWLD				Percent Tandem Axles in ATHWLD				Flexible Pavement																
		2030	2050			ADT	DHV																											
<u>Section 8</u>		80,850	91,450	55 - 45	7.1	2.9	2.2	0	0																									
Frontage Road Cutline Section 8		Travis County																	0	3	0	8"												
Data for Use in Air & Noise Analysis																																		
Vehicle Class		Base Year																																
		% of ADT		% of DHV																														
Light Duty		97.1		97.8																														
Medium Duty		1.9		1.4																														
Heavy Duty		1.0		0.8																														
										ATHWLD				Percent Tandem Axles in ATHWLD				Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)																
Description of Location		Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ADT	DHV																									
		2030	2060			ADT	DHV																											
<u>I-35 (Frontage Roads)</u>		Section 8																																
Frontage Road Cutline Section 8		Travis County																	0	3	0	8"												

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

August 22, 2011

Description of Location											Base Year				Percent Tandem Axles in ATHWLD											
											Dir Dist %	K Factor	Percent Trucks													
											2030	2050	ADT	DHV												
																Flexible Pavement	S N	Rigid Pavement	SLAB							
I-35 (Frontage Roads)	Section 9	Frontage Road Cutline Section 9	Travis County	95,250	124,650	55 - 45	7.1	2.7	2.0	0	0	3	0	8*												
Data for Use in Air & Noise Analysis											Base Year				Percent Tandem Axles in ATHWLD											
Vehicle Class				% of ADT		% of DHV																				
Light Duty				97.3		98.0																				
Medium Duty				1.8		1.4																				
Heavy Duty				0.9		0.6																				
I-35 (Frontage Roads)	Section 9	Frontage Road Cutline Section 9	Travis County	95,250	137,150	55 - 45	7.1	2.7	2.0	0	0	3	0	8*												

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

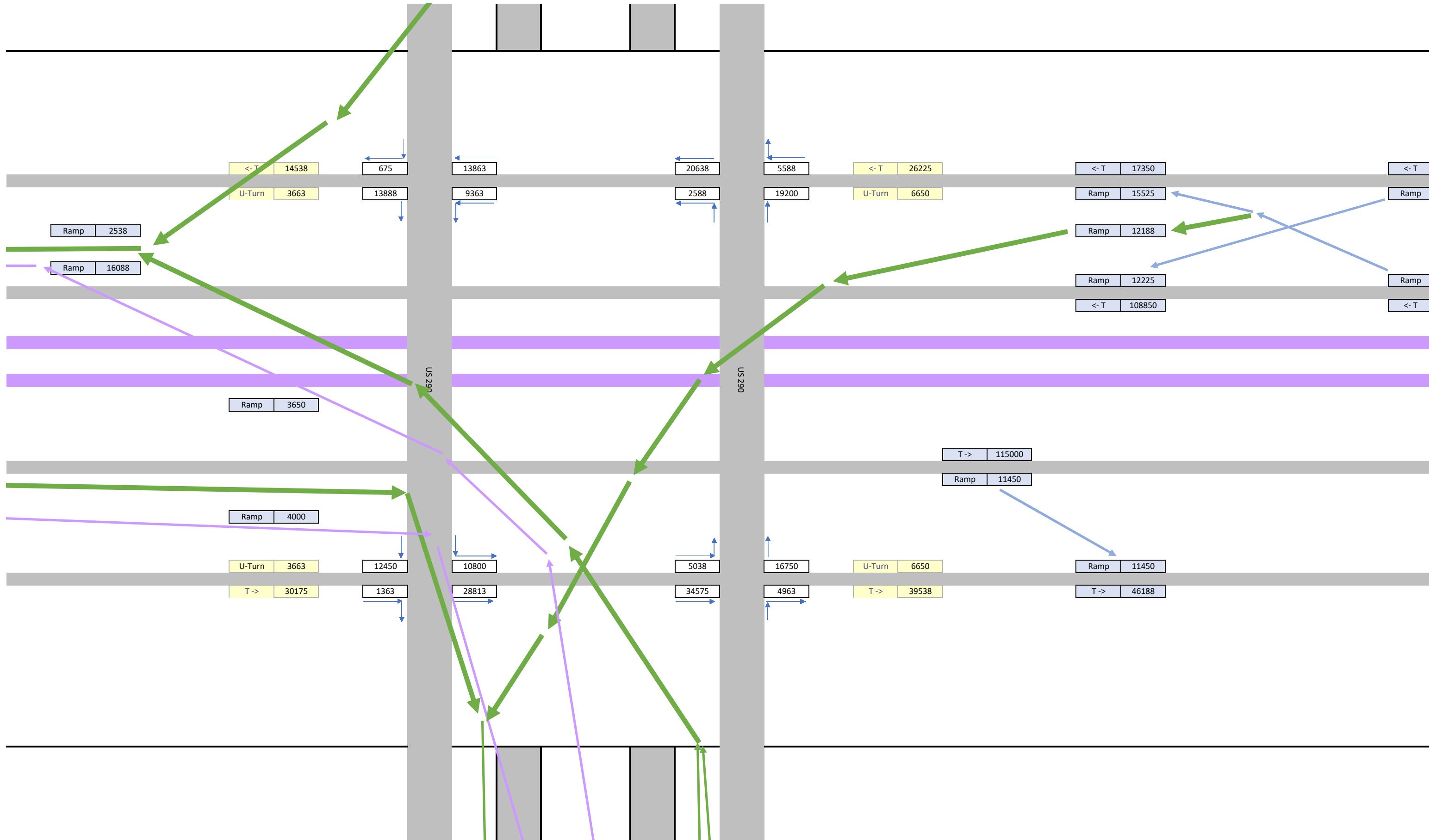
Austin District

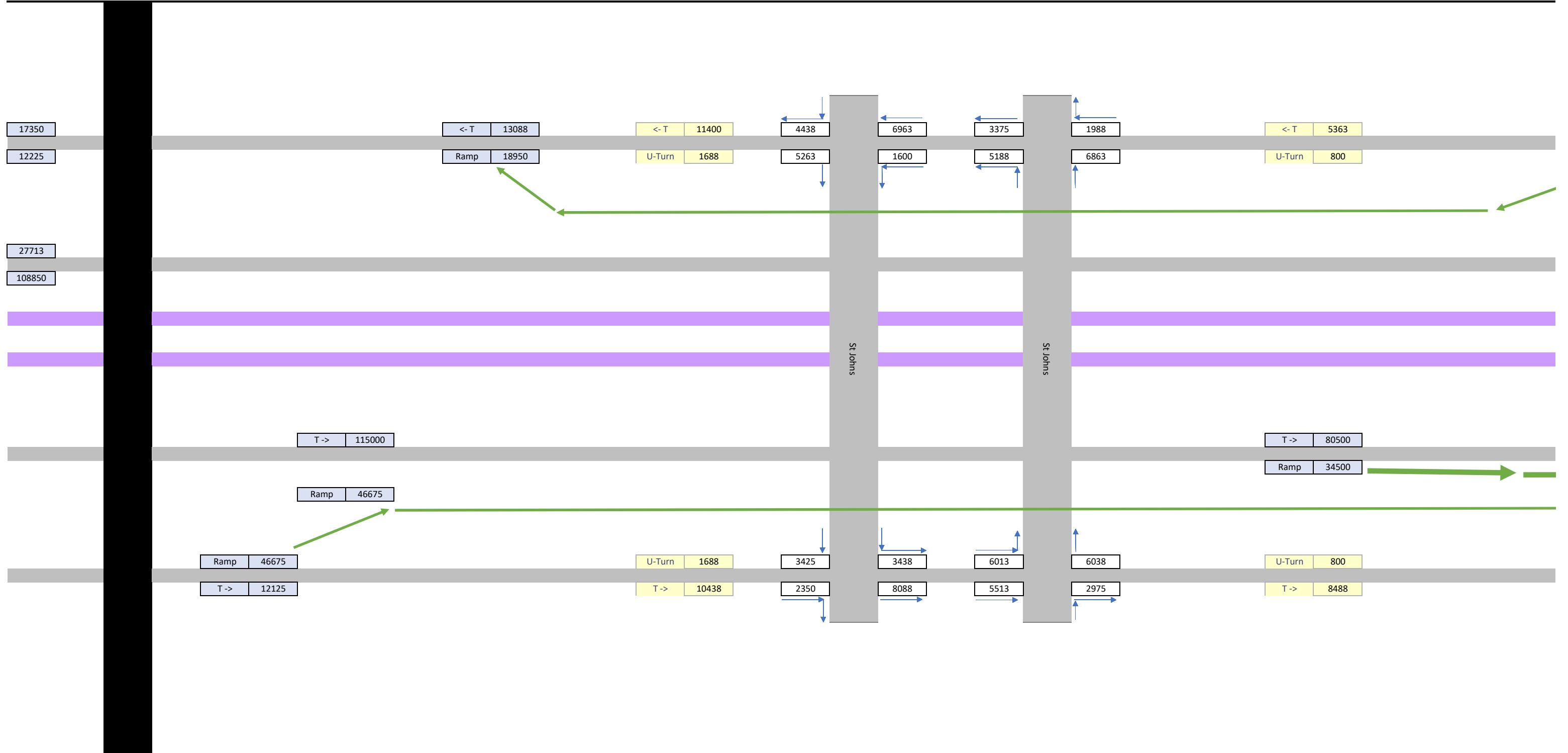
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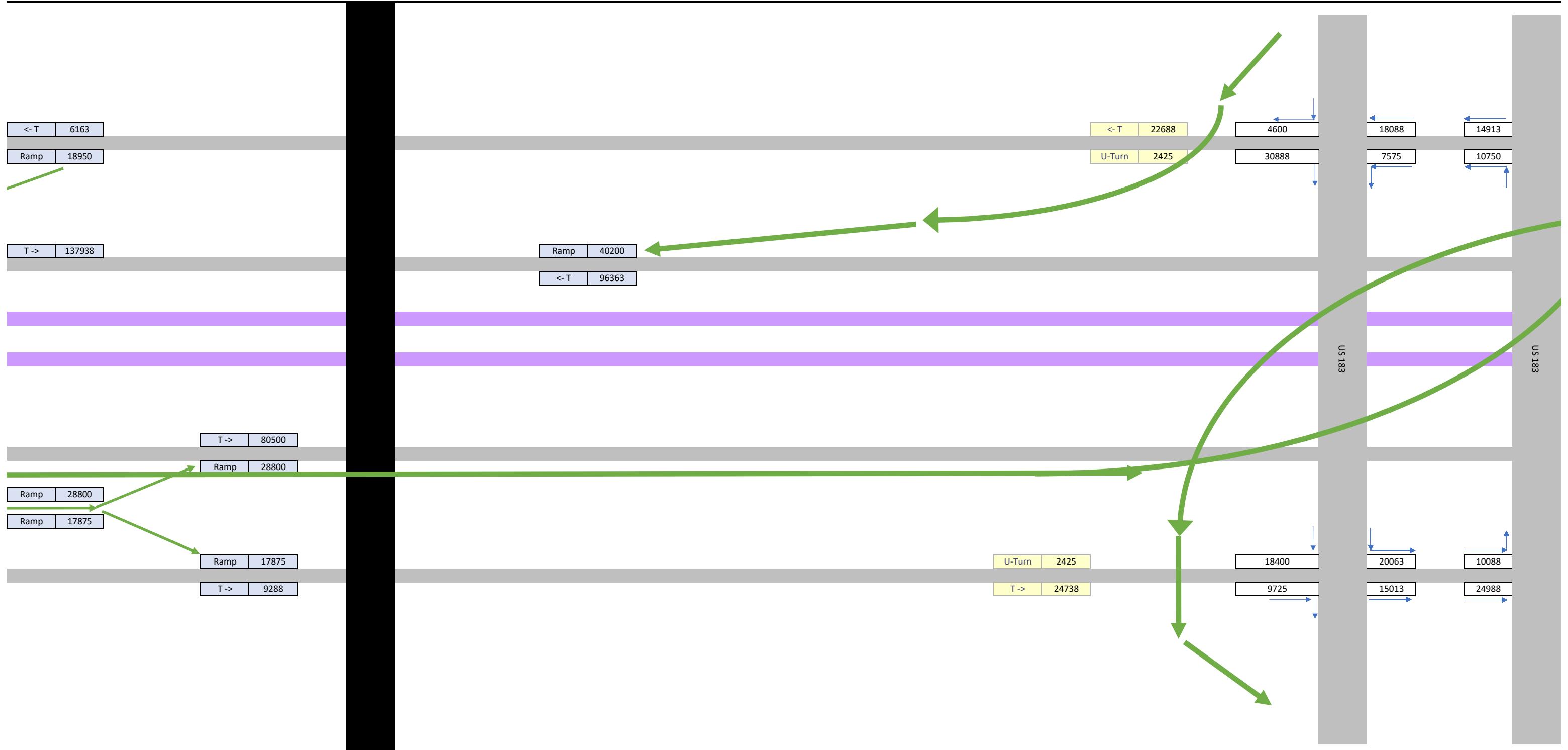
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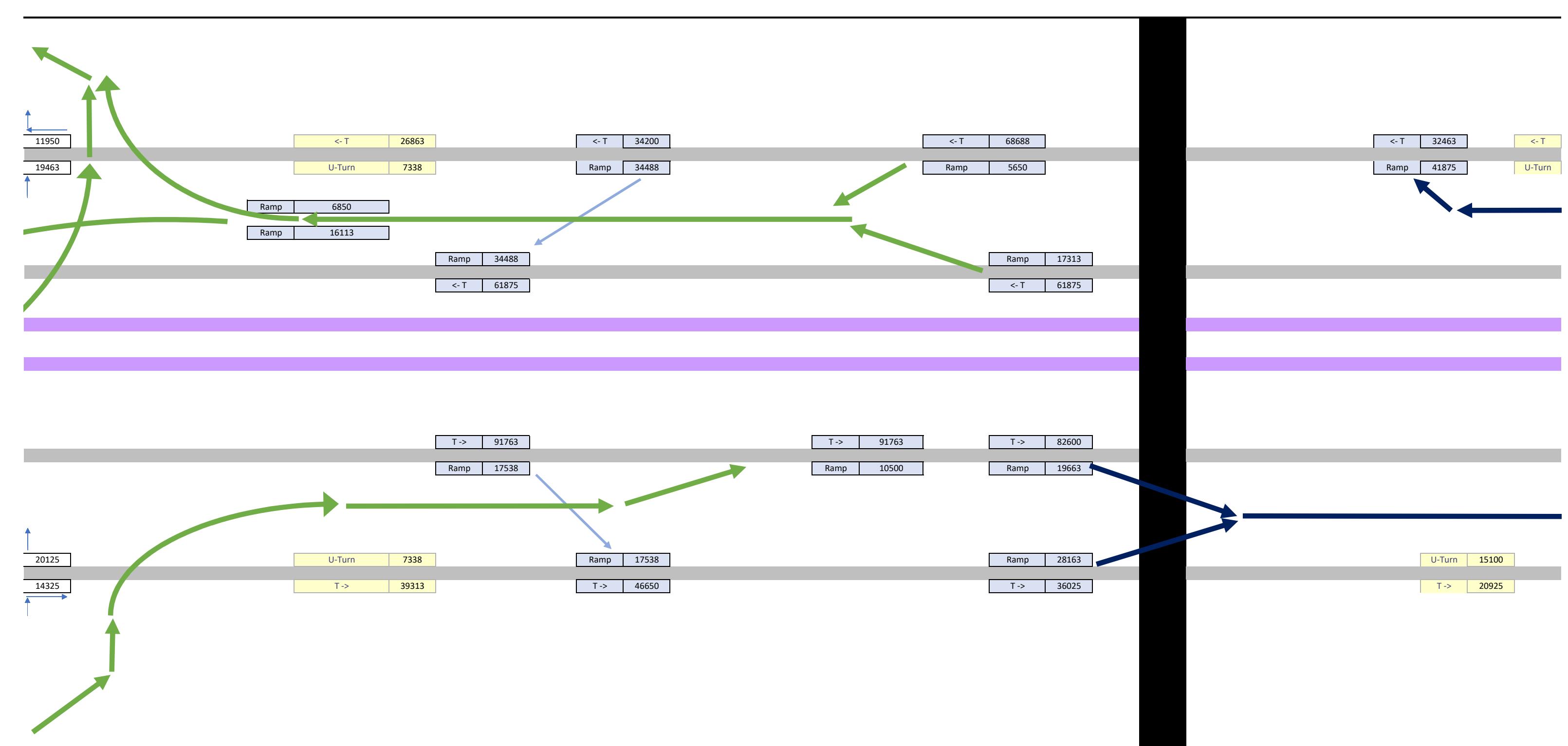
Description of Location										Base Year				Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050)									
										ATHWLD	Percent Tandem Axles in ATHWLD	2030		2050		Dir Dist %	K Factor	Percent Trucks		Flexible Pavement	S N	Rigid Pavement	SLAB
												ADT	DHV	ADT	DHV			Flexible Pavement	S N	Rigid Pavement	SLAB		
I-35 (Frontage Roads)	Section 10	Frontage Road Cutline Section 10	Travis County	84,000	110,150	55 - 45	7.1	2.9	2.2	0	0	0	3	0	8"								
Data for Use in Air & Noise Analysis										Vehicle Class	Base Year				Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)								
Light Duty					97.1	97.8					% of ADT	% of DHV											
Medium Duty					1.9	1.4																	
Heavy Duty					1.0	0.8																	
Description of Location										ATHWLD	Base Year				Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)								
I-35 (Frontage Roads)					84,000	121,250	55 - 45	7.1	2.9		ADT	DHV	ADT	DHV	Dir Dist %	K Factor	Percent Trucks	Flexible Pavement	S N	Rigid Pavement	SLAB		
Section 10					Frontage Road Cutline Section 10	Travis County	84,000	121,250	55 - 45		0	0	0	3	0	8"							

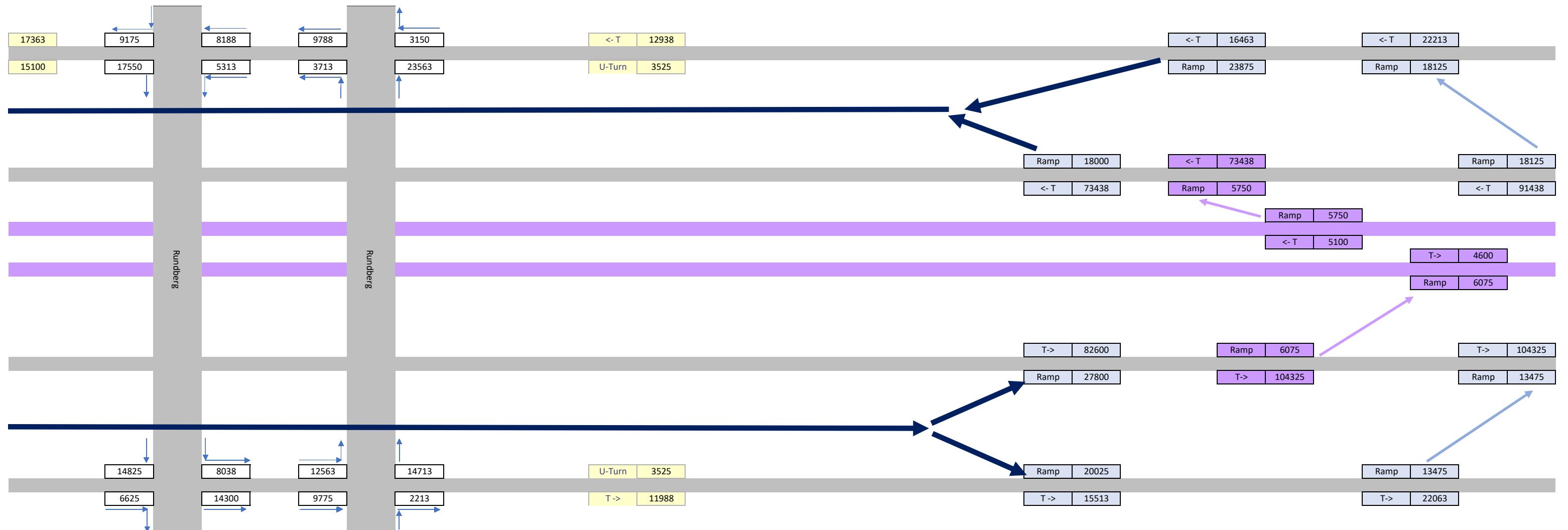
Project Limit

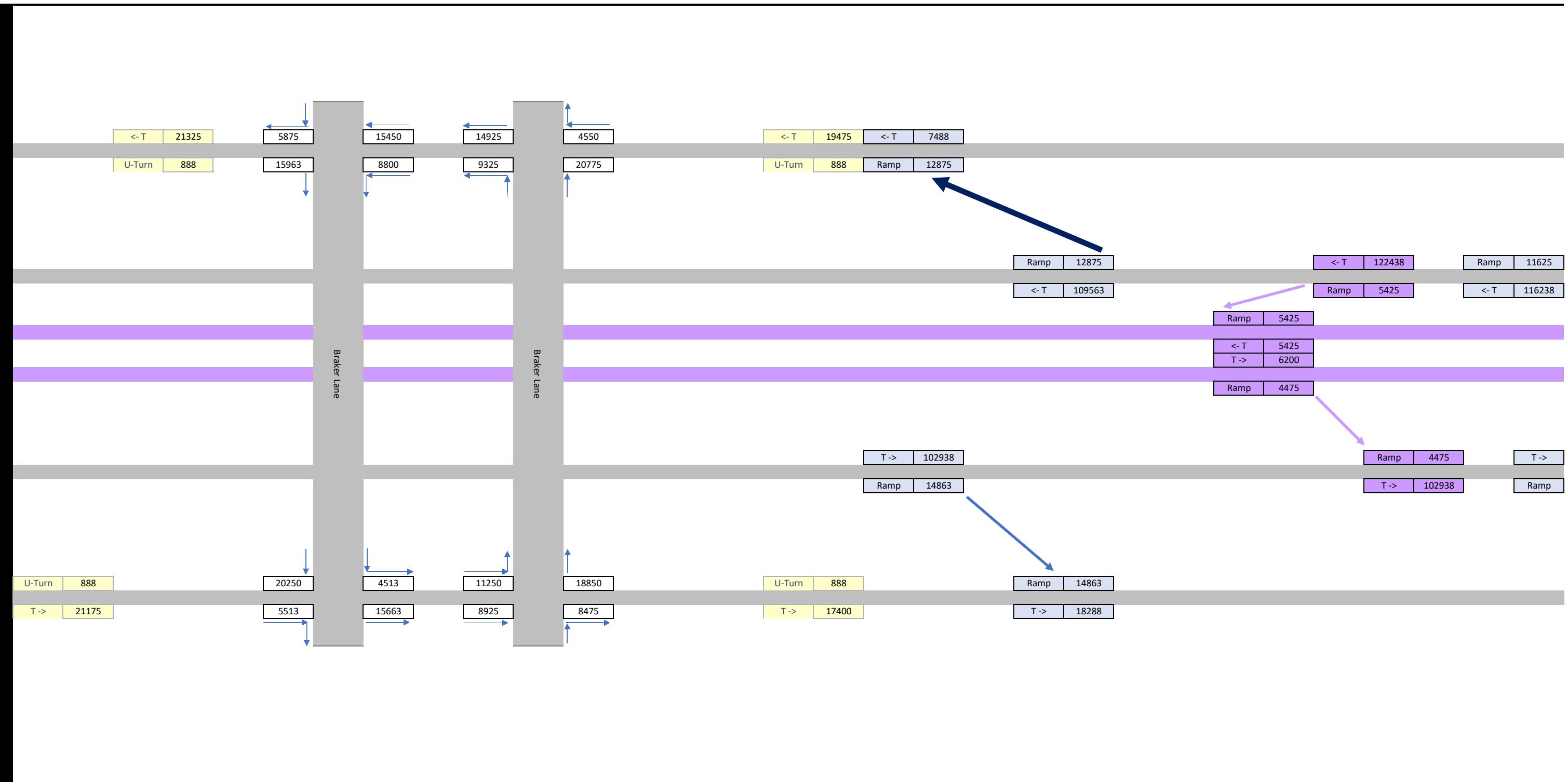


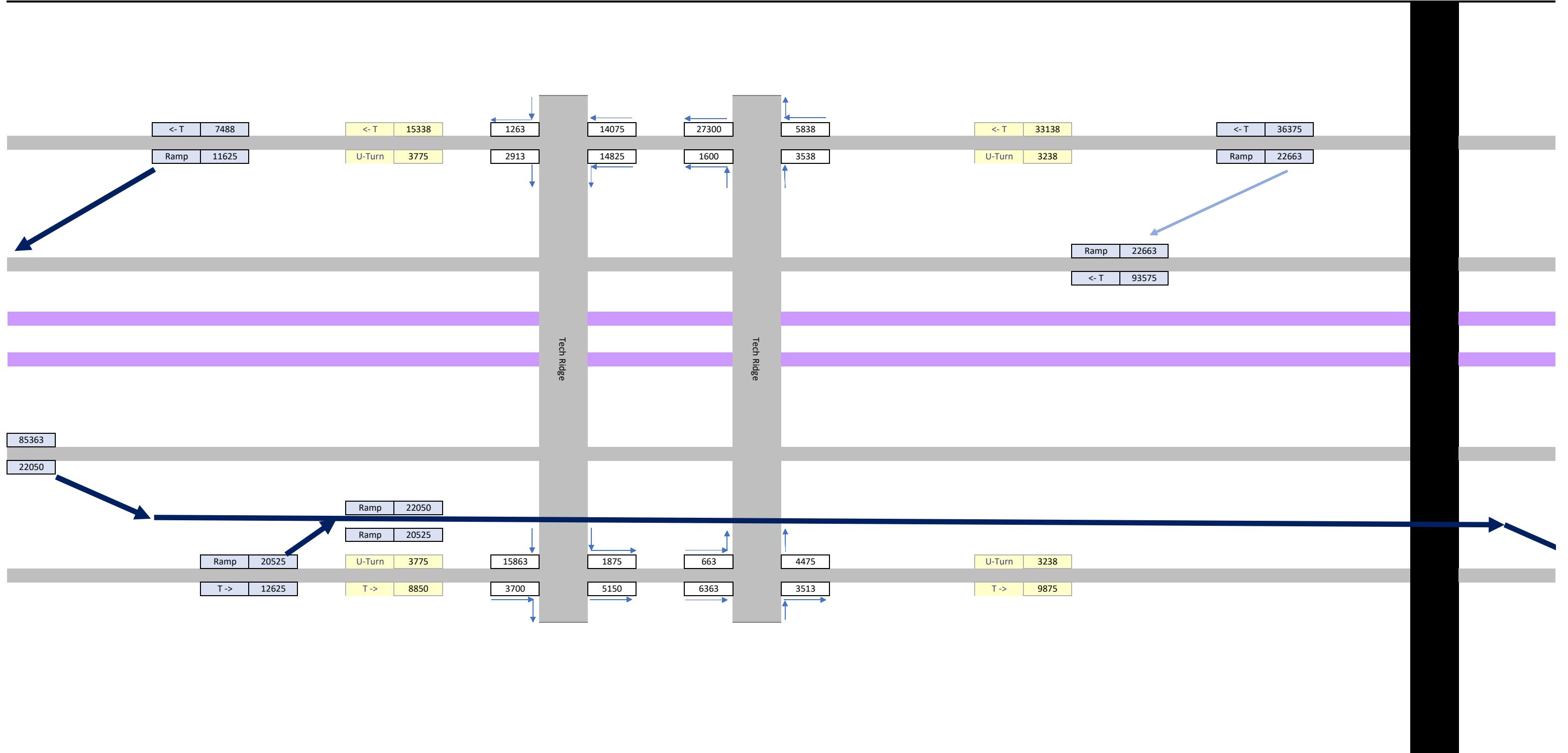


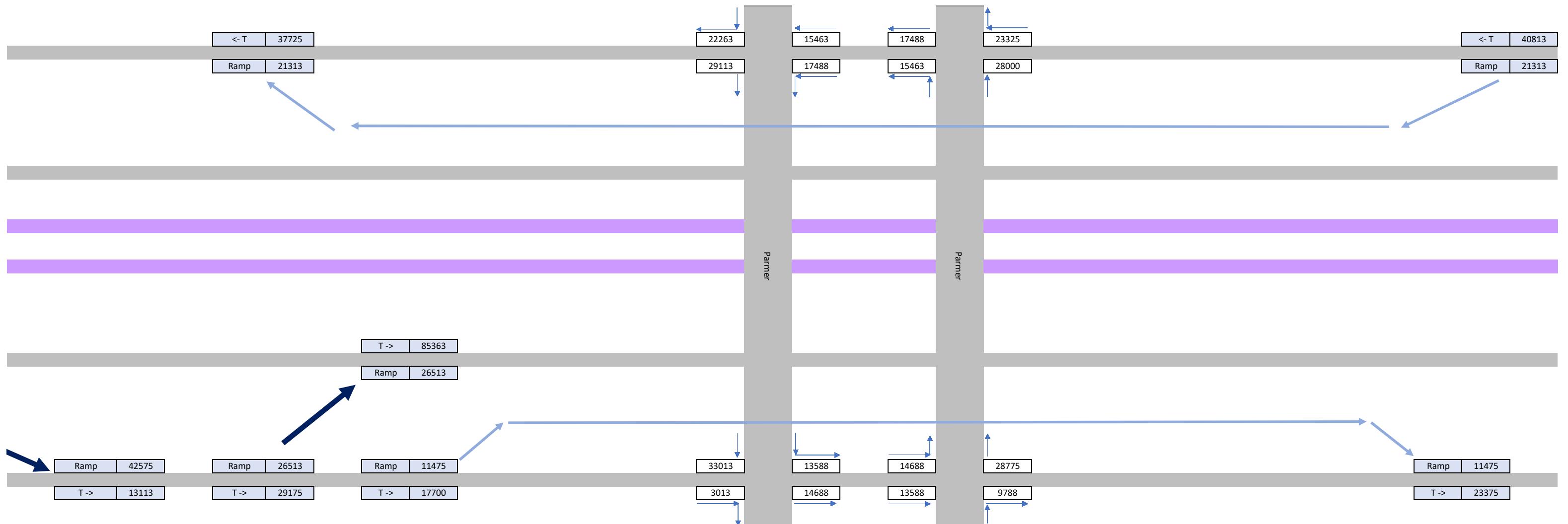


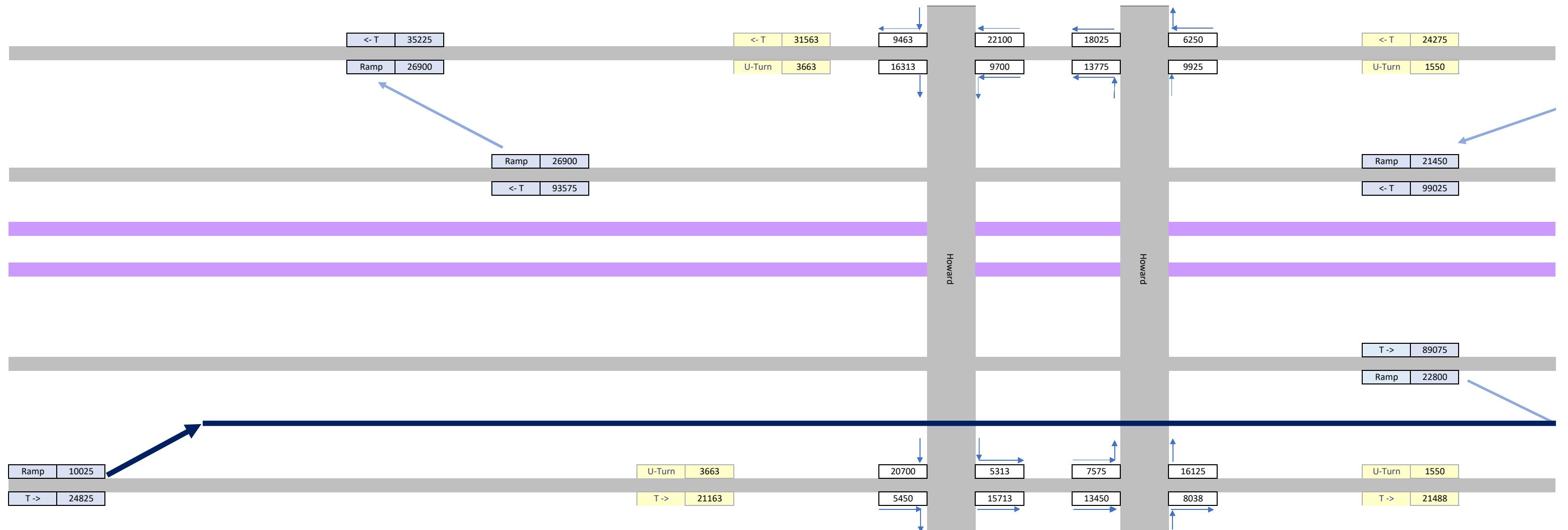


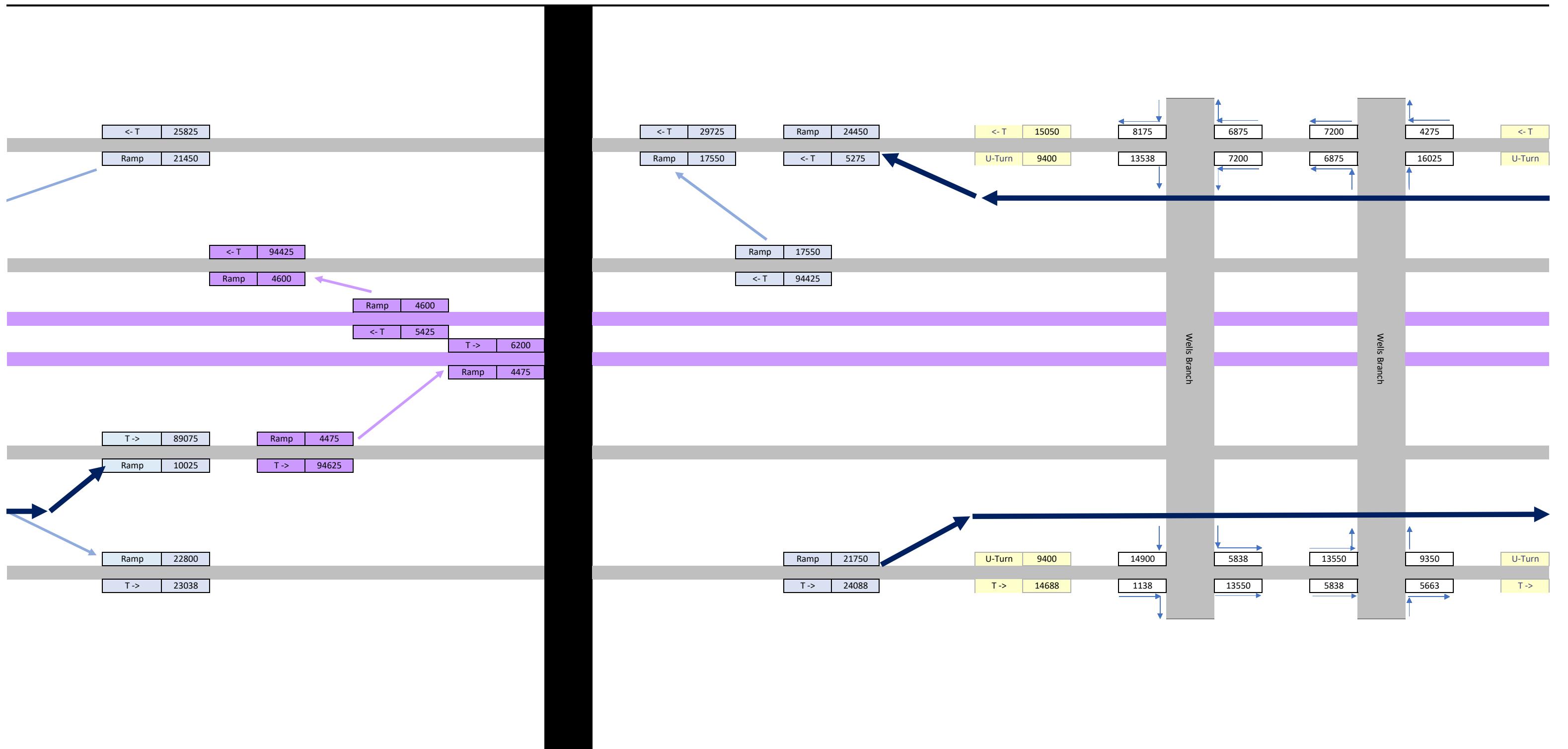


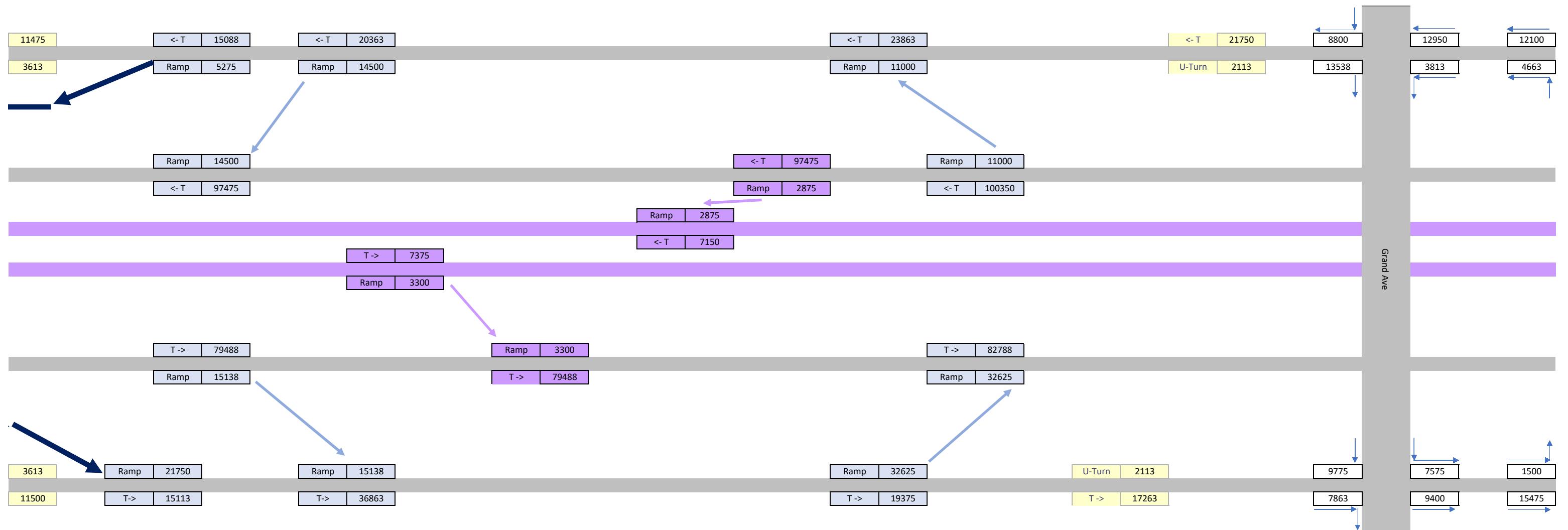


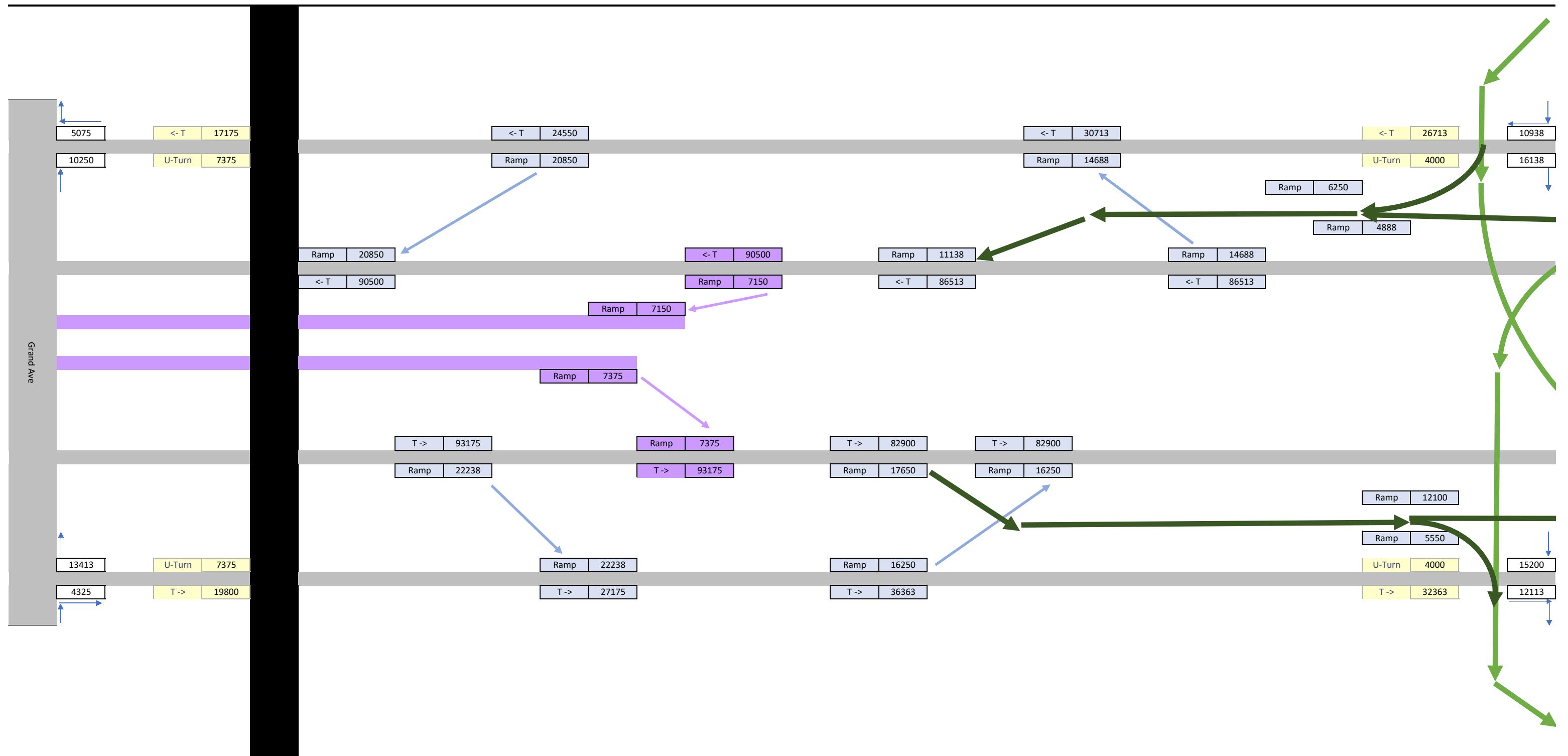




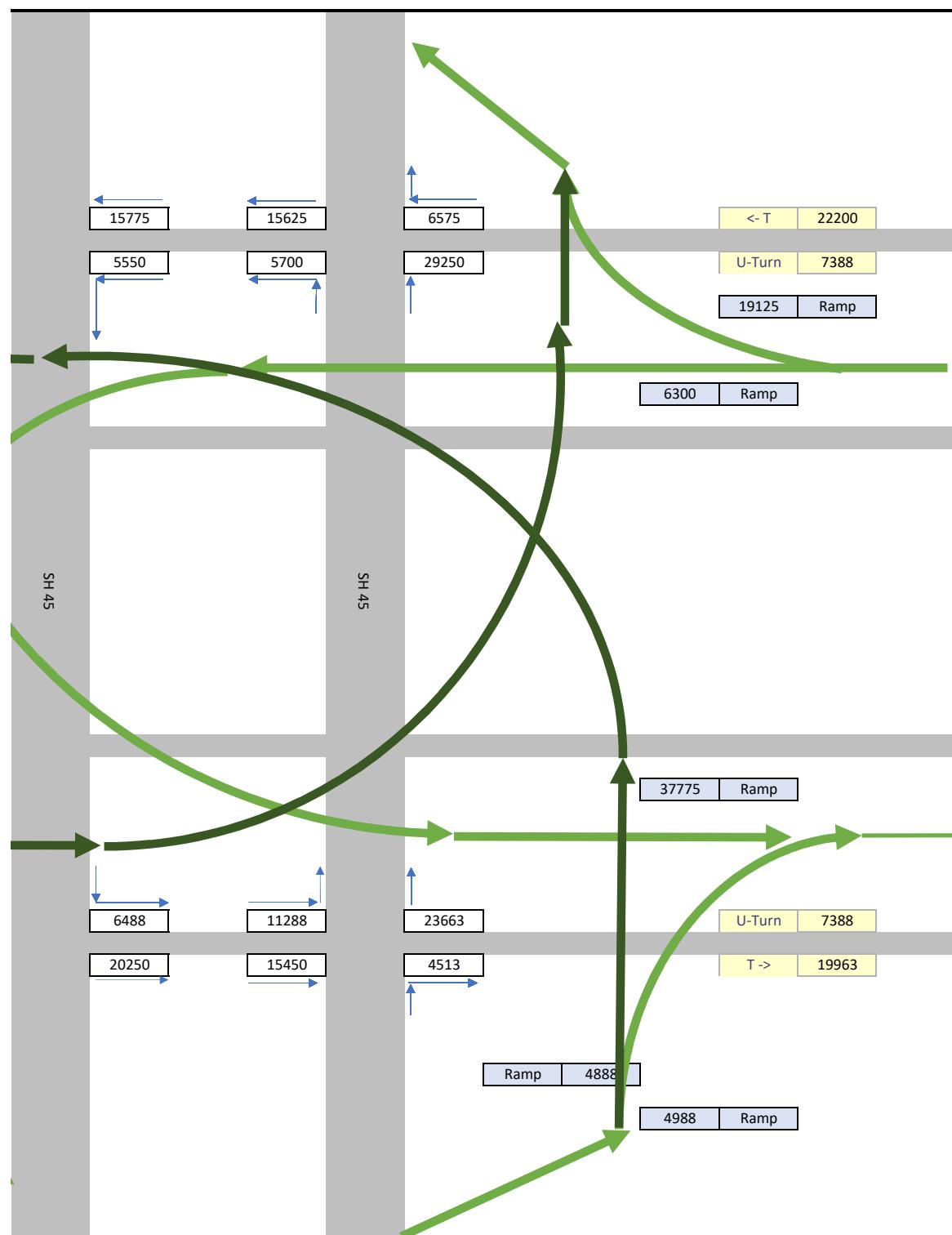






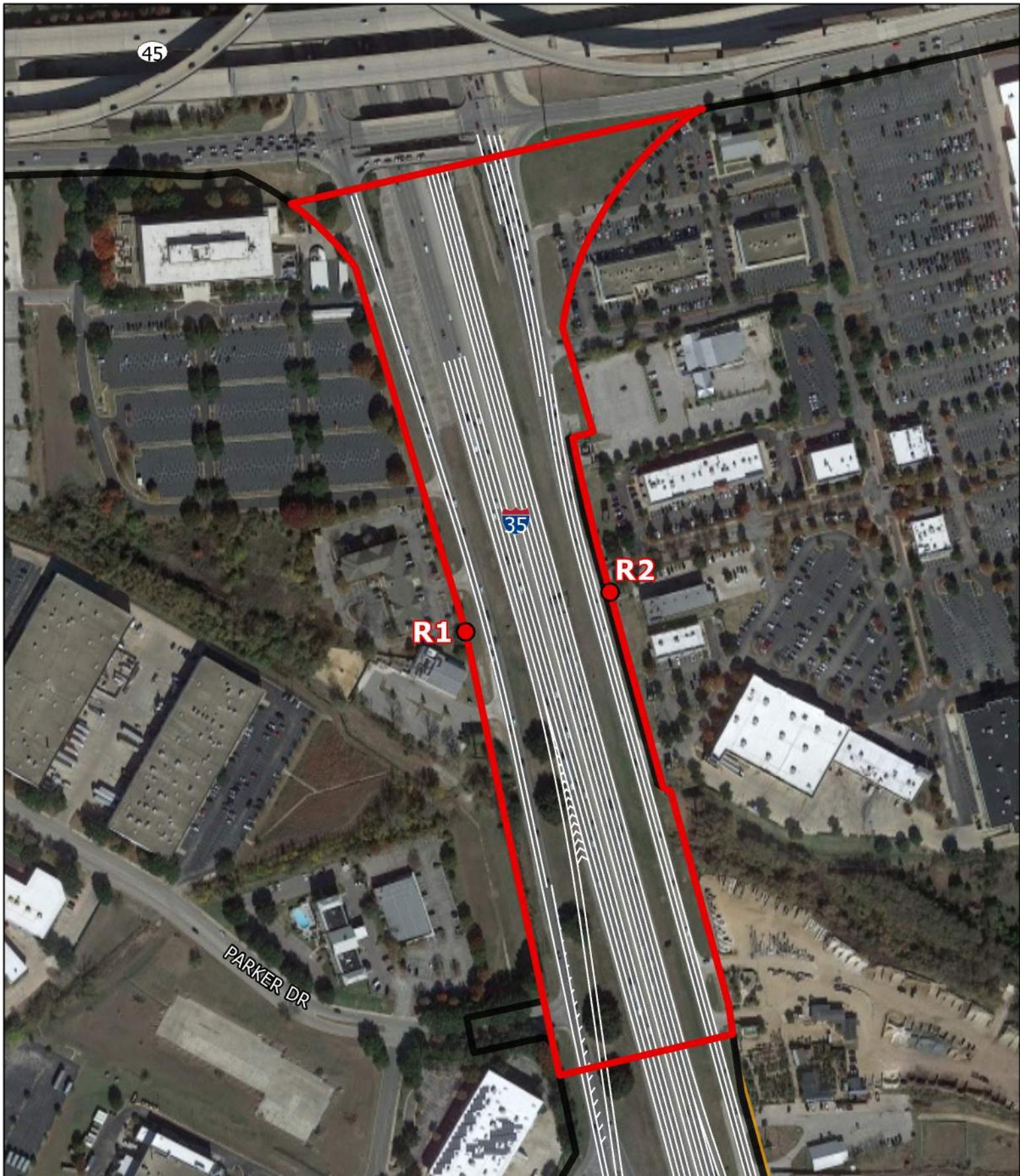


Project Limit



APPENDIX C

CO Receptor Locations



CO Receptors - Segment 1

I-35 Capital Express North

From SH 45N to US 290E

Travis & Williamson County, TX

CSJ: 0015-10-062 & 0015-13-389

● CO Receptor

□ Proposed ROW



□ CO Modeling Area

— Pavement Marking

▀ Existing ROW

0 230 460 US Feet

Sources: Google Imagery 2019



CO Receptors - Segment 2

I-35 Capital Express North

From SH 45N to US 290E

Travis & Williamson County, TX

CSJ: 0015-10-062 & 0015-13-389

● CO Receptor

■ CO Modeling Area

■ Existing ROW

■ Proposed ROW

— Pavement Marking



US Feet

0 230 460

Sources: Google Imagery 2019



CO Receptors - Segment 3

I-35 Capital Express North

From SH 45N to US 290E

Travis & Williamson County, TX

CSJ: 0015-10-062 & 0015-13-389

● CO Receptor

■ CO Modeling Area

■ Existing ROW

■ Proposed ROW

— Pavement Marking



US Feet

0 230 460

Sources: Google Imagery 2019



CO Receptors - Segment 4

I-35 Capital Express North

From SH 45N to US 290E

Travis & Williamson County, TX

CSJ: 0015-10-062 & 0015-13-389

● CO Receptor

■ CO Modeling Area

■ Existing ROW

■ Proposed ROW

— Pavement Marking



US Feet

0 230 460

Sources: Google Imagery 2019



Quantitative Mobile Source Air Toxics Technical Report

I-35 Capital Express North Project

Travis and Williamson Counties, Texas
Austin District
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Table of Contents

1.0 Background Information.....	1
<i>Projects Subject to a Quantitative MSAT Analysis</i>	<i>1</i>
2.0 Quantitative MSAT Analysis.....	1
<i>Background</i>	<i>1</i>
<i>Project-Specific MSAT Information</i>	<i>5</i>
<i>Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis.....</i>	<i>5</i>
3.0 Analysis Methodology.....	8
4.0 Analysis Results	8
5.0 Conclusion.....	11

List of Tables

Table 1: MSAT Emission Inventory by Scenario (2018 – 2045).....	9
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List of Figures

Figure 1: Projected National MSAT Emissions Trends	4
Figure 2: Projected MSAT Emissions vs. VMT by Scenario	10
Figure 3: Comparison of Total MSAT Emissions vs. VMT by Scenario	10

Appendices

Appendix A: Project Location Map

Appendix B: MSAT Conference Call Meeting Minutes

Appendix C: Traffic Data

Appendix D: Analysis Tables

1.0 Background Information

The Texas Department of Transportation (TxDOT) Austin District proposes improvements to Interstate 35 (I-35) from State Highway 45 North (SH 45N) in Williamson County to US Highway 290 East (US 290E) in Travis County. The proposed improvements would add one non-tolled managed lane in each direction, reconstruct intersections and bridges to increase bridge clearances and east/west mobility, and improve bicycle and pedestrian accommodations along I-35 frontage roads and at east/west crossings. The project length is approximately 11.5 miles (see **Appendix A** for a Project Location Map).

Projects Subject to a Quantitative MSAT Analysis

Projects may be subject to a quantitative mobile source air toxics (MSAT) analysis if the project is adding capacity, the design year annual average daily traffic (AADT) is over 140,000 vehicles per day (vpd), there is public concern over air quality, or the project will affect an intermodal facility. Since the project would add capacity and the design year traffic volume is above 140,000 vpd, a quantitative MSAT is required to assess the level at which MSAT would increase or decrease as a result of this project.

The MSAT analysis methodology, including determining and approving the analysis years, the networks links to be included, and the sources for the traffic data used in the analysis, was coordinated via a conference call on June 18, 2019. The call participants consisted of representatives from TxDOT Environmental Affairs Division (ENV), TxDOT Austin District, and the consultant team. See **Appendix B** for a record of the meeting.

2.0 Qualitative MSAT Analysis

Background

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System

(IRIS)¹. In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 2011 National Air Toxics Assessment (NATA)². These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (DPM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter (POM). While the Federal Highway Administration (FHWA) considers these the priority MSAT, the list is subject to change and may be adjusted in consideration of future EPA rules.

Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010. These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and vehicle miles traveled (VMT) data. MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014–2019 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017–2025 (79 FR 60344).

Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers Guide³, EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014. Using EPA's MOVES2014a model, as shown in **Figure 1**, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

¹ The Environmental Protection Agency (EPA) has a program titled the Integrated Risk Information System (IRIS) that characterizes the health hazards of chemicals found in the environment, including MSAT. IRIS has a process (<https://www.epa.gov/iris/basic-information-about-integrated-risk-information-system>) for developing these assessments, which allows for the public and scientific community to submit relevant information for inclusion in them.”

² See: <https://www.epa.gov/national-air-toxics-assessment>

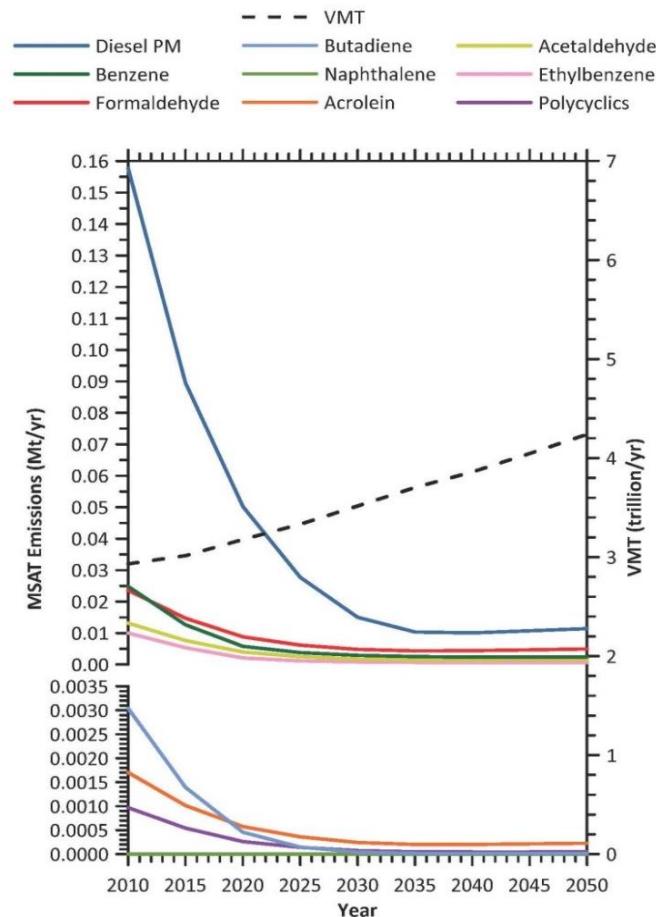
³ See: [MOVES2014a Questions and Answers Guide](#)

DPM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES2014a will notice some differences in emissions compared with MOVES2010b. MOVES2014a is based on updated data on some emissions and pollutant processes compared to MOVES2010b, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES2014a emissions forecasts are based on lower VMT projections than MOVES2010b, consistent with recent trends suggesting reduced nationwide VMT growth compared to historical trends.

MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project level decision-making within the context of the National Environmental Policy Act (NEPA). The FHWA, EPA, Health Effects Institute (HEI), and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

**Figure 1: Projected National MSAT Emissions Trends
For Vehicles Operating on Roadways (2010–2050)**



Source: EPA MOVES2014a model runs conducted by FHWA, September 2016.

Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles traveled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorological, and other factors.

Project-Specific MSAT Information

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at:

http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.pdf.

The VMT estimated for the Build Alternative is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. The additional travel lanes contemplated as part of the Build Alternative will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under the Build Alternative than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built at the US 183 Interchange and Parmer Lane. However, the magnitude and the duration of these potential increases compared to the No Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives⁴. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with

⁴ FHWA Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, October 18, 2016.

a proposed action.⁵ Consistent with 40 CFR 1502.22 (regarding incomplete and unavailable information) FHWA does not conduct MSAT health impacts for the reasons described below.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. The EPA is the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain IRIS, which is “a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects”⁶. Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including HEI. Two HEI studies are summarized in Appendix D of FHWA’s Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations⁷ in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

⁵ FHWA Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, October 18, 2016.

⁶ See: <http://www.epa.gov/iris/>

⁷ See: [HEI, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects](https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects)

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI⁸. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, in particular for DPM. The EPA states that with respect to diesel engine exhaust, “[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (EPA IRIS database, Diesel Engine Exhaust, Section II.C⁹).

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable¹⁰.

⁸ See: <https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>

⁹ See: https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642.htm#quainhal

¹⁰ See: [https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/\\$file/07-1053-1120274.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf)

3.0 Analysis Methodology

The approach used in the analysis of MSATs along the project area considers the on-road sources for the nine priority MSATs in three different scenarios: Base (2018), No Build (2045), and Build (2045). The analysis of an interim year was not required per coordination during the MSAT Conference Call.

A project links method was used for the analysis. The mainlanes, frontage roads, and ramps within the project were represented as links in the analysis, with a distinct traffic volume, length, and speed for each scenario. The VMT for each link was multiplied by an emission rate for each of the nine priority MSATs for a total in each scenario.

The analysis utilizes the TxDOT Emission Rates Lookup Table (ERLT) for MSAT (*TxDOT Air Quality Toolkit, January 2017*) for the Austin region, which are based on the MOVES2014 model for each of the priority MSATs for the corresponding analysis years and associated roadway link parameters. These parameters include posted speeds for all road types, an urban or rural designation, and roadway classification of restricted or unrestricted. Because the current ERLTs do not extend to the design year of 2045, the rates for the year 2040 were used as a surrogate. The use of these rates represents a worst-case analysis, since emission rates decline over time.

4.0 Analysis Results

The resulting emission inventory for the nine priority MSATs for the project link network is summarized in **Table 1** and **Figures 2 and 3**. The analysis indicates that a decrease in MSAT emissions can be expected for both the Build and No Build Alternatives in 2045, compared to the existing year of 2018. Under the Build Alternative, emissions of total MSAT are predicted to decrease by 73% from 2018 to 2045, even though VMT is expected to rise by 54%.

All nine MSAT compounds are expected to decrease from the base scenario in both the Build and No-Build scenarios. Of the nine priority MSAT compounds, DPM contributes the most to the emissions total for all scenarios, followed by formaldehyde. In future years, a large reduction in DPM emissions is predicted, with a calculated 81% decrease from 2018 to 2045 in both scenarios.

Table 1: MSAT Emission Inventory by Scenario (2018–2045)

Compound	Year/Scenario				
	2018 Base		2045 Design		
	Total (tons/year)	No Build Total (tons/year)	Percent Change from 2018	Build Total (tons/year)	Percent Change from 2018
Benzene	1.18	0.38	-68%	0.39	-67%
Naphthalene	0.16	0.06	-61%	0.06	-60%
Butadiene	0.12	0.00	-98%	0.00	-98%
Formaldehyde	1.47	0.75	-49%	0.77	-47%
Acrolein	0.09	0.03	-63%	0.04	-62%
DPM	7.53	1.40	-81%	1.43	-81%
POM	0.06	0.02	-71%	0.02	-71%
Acetaldehyde	0.69	0.25	-64%	0.26	-63%
Ethylbenzene	0.57	0.25	-56%	0.26	-55%
Total MSAT (Tons/Year)	11.89	3.15	-74%	3.23	-73%
Total VMT (Miles/Year)	851,606,903.45	1,281,384,926.56	50%	1,310,037,335.78	54%

Figure 2: Projected MSAT Emissions vs. VMT by Scenario

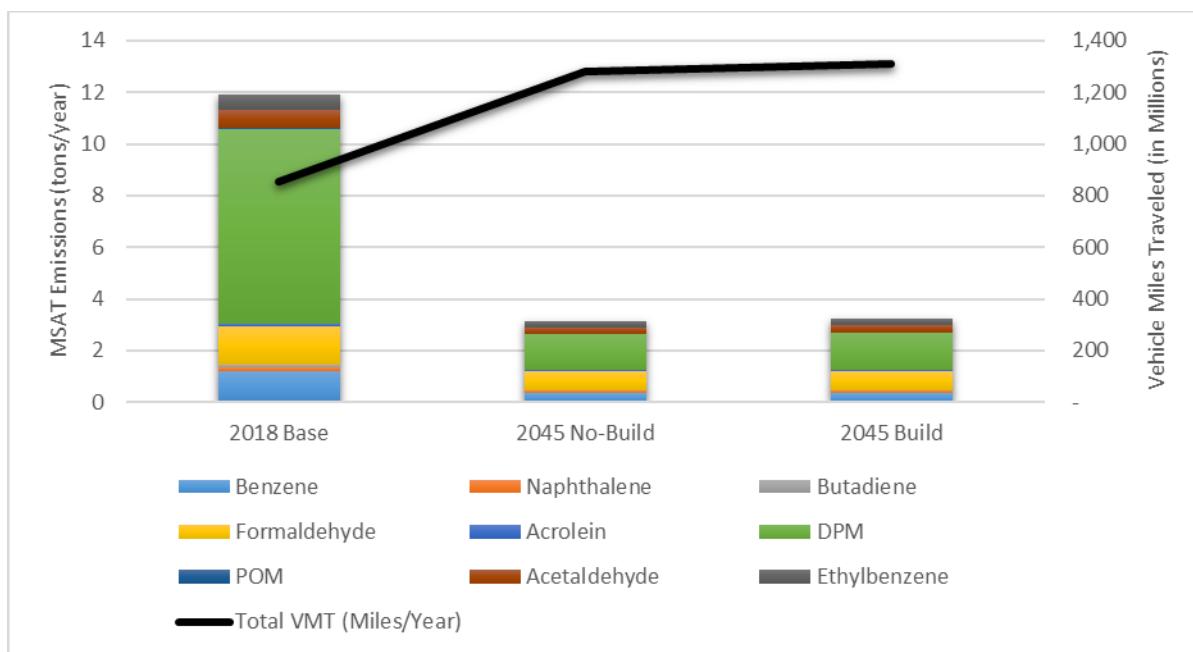
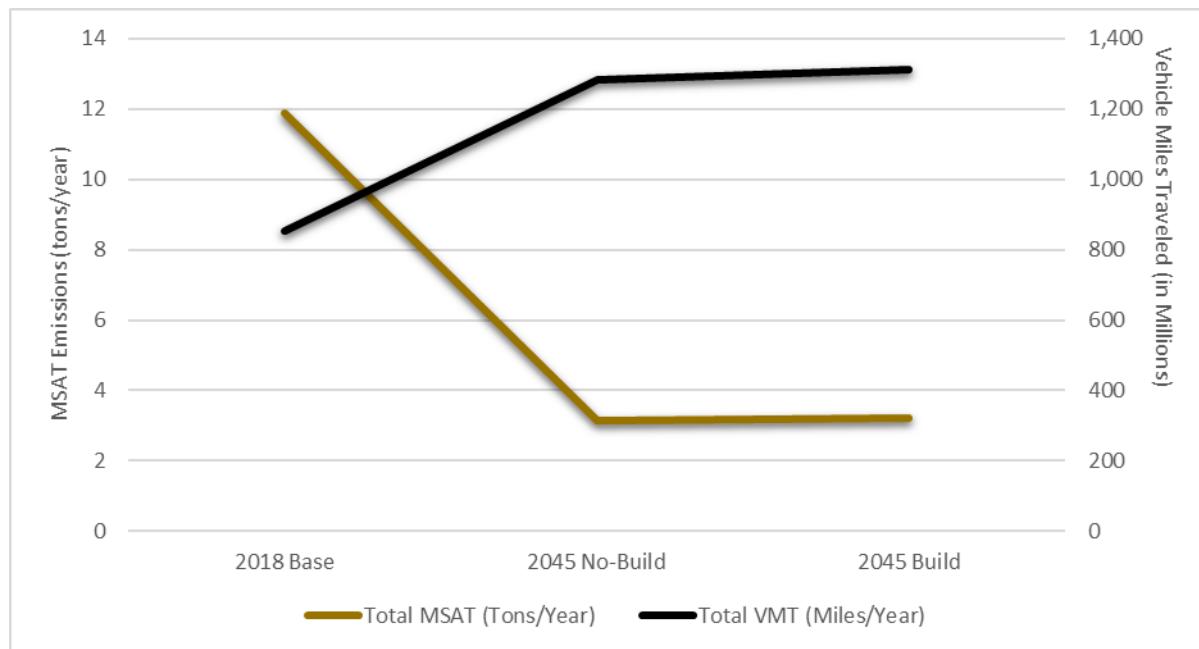


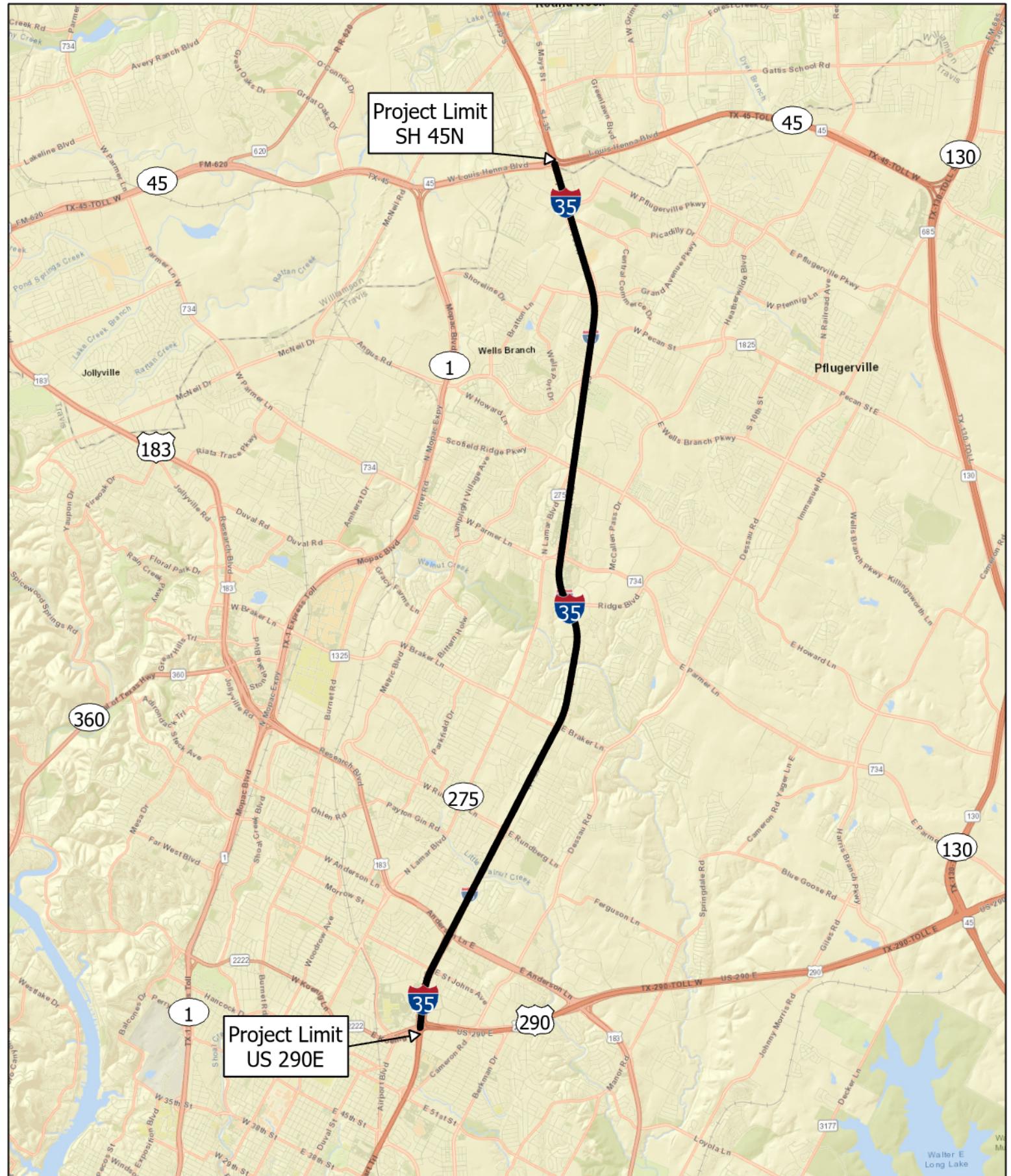
Figure 3: Comparison of Total MSAT Emissions vs. VMT by Scenario



5.0 Conclusion

In sum, both the Build and No Build Alternative in the design year are expected to be associated with lower levels of MSAT emissions compared to the base year. There is a minor increase in MSAT emissions expected between the No Build and Build Alternatives for the design year. Under all alternatives, MSAT levels are likely to decrease over time due to nationally mandated cleaner vehicles and fuels.

APPENDIX A
Project Location Map



I-35 Capital Express North

From SH 45N to US 290E

Travis & Williamson County, TX

CSJ: 0015-10-062 & 0015-13-389

APPENDIX B

MSAT Conference Call Meeting Minutes



Meeting Minutes

Project Names	Capital Express North / South Projects	Job #/CSJ	0015-10-062, 0015-13-077
Meeting Location	Conference Call	Meeting Date	6/18/2019
Meeting Purpose	Air Quality Approach Discussion		

Attendees:

Tim Wood	TxDOT ENV
Bill Tillar	AECOM GEC
Ryan Ingram	AECOM GEC

The following represents the undersigned's understanding of the issues discussed and the resolutions agreed upon. Any objection to any item(s) in these minutes must be submitted in writing to the undersigned within ten (10) calendar days of the issue date of these minutes or these minutes shall become part of the permanent project record.

Discussion Topics:

1. Introductions
2. Overview
 - a. Project Description
 - i. Capital Express North (I-35 from SH 45N to US 290E)
 1. This project is being environmentally cleared as an Environmental Assessment (EA) and mainly consists of adding one managed lane (HOV 2+) in each direction within the limits.
 - ii. Capital Express South (I-35 from US 290W /SH 71 to SH 45SE)
 1. This project is being environmentally cleared as an Environmental Assessment (EA) and mainly consists of adding two managed lanes (HOV 2+) in each direction within the limits.
 - b. Reason for Call
 - i. The call was held to discuss the years of analysis required for MSAT and CO TAQA. The project is added capacity and has AADT > 140,000.
 - c. The project's anticipated environmental approval date: North: December 2020, South: December 2020.



- i. The estimated time to completion (ETC) year: North: 2025, South: 2024
(ETC refers to the conclusion of construction and the opening year of the project.)
3. MSAT Analysis
 - a. The appropriate base year and design year to analyze in the MSAT analysis (both projects).
 - i. Base year: 2018
 - ii. Design/horizon year: 2045
 - b. An interim year would not be required for either project.
 - c. Methodology for determining the affected network:
 - i. If traffic data has been developed from a corridor travel demand model (TDM), then all links within the corridor analysis should be analyzed using the standard +/- 5 percent affected network method will be used for the project per TxDOT's air quality toolkit.
 - ii. Otherwise, only the project links will be included in the MSAT analysis.
 - d. MSAT emission rate tables are available and 2040 tables should be used since 2045 tables have not been developed.
4. CO TAQA
 - a. Discuss ETC and design year for analysis
 - i. ETC year would be 2025 (North) and 2024 (South)
 - ii. The design/horizon year for both projects is 2045
 - b. Use CAL3QHC model for analysis
5. GHG
 - a. GHG analysis not required for either project since each document is an EA.

Action Items:

1. GEC will have a call with traffic consultant to determine when Build and No-Build traffic will be available for 2045. Bill/Ryan to follow-up with Tim after data is received. Analysis requirements for MSAT and CO TAQA may be revised based on comparison of 2045 No Build vs Build traffic volumes.

APPENDIX C

Traffic Data

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

August 22, 2011

Description of Location										Base Year				ATHWLD				Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050)					
																		Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB	
I-35 (Mainlanes)																							
Section 3																							
Mainlanes Cutline Section 3	209,150	274,500	55 - 45	7.1	9.6	4.3	0	0												0	3	0	8"
Travis County																							
Data for Use in Air & Noise Analysis																							
Description of Location										Base Year				ATHWLD				Percent Tandem Axles in ATHWLD					
I-35 (Mainlanes)										Base Year				ATHWLD				Percent Tandem Axles in ATHWLD					
Section 3																							
Mainlanes Cutline Section 3	209,150	302,200	55 - 45	7.1	9.6	4.3	0	0															
Travis County																							

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

August 22, 201

														Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050)											
I-35 (Frontage Roads)	Section 2	Frontage Road Cutline Section 2	Travis County	48,800	63,950	51 - 49	7.0	3.2	2.4	0	0	0	3	0	8"										
Data for Use in Air & Noise Analysis																									
Vehicle Class		Base Year																							
		% of ADT		% of DHV																					
Light Duty		96.8		97.6																					
Medium Duty		2.8		2.1																					
Heavy Duty		0.4		0.3																					
I-35 (Frontage Roads)	Section 2	Frontage Road Cutline Section 2	Travis County	48,800	70,450	51 - 49	7.0	3.2	2.4	0	0	0	3	0	8"										

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

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Austin District

August 22, 2019

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

August 22, 2011

										Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050)											
Description of Location		Average Daily Traffic	Base Year	ATHWLD	Percent Tandem Axles in ATHWLD																
		2030	2050			Dir Dist %	K Factor	Percent Trucks		Flexible Pavement	S N	Rigid Pavement	SLAB								
I-35 (Frontage Roads)								ADT	DHV												
Frontage Road Cutline Section 6	Travis County	84,400	104,500	51 - 49	5.9	2.6	2.0	0	0	0	3	0	8"								
Data for Use in Air & Noise Analysis										Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)											
Vehicle Class		Base Year		% of ADT		% of DHV															
Light Duty		97.4		98.0						Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)											
Medium Duty		2.3		1.7																	
Heavy Duty		0.3		0.3																	
Description of Location											ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)								
Average Daily Traffic		Dir Dist %		K Factor		Percent Trucks															
		2030	2060			ADT	DHV														
I-35 (Frontage Roads)	Travis County	84,400	112,550	51 - 49	5.9	2.6	2.0	0	0	0	3	0	8"								
Data for Use in Air & Noise Analysis										Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)											
Vehicle Class		Base Year		% of ADT		% of DHV		ATHWLD													
Light Duty		97.4		98.0																	
Medium Duty		2.3		1.7																	
Heavy Duty		0.3		0.3																	
Description of Location											ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)								
Average Daily Traffic		Dir Dist %		K Factor		Percent Trucks															
		2030	2060			ADT	DHV														
I-35 (Frontage Roads)	Travis County	84,400	112,550	51 - 49	5.9	2.6	2.0	0	0	0	3	0	8"								

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

Description of Location										Base Year				ATHWLD				Percent Tandem Axles in ATHWLD				Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050)				
<u>I-35 (Frontage Roads)</u>		<u>Section 8</u>		Frontage Road Cutline Section 8		80,850	91,450	55 - 45	7.1	2.9	2.2	0	0	0	3	0	8"	0	3	0	8"					
Data for Use in Air & Noise Analysis																										
Vehicle Class		Base Year				% of ADT		% of DHV																		
		Light Duty	97.1	97.8	Medium Duty	1.9	1.4	Heavy Duty	1.0	0.8																
Description of Location										Base Year				ATHWLD		Percent Tandem Axles in ATHWLD				Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)						
										Average Daily Traffic		Dir Dist %	K Factor			Percent Trucks		ADT	DHV							
										2030	2060															
<u>I-35 (Frontage Roads)</u>		<u>Section 8</u>		Frontage Road Cutline Section 8		80,850	100,000	55 - 45	7.1	2.9	2.2	0	0	0	3	0	8"	0	3	0	8"					
Travis County																										

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

August 22, 2019

August 22, 2011

Description of Location											Base Year				Percent Tandem Axles in ATHWLD											
											Dir Dist %	K Factor	Percent Trucks													
											2030	2050	ADT	DHV												
																Flexible Pavement	S N	Rigid Pavement	SLAB							
I-35 (Frontage Roads)	Section 9	Frontage Road Cutline Section 9	Travis County	95,250	124,650	55 - 45	7.1	2.7	2.0	0	0	0	0	0	0	0	3	0	8*							
Data for Use in Air & Noise Analysis											Base Year				Percent Tandem Axles in ATHWLD											
Vehicle Class				% of ADT		% of DHV																				
Light Duty				97.3		98.0																				
Medium Duty				1.8		1.4																				
Heavy Duty				0.9		0.6																				
I-35 (Frontage Roads)	Section 9	Frontage Road Cutline Section 9	Travis County	95,250	137,150	55 - 45	7.1	2.7	2.0	0	0	0	0	0	0	0	3	0	8*							

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

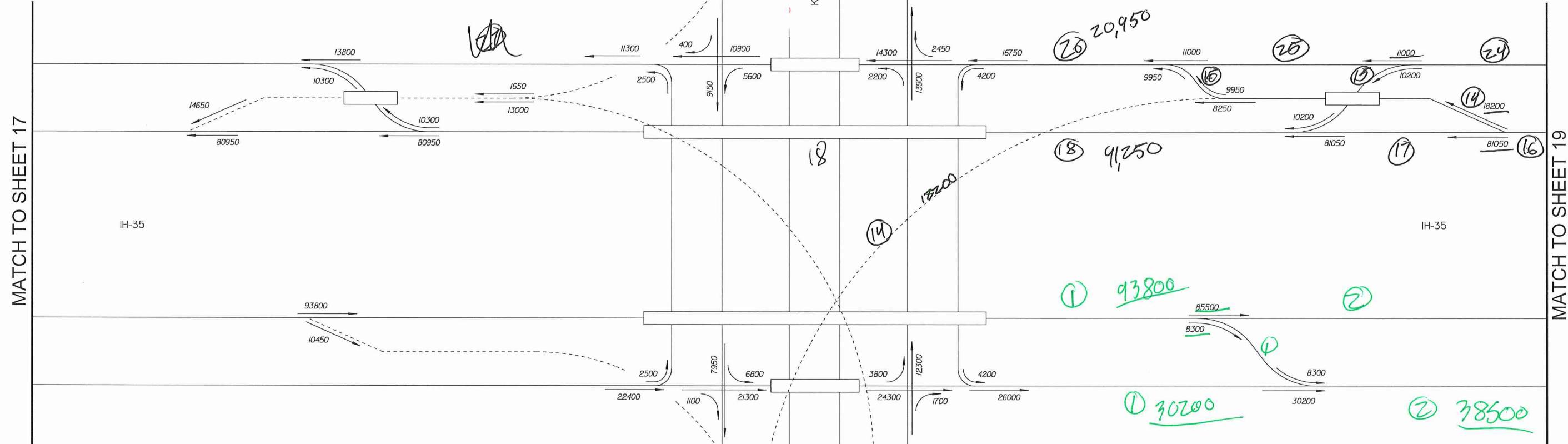
August 22, 2019

August 22, 2011

											Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2030 to 2050)					
											ATHWLD	Percent Tandem Axles in ATHWLD	Flexible Pavement	S N	Rigid Pavement	SLAB
												ADT	Percent Trucks			
												DHV				
I-35 (Frontage Roads)	Section 10	Frontage Road Cutline Section 10	Travis County	84,000	110,150	55 - 45	7.1	2.9	2.2	0	0	3	0	8"		
Data for Use in Air & Noise Analysis												Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)				
Vehicle Class		Base Year														
		% of ADT	% of DHV													
Light Duty		97.1	97.8													
Medium Duty		1.9	1.4													
Heavy Duty		1.0	0.8													
Description of Location		Base Year									ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2030 to 2060)				
		Average Daily Traffic		Dir Dist %	K Factor	Percent Trucks		ADT	DHV							
Frontage Road Cutline Section 10	Travis County	84,000	121,250			55 - 45	7.1	2.9	2.2	0		0	3	0	8"	

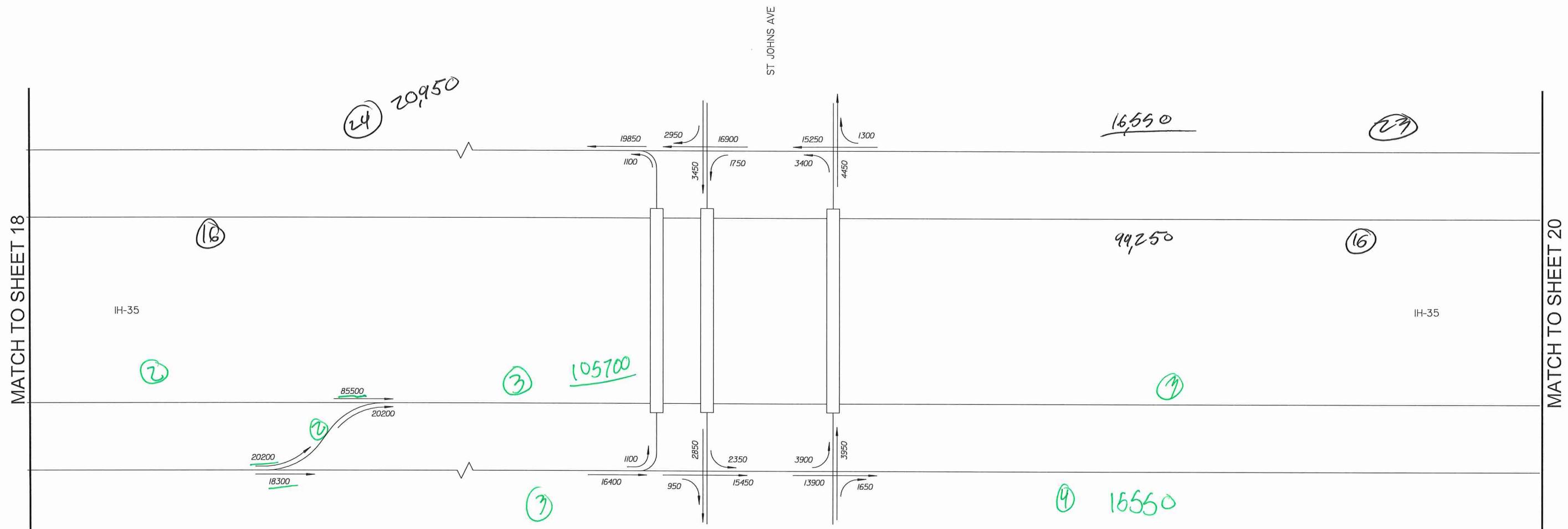
2018 EXISTING CONFIGURATION

MATCH TO SHEET 27



2018 EXISTING CONFIGURATION

A diagram showing a Z-shaped connector component. It consists of two curved, tapered legs that meet at a central circular hub. The hub has a cross-hatched pattern.



... \2018.0011*LineDiagrams*TPP*Existing*2018.dgn

THOUSTON

28:37 AM

11 / 25 / 2019

2018 FORECASTED AVERAGE DAILY TRAFFIC VOLUMES
AND TURNING MOVEMENTS AT SPECIFIED POINTS ALON
IH-35 FROM MAIN ST TO HESTER'S CROSSING ROAD
AND US 290 FROM AIRPORT BLVD TO US 183

LEGEND

1000 - 2018 ADT
LD - LOWER DECK
UD - UPPER DECK
→ TRAVEL DIRECTION

1000 - 2018 ADT
LD - LOWER DECK
UD - UPPER DECK
→ TRAVEL DIRECTION

→ TRAVEL DIRECTION

NOT TO SCALE



CAPITAL EXPRESS

CAPITAL EXPRESS
2018 EXISTING CONFIGURATION
24 HOUR VOLUMES
(SHEET 19 OF 28)

(SHEET 19 OF 28) SCALE : N- T- S- PROJECT NO.

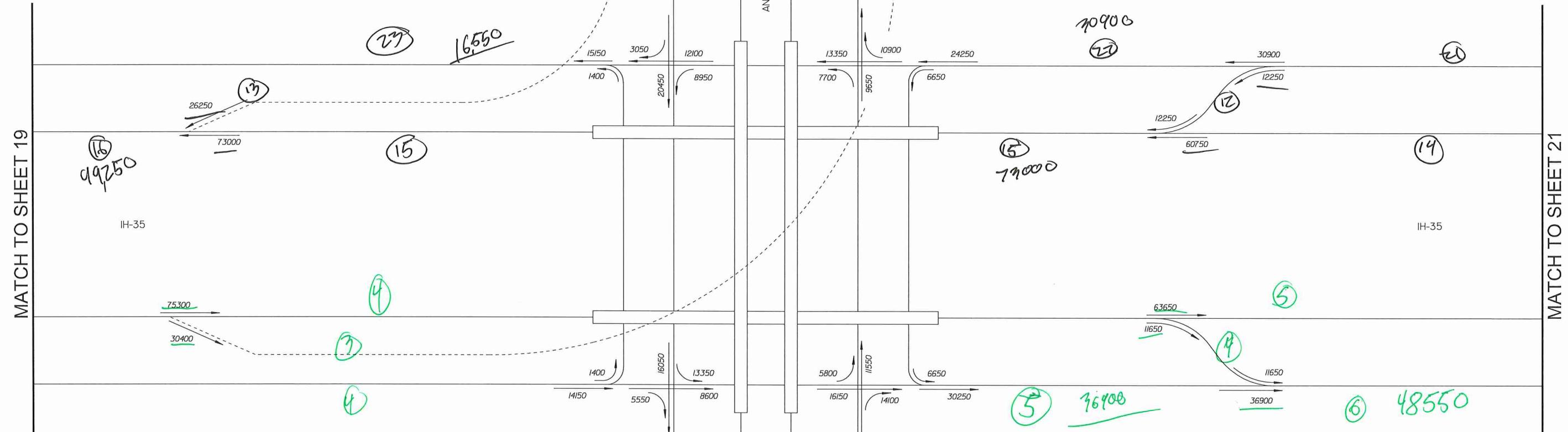
DWN: TH CKD: HH

STATE	STATE DISTRICT	FED. DIV.	RD. NO.	COUNTY
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TEXAS 14 6 TRAVIS

CONTROL	SECTION	JOB	HWY. NO.	SHEET NO.
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2018 EXISTING CONFIGURATION



...\\2018.0011*LineDiagrams*TPP*Existing*2018.dgn

10:28:37 AM Houston

1/25/2019

2018 FORECASTED AVERAGE DAILY TRAFFIC VOLUMES
AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG
IH-35 FROM MAIN ST TO HESTER'S CROSSING ROAD
AND US 290 FROM AIRPORT BLVD TO US 183

LEGEND

- 1000 - 2018 ADT
- LD - LOWER DECK
- UD - UPPER DECK
- TRAVEL DIRECTION

NOT TO SCALE



CAPITAL EXPRESS

2018 EXISTING CONFIGURATION
24 HOUR VOLUMES
(SHEET 20 OF 28)

SCALE : N. T.S.		PROJECT NO.	
DWN:	TH	CKD: HH	
STATE	STATE DISTRICT	FED. RD.	COUNTY
TEXAS	14	6	TRAVIS
CONTROL SECTION	JOB	Hwy. No.	SHEET NO.
5000	00	106	IH-35 20

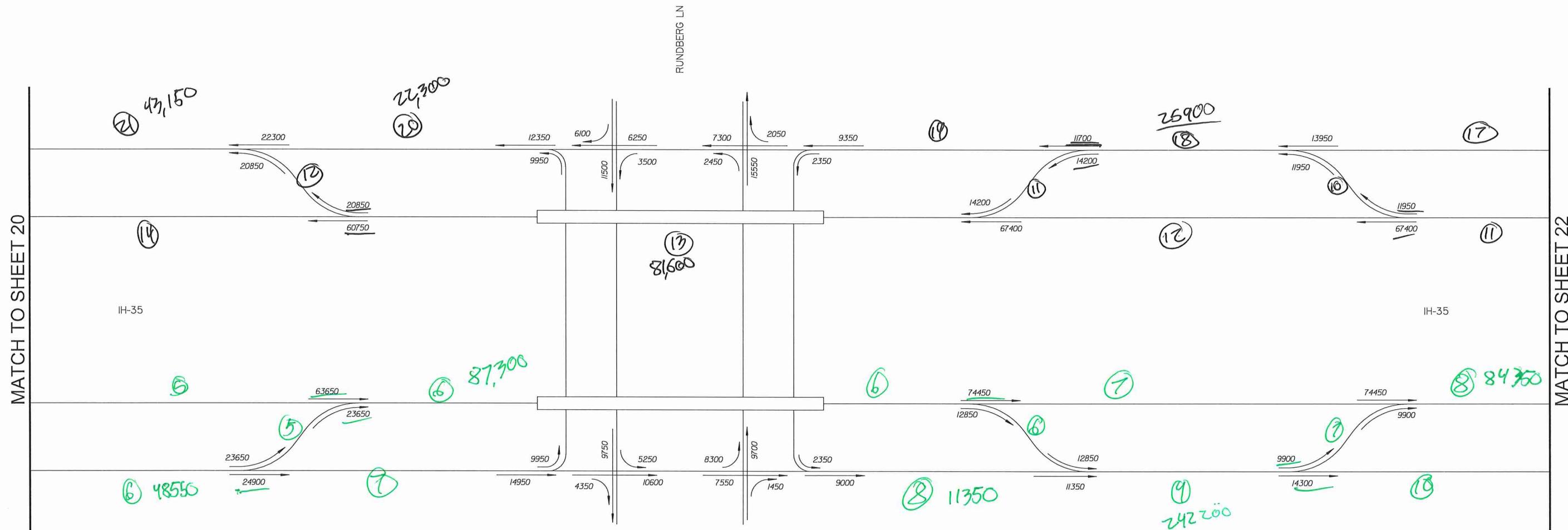
2018 EXISTING CONFIGURATION

MATCH TO SHEET 20

...\\2018.0011*LineDiagrams*TPP*Existing*2018.dgn

Thouston

10:28:3 1/25/2019



2018 FORECASTED AVERAGE DAILY TRAFFIC VOLUMES
AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG
IH-35 FROM MAIN ST TO HESTER'S CROSSING ROAD
AND US 290 FROM AIRPORT BLVD TO US 183

LEGEND

1000 - 2018 ADT

LD - LOWER DECK

UD - UPPER DECK

→ TRAVEL DIRECTION

NOT TO SCALE



Massachusetts Department of Transportation

CAPITAL EXPRESS
2018 EXISTING CONFIGURATION
24 HOUR VOLUMES
(SHEET 21 OF 28)

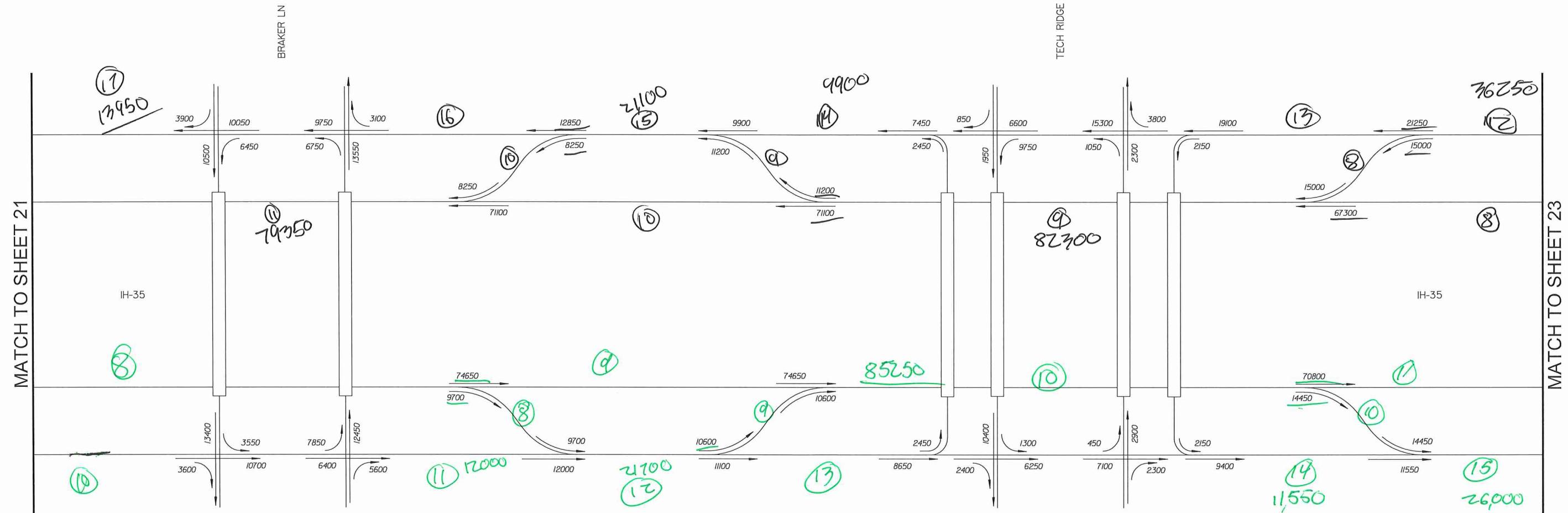
SCALE : N. T. S. PROJECT NO.

DWN: TH CKD: HH

STATE	DISTRICT	DIV. NO.	COUNTY
TEXAS	14	6	TRAVIS

TEXAS	14	6	TRAVIS	
CONTROL	SECTION	JOB	HWY. NO.	SHEET NO.

2018 EXISTING CONFIGURATION



MATCH TO SHEET 21

MATCH TO SHEET 23

10:28:38 AM Houston

...\\2018_0011*LineDiagrams*TPP*Existing*2018.dgn

1/25/2019

2018 FORECASTED AVERAGE DAILY TRAFFIC VOLUMES
AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG
IH-35 FROM MAIN ST TO HESTER'S CROSSING ROAD
AND US 290 FROM AIRPORT BLVD TO US 183

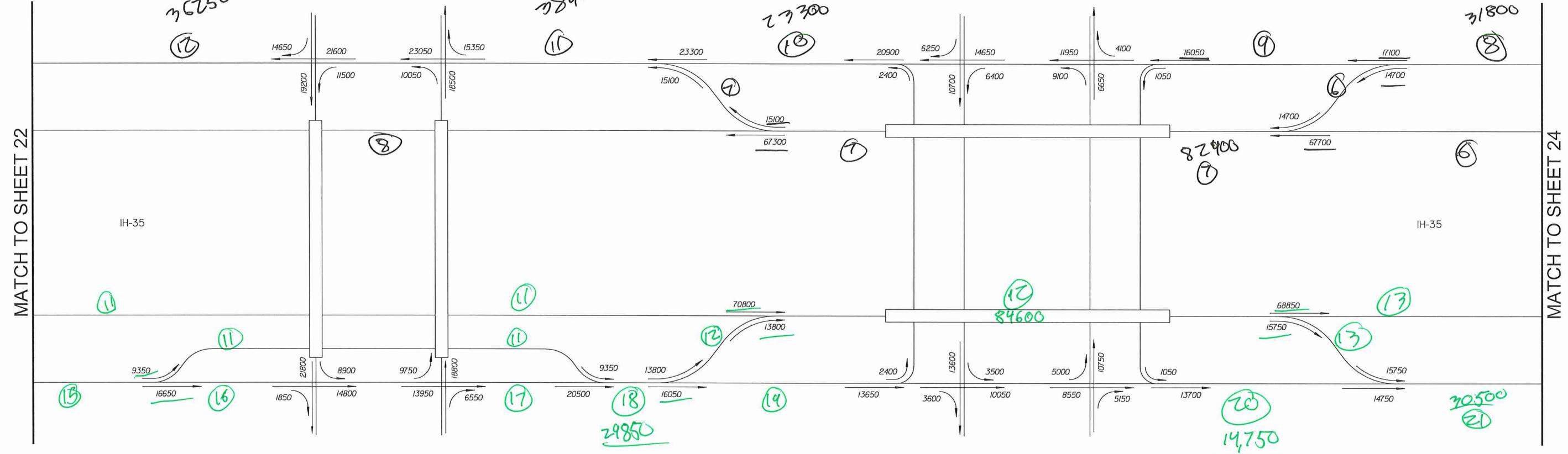
LEGEND
1000 - 2018 ADT
LD - LOWER DECK
UD - UPPER DECK
→ TRAVEL DIRECTION



CAPITAL EXPRESS
2018 EXISTING CONFIGURATION
24 HOUR VOLUMES
(SHEET 22 OF 28)

SCALE : N. T. S.		PROJECT NO.	
DWN:	TH	CKD: HH	
STATE	STATE DISTRICT	FED. RD. DIV. NO.	COUNTY
TEXAS	14	6	TRAVIS
CONTROL	SECTION	JOB	HWY. NO. SHEET NO.
5000	00	106	IH-35 22

2018 EXISTING CONFIGURATION



MATCH TO SHEET 22

MATCH TO SHEET 24

2018 FORECASTED AVERAGE DAILY TRAFFIC VOLUMES
AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG
IH-35 FROM MAIN ST TO HESTER'S CROSSING ROAD
AND US 290 FROM AIRPORT BLVD TO US 183

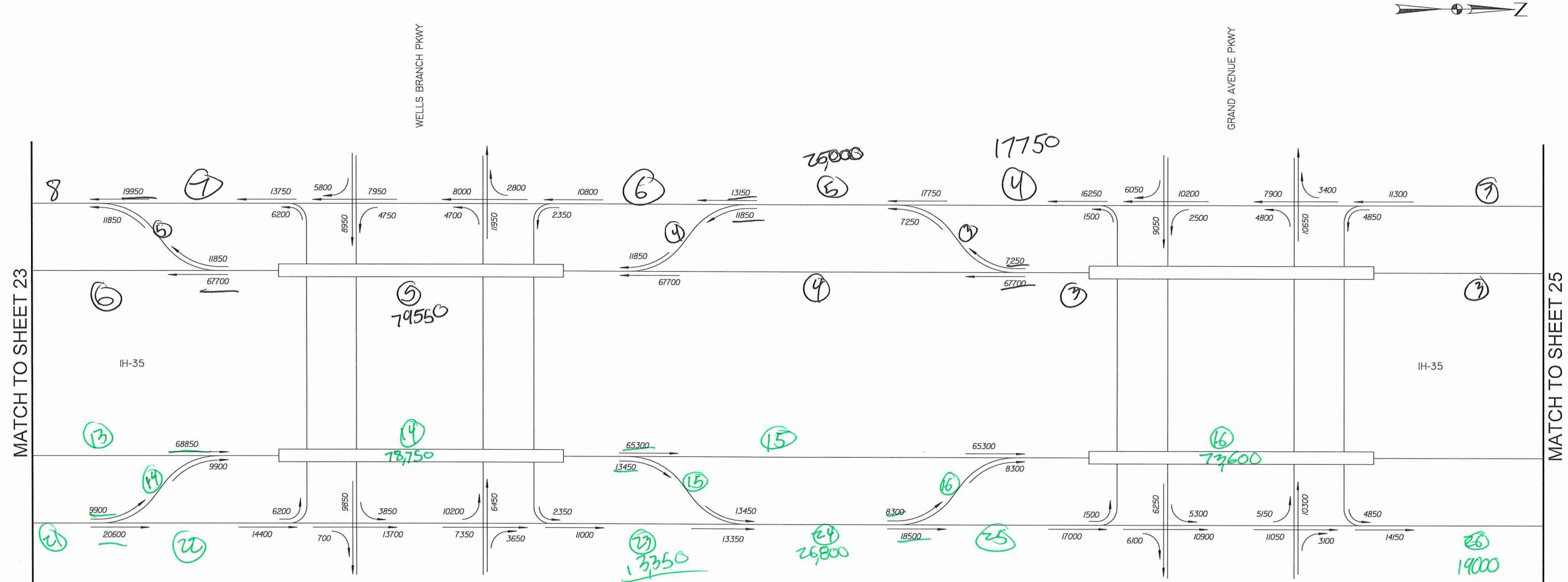
LEGEND
1000 - 2018 ADT
LD - LOWER DECK
UD - UPPER DECK
→ TRAVEL DIRECTION



CAPITAL EXPRESS
2018 EXISTING CONFIGURATION
24 HOUR VOLUMES
(SHEET 23 OF 28)

SCALE : N. T. S.		PROJECT NO.	
DWY:	TH	CKD: HH	
STATE	DISTRICT	FED. RD.	COUNTY
TEXAS	14	6	TRAVIS
CONTROL	SECTION	JOB	HWY. NO. SHEET NO.
5000	00	106	IH-35 23

2018 EXISTING CONFIGURATION



...\\2018.0011*LineDiagrams*TPB*Existing*2018.dgn

Houston

10:28:38 AM

1/25/2019

2018 FORECASTED AVERAGE DAILY TRAFFIC VOLUMES
AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG
IH-35 FROM MAIN ST TO HESTER'S CROSSING ROAD
AND US 290 FROM AIRPORT BLVD TO US 183

NOT TO SCALE



CAPITAL EXPRESS
2018 EXISTING CONFIGURATION
24 HOUR VOLUMES
(SHEET 24 OF 28)

LEGEND
1000 - 2018 ADT
LD - LOWER DECK
UD - UPPER DECK
→ TRAVEL DIRECTION

STATE	STATE DISTRICT	FED. RD. DIV. NO.	COUNTY
TEXAS	14	6	TRAVIS
CONTROL	SECTION	JOB	HWY. NO. SHEET NO.
5000	00	106	IH-35 24

2018 EXISTING CONFIGURATION

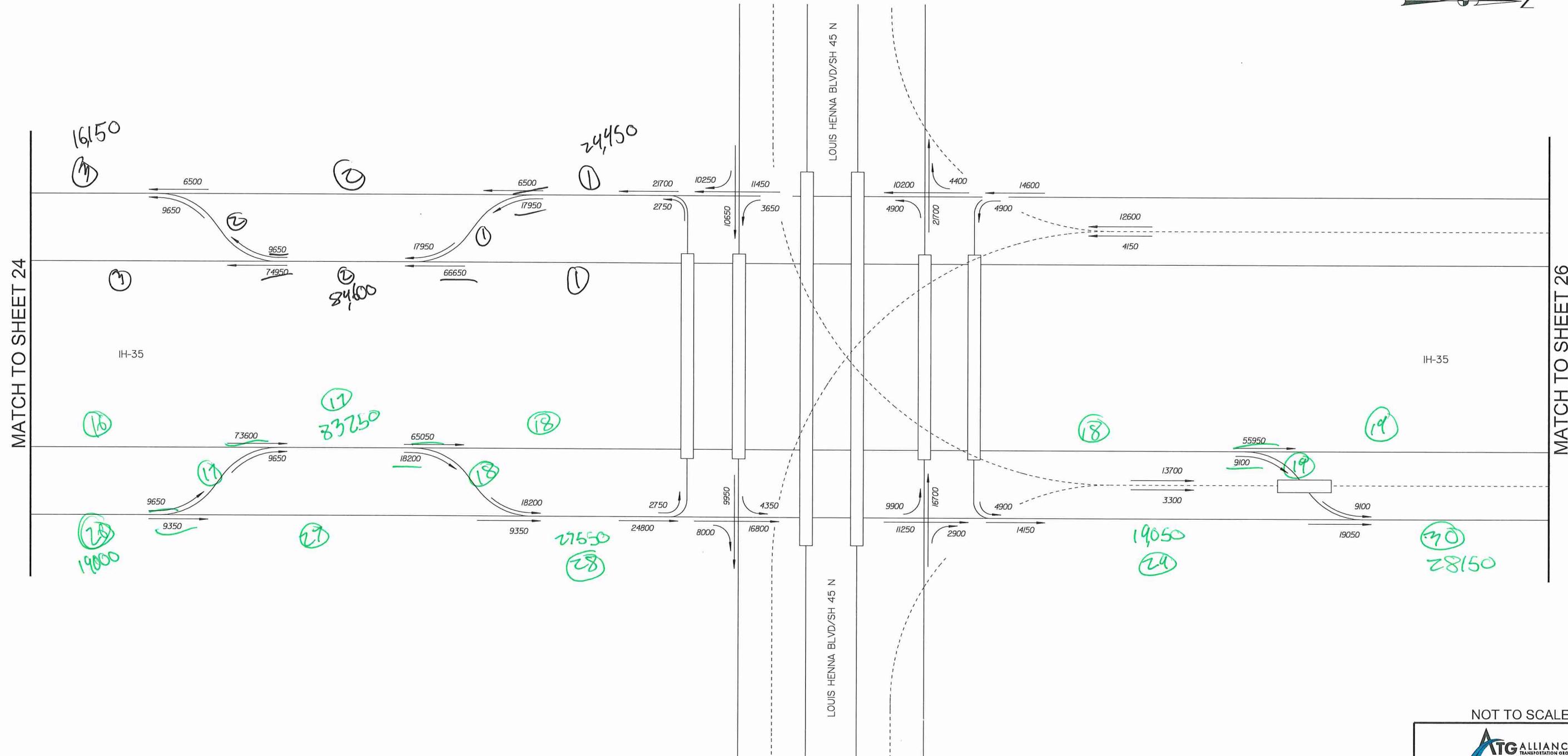
A diagram illustrating a Z-shaped angle formed by a transversal line intersecting two parallel lines.

MATCH TO SHEET 2A

... \2018.0011*LineDiagrams*TPP*Existing*2018. dgn

110:28:38 AM Houston

1 / 25 / 2019



2018 FORECASTED AVERAGE DAILY TRAFFIC VOLUMES
AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG
IH-35 FROM MAIN ST TO HESTER'S CROSSING ROAD
AND US 290 FROM AIRPORT BLVD TO US 183

LEGEND

1000 - 2018 ADT

LD - LOWER DECK

UD - UPPER DECK

→ TRAVEL DIRECTION

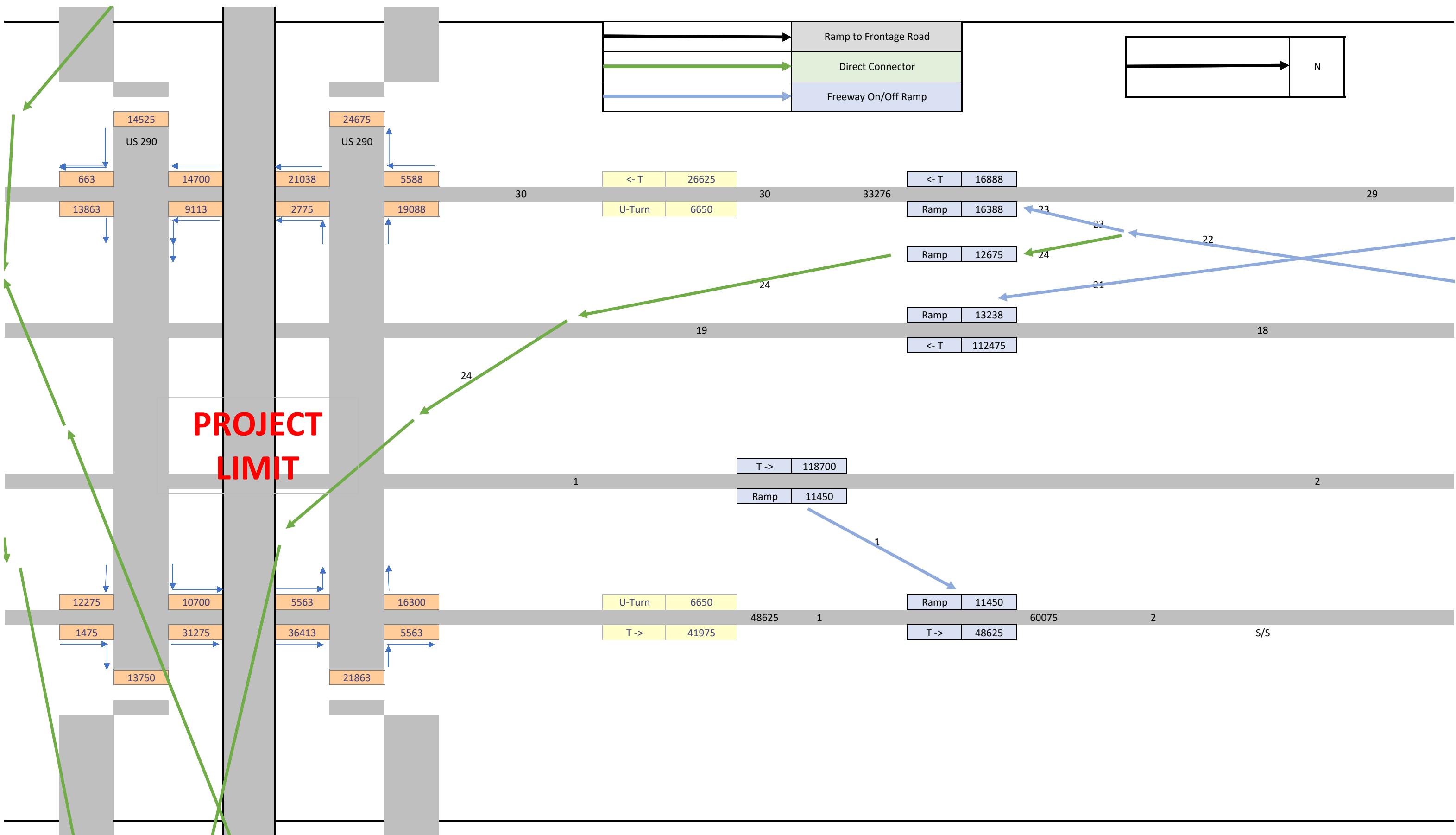
NOT TO SCALE

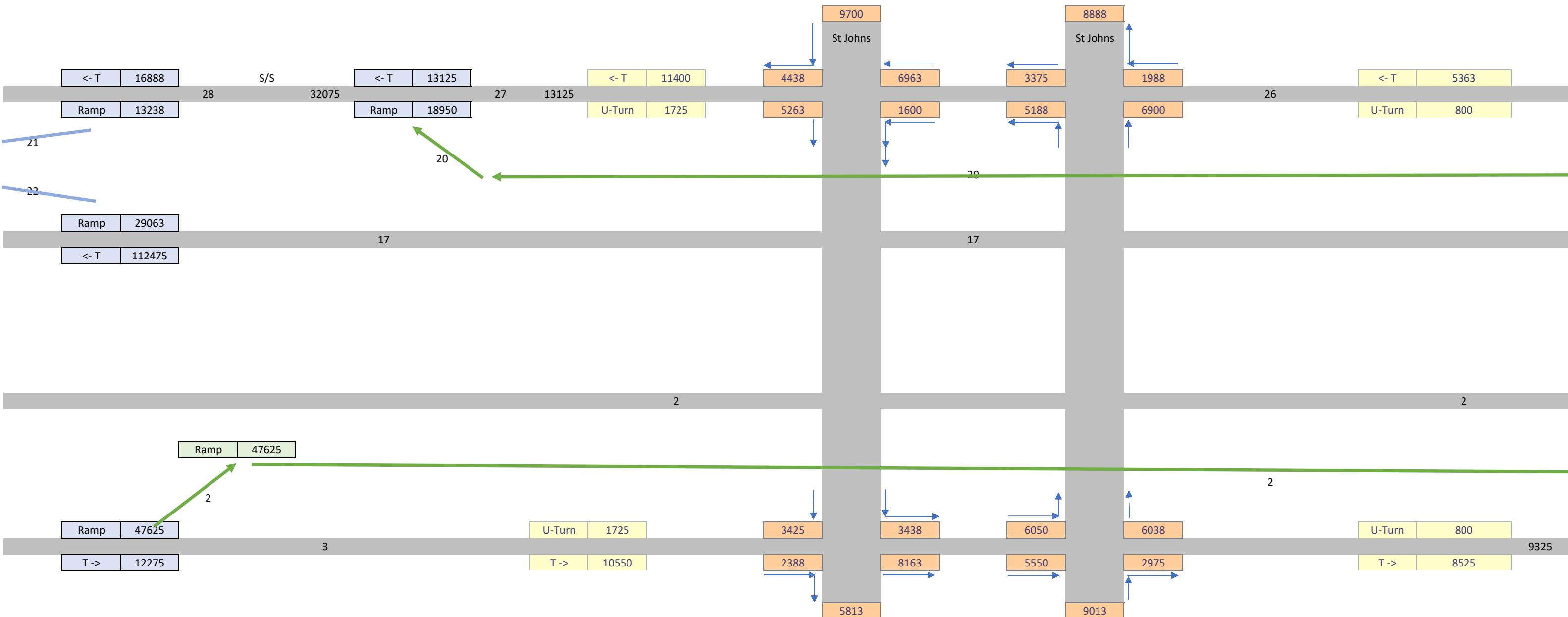


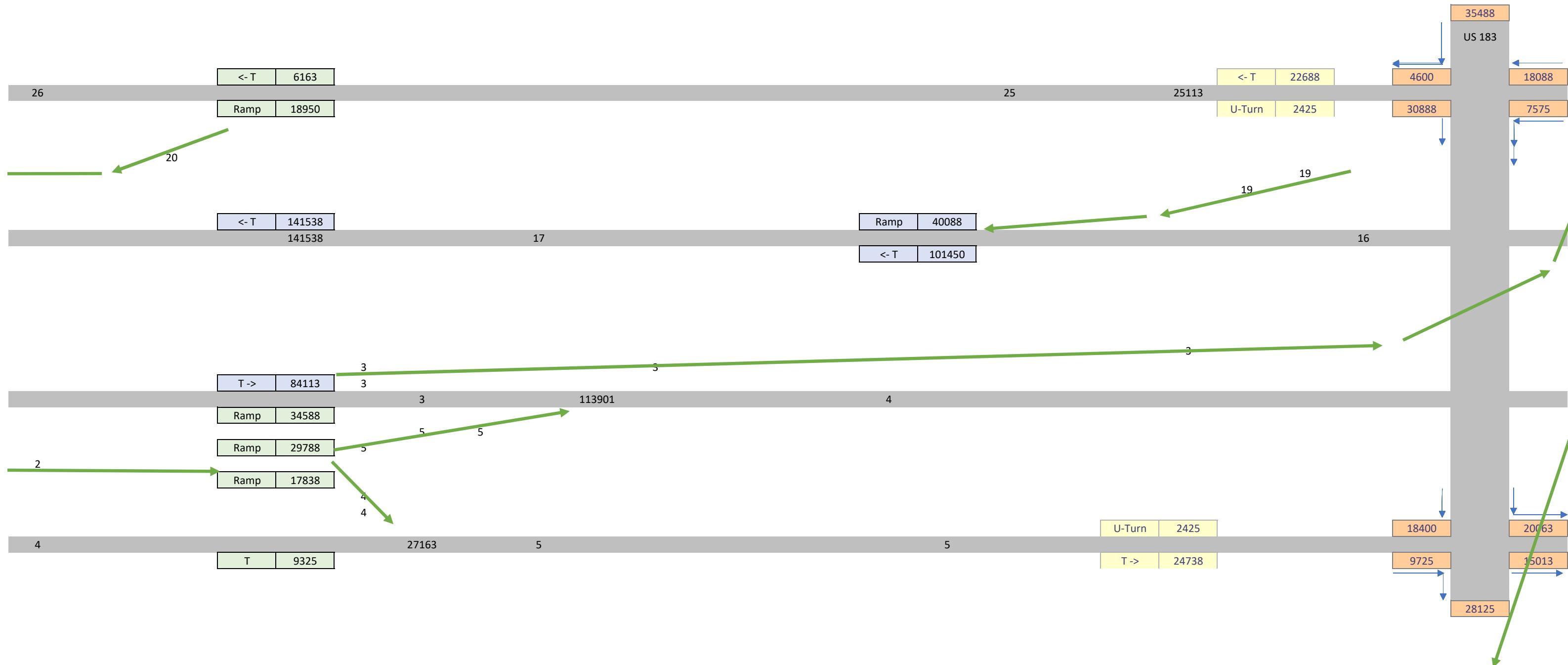
Texas Department of Transportation

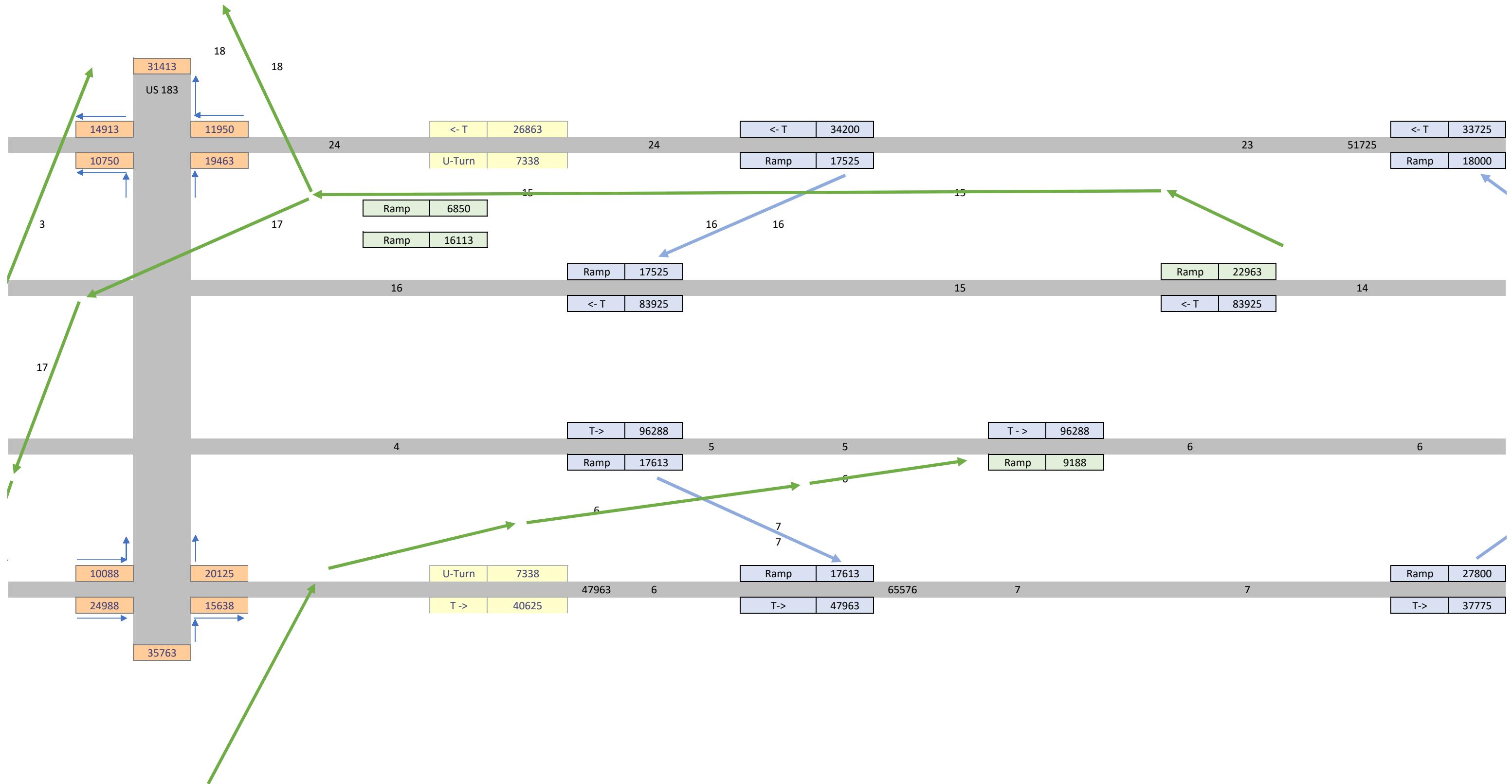
CAPITAL EXPRESS
2018 EXISTING CONFIGURATION
24 HOUR VOLUMES

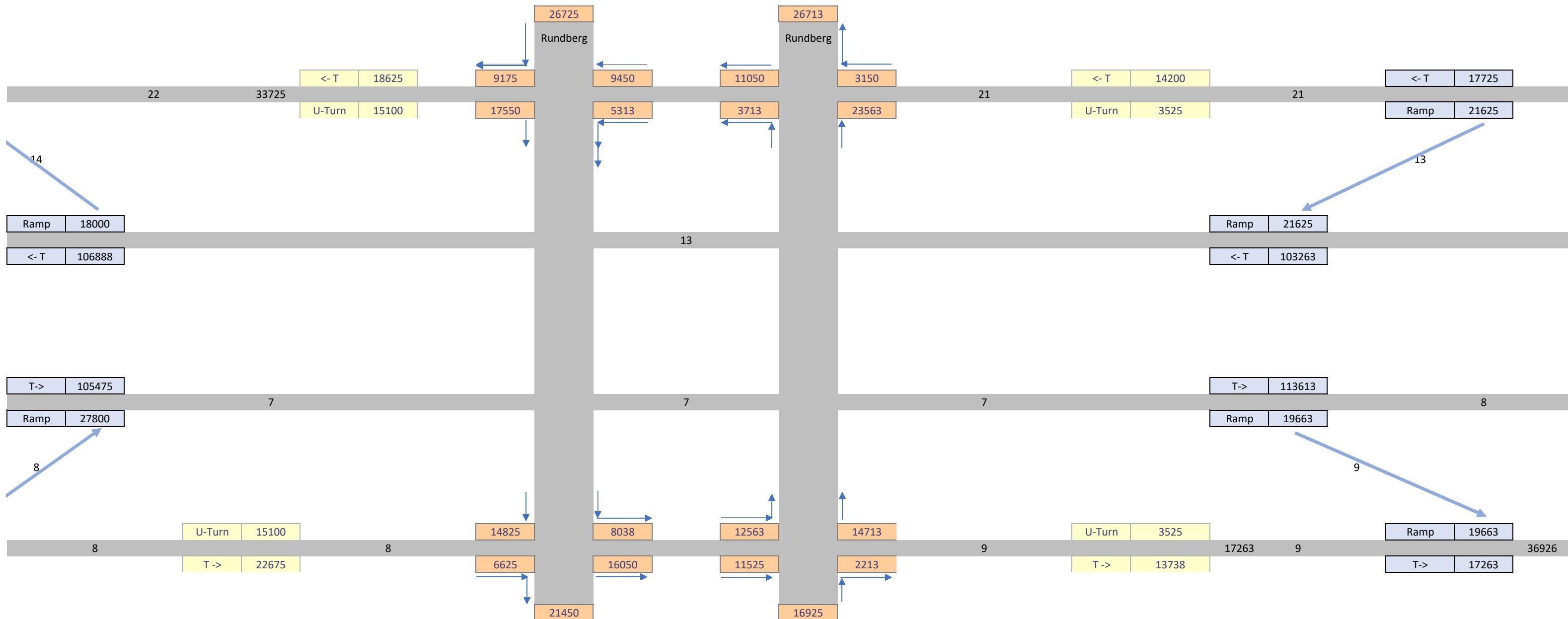
SCALE : N. T. S.		PROJECT NO.		
DWY: TH CKD: HH				
STATE	STATE DISTRICT	FED. DIV.	RD. NO.	COUNTY
TEXAS	14	6		TRAVIS
CONTROL	SECTION	JOB	HWY. NO.	SHEET NO.
5000	00	106	IH-35	25

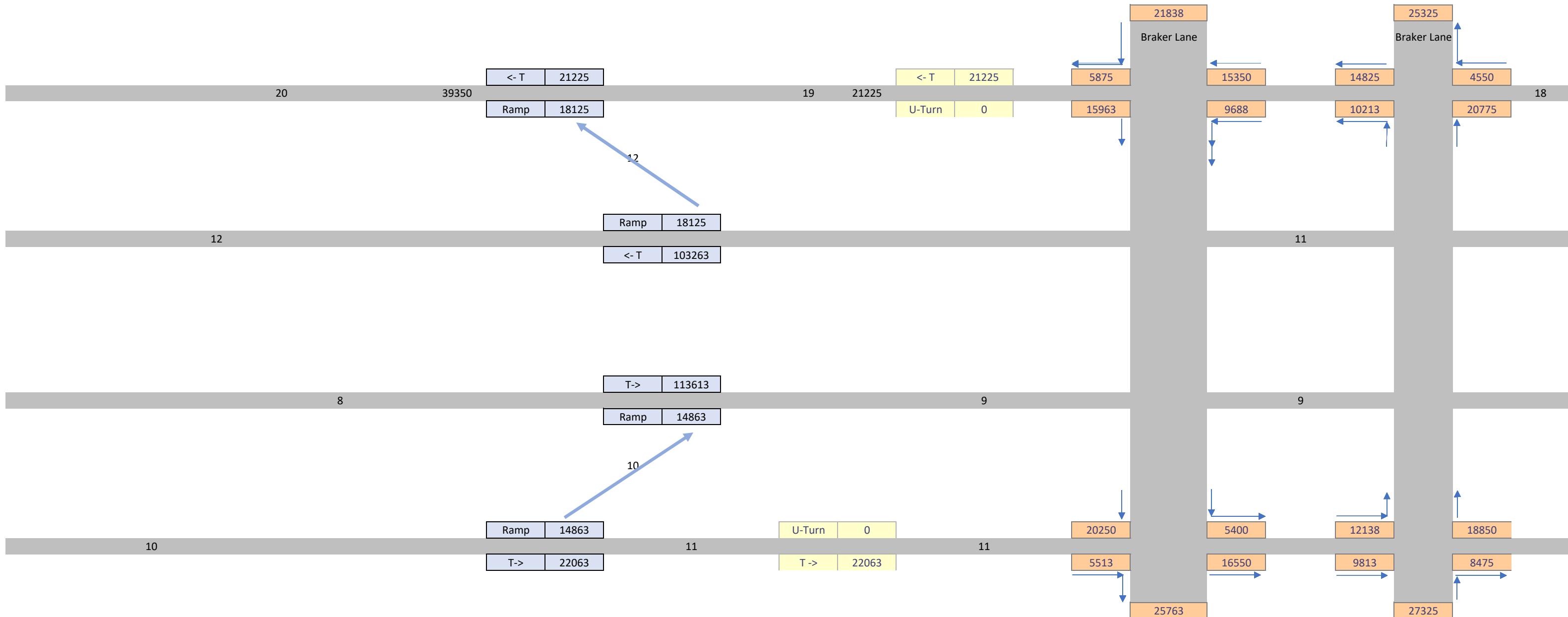


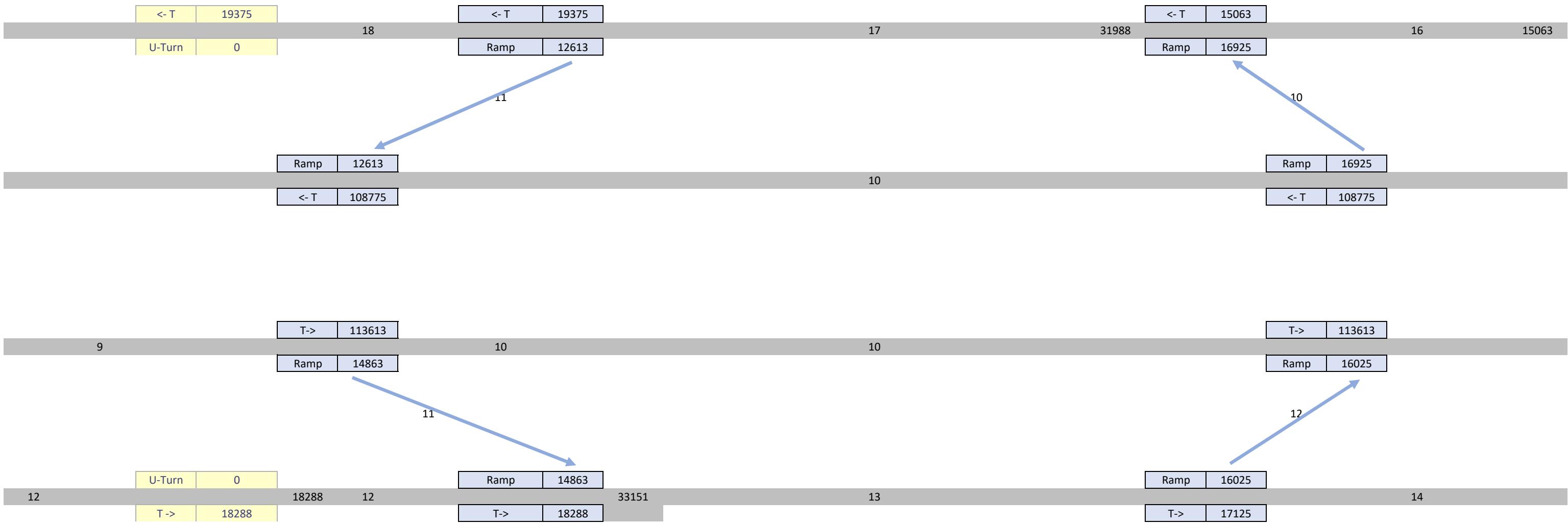


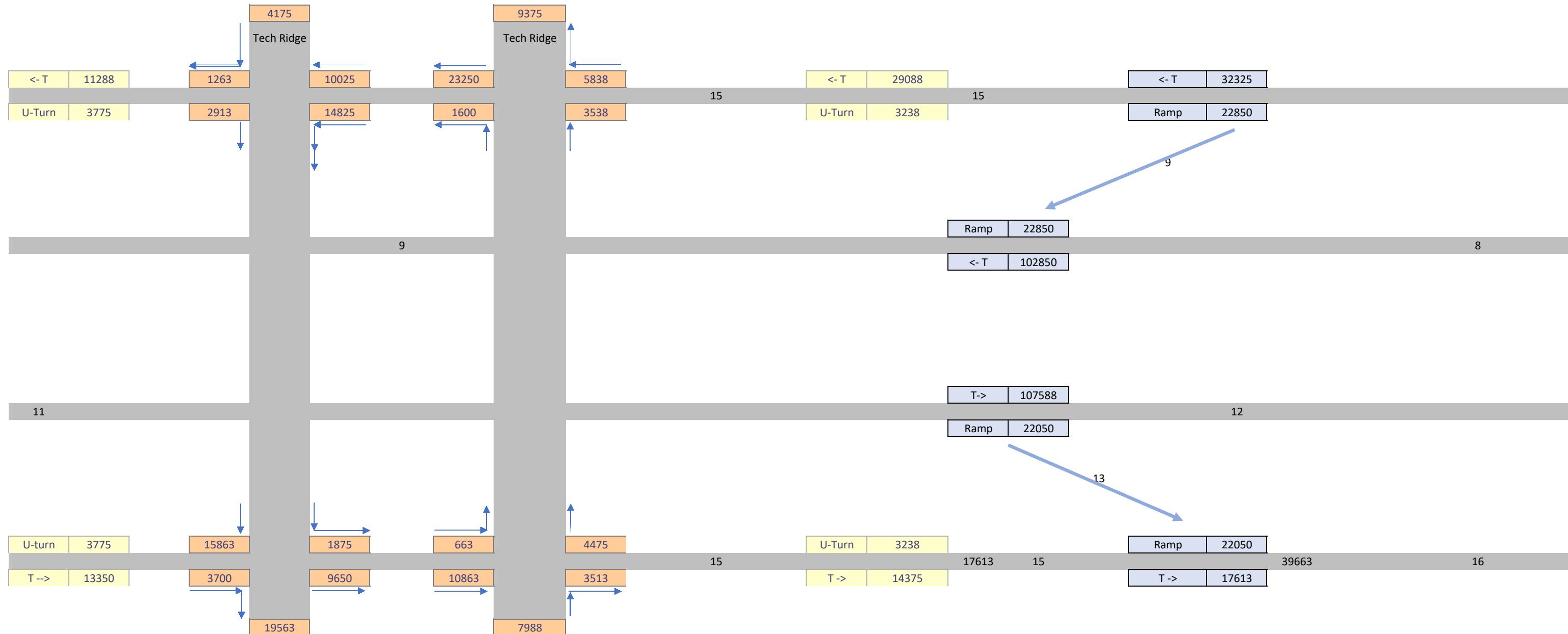


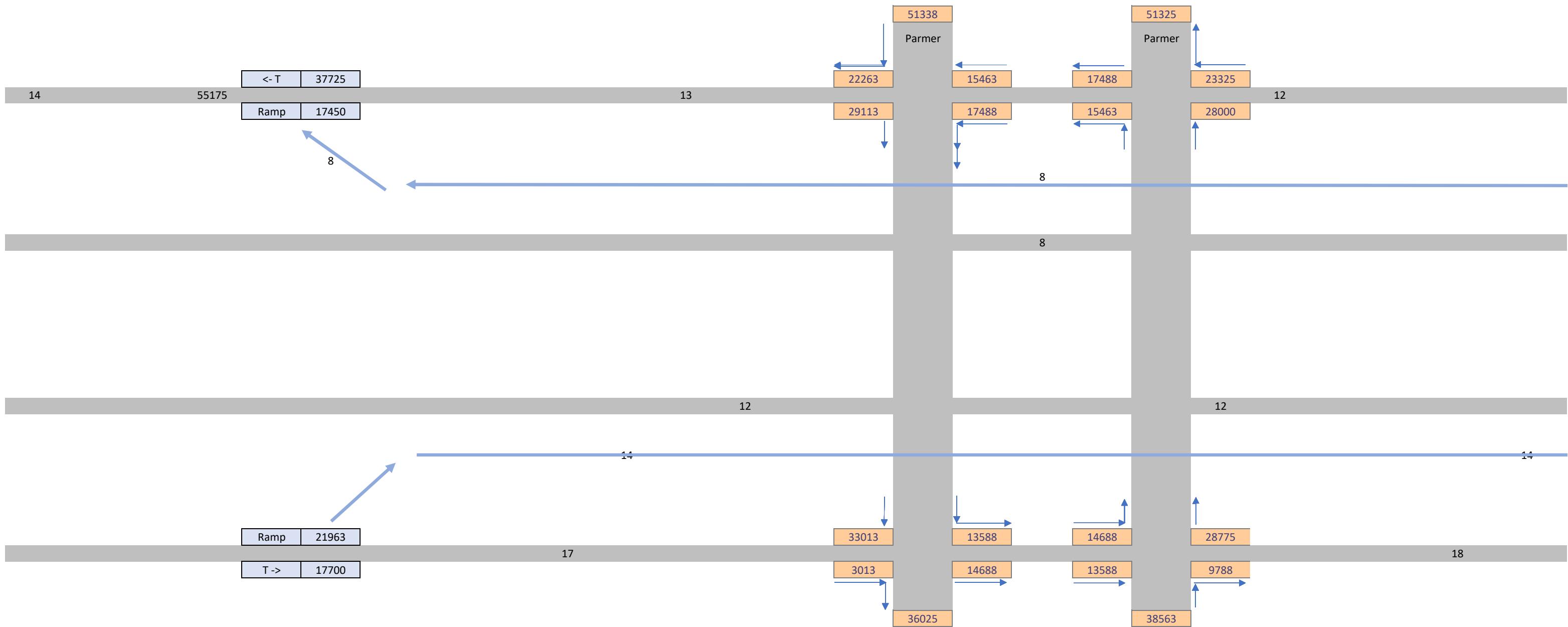


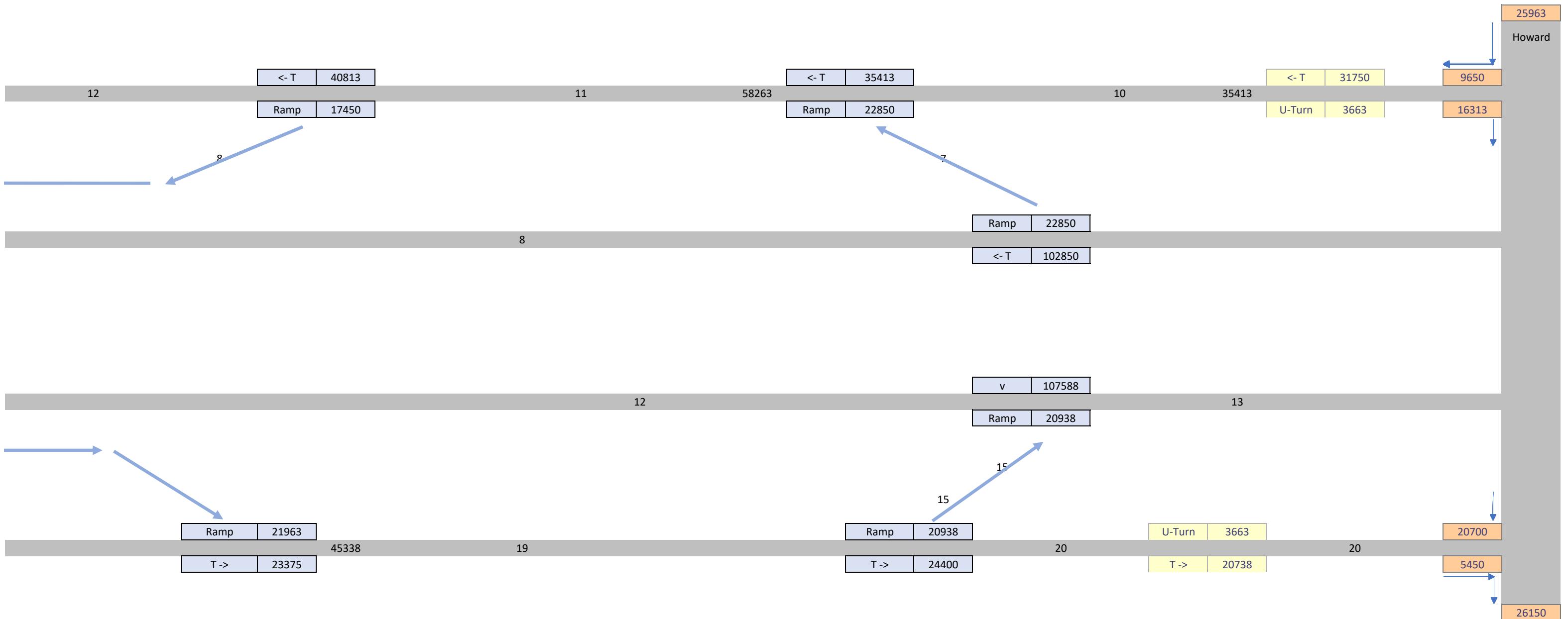


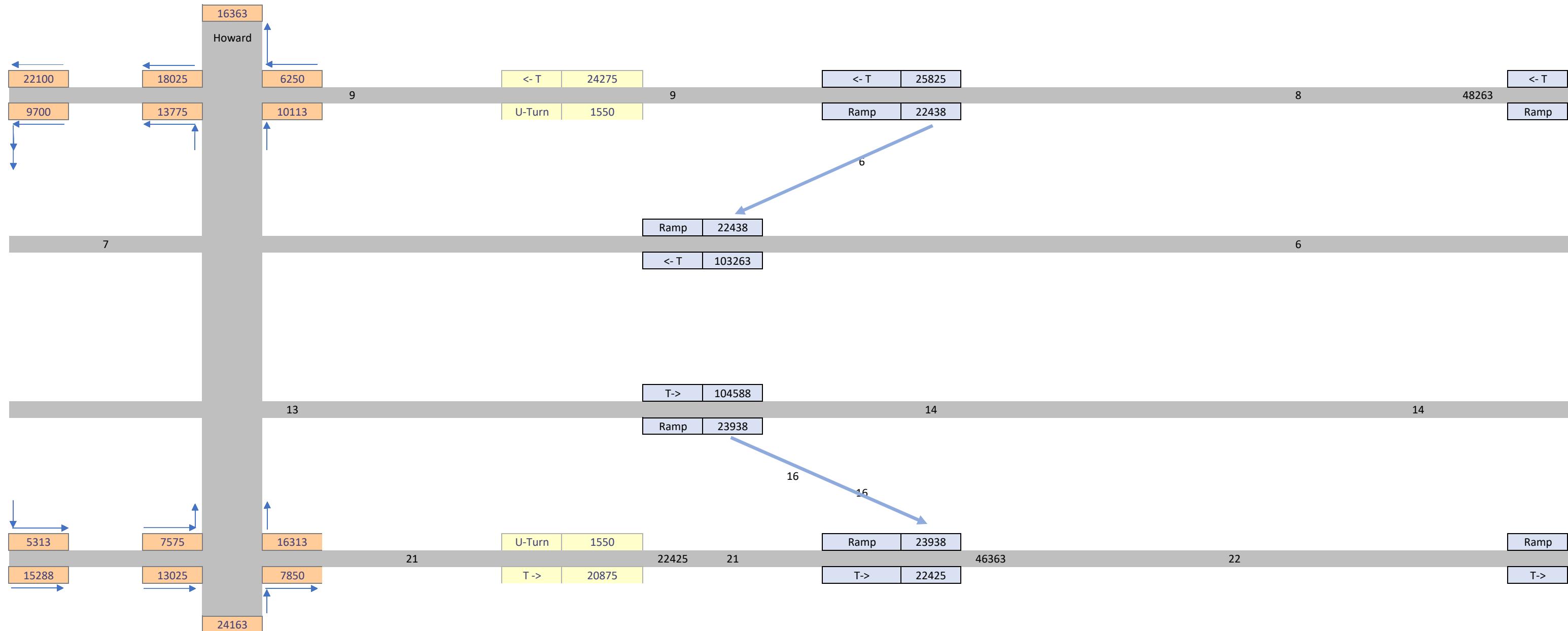


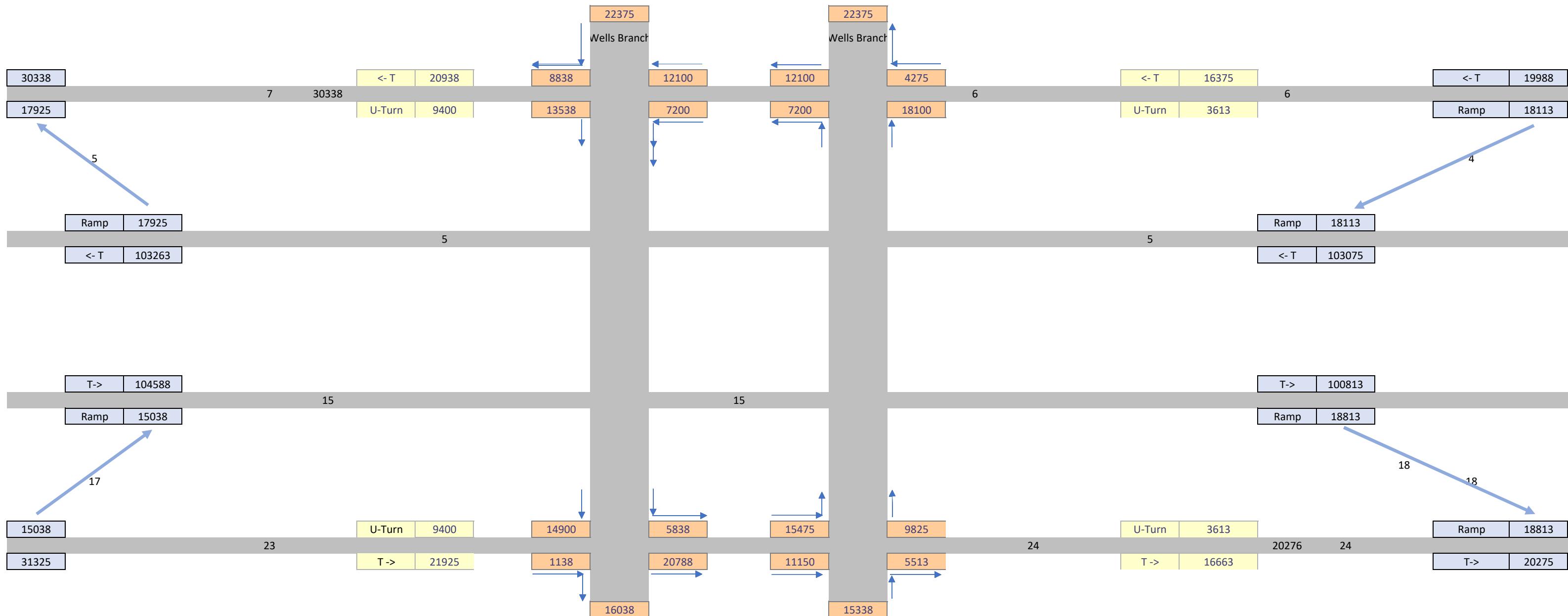


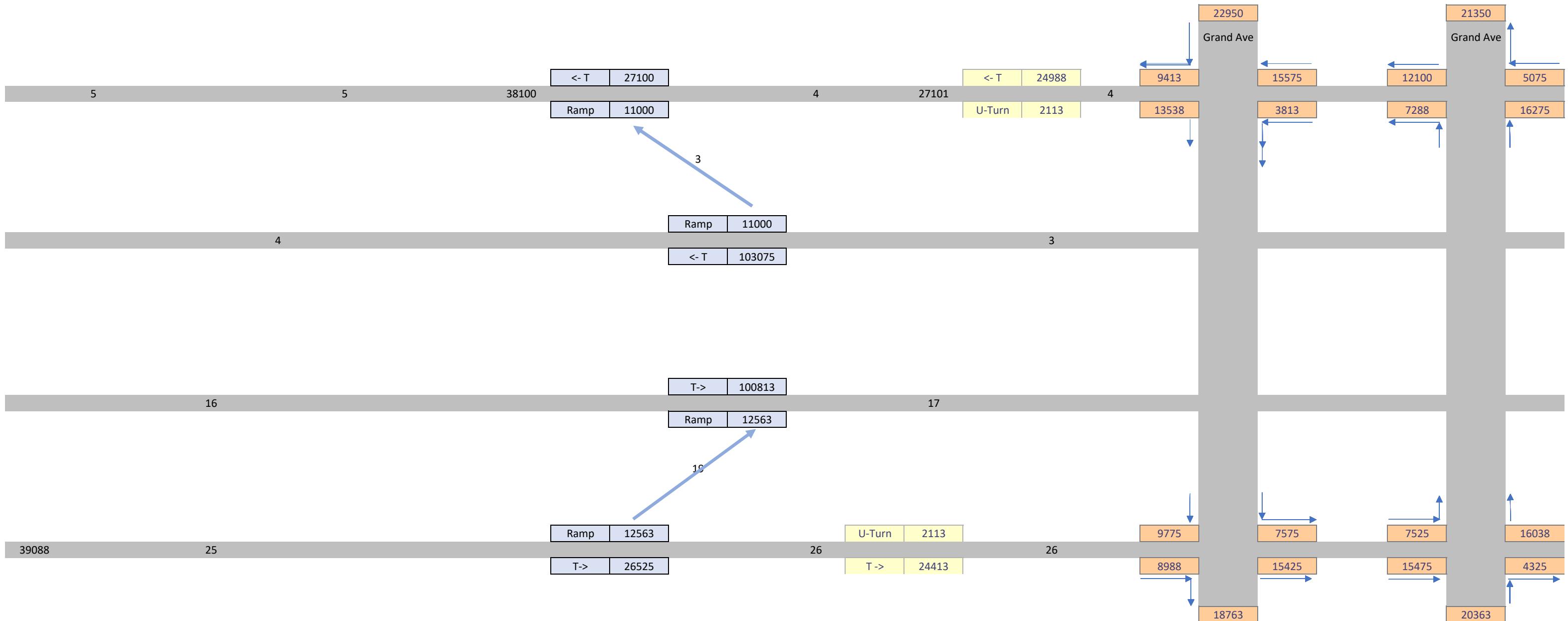


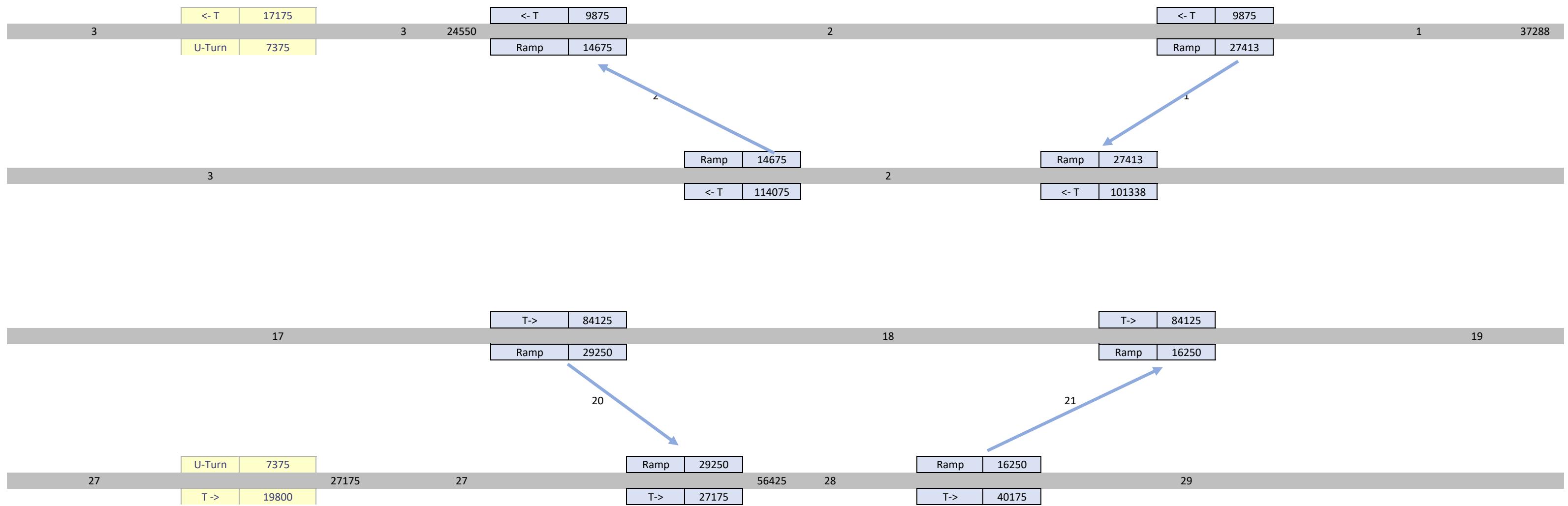


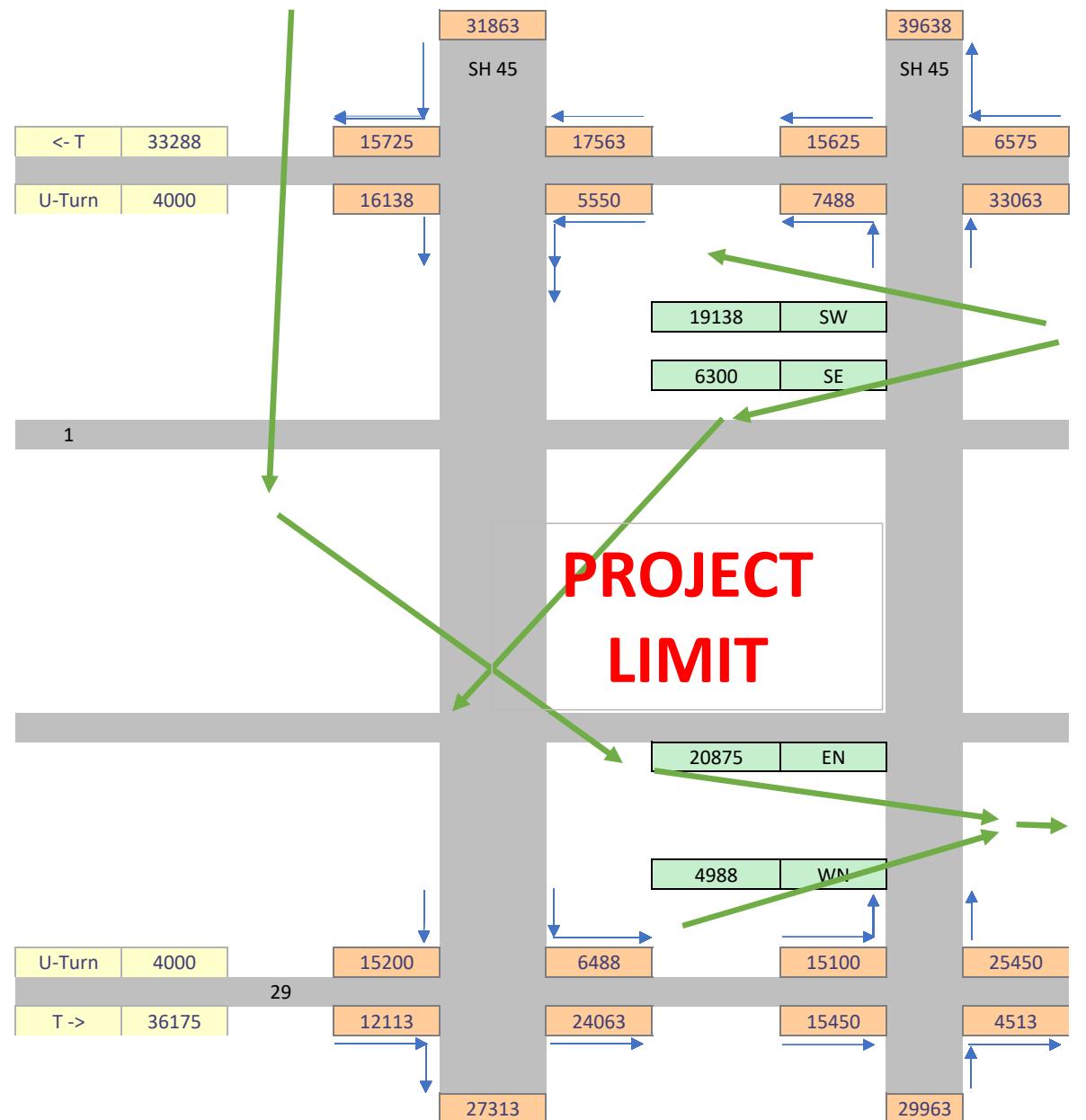






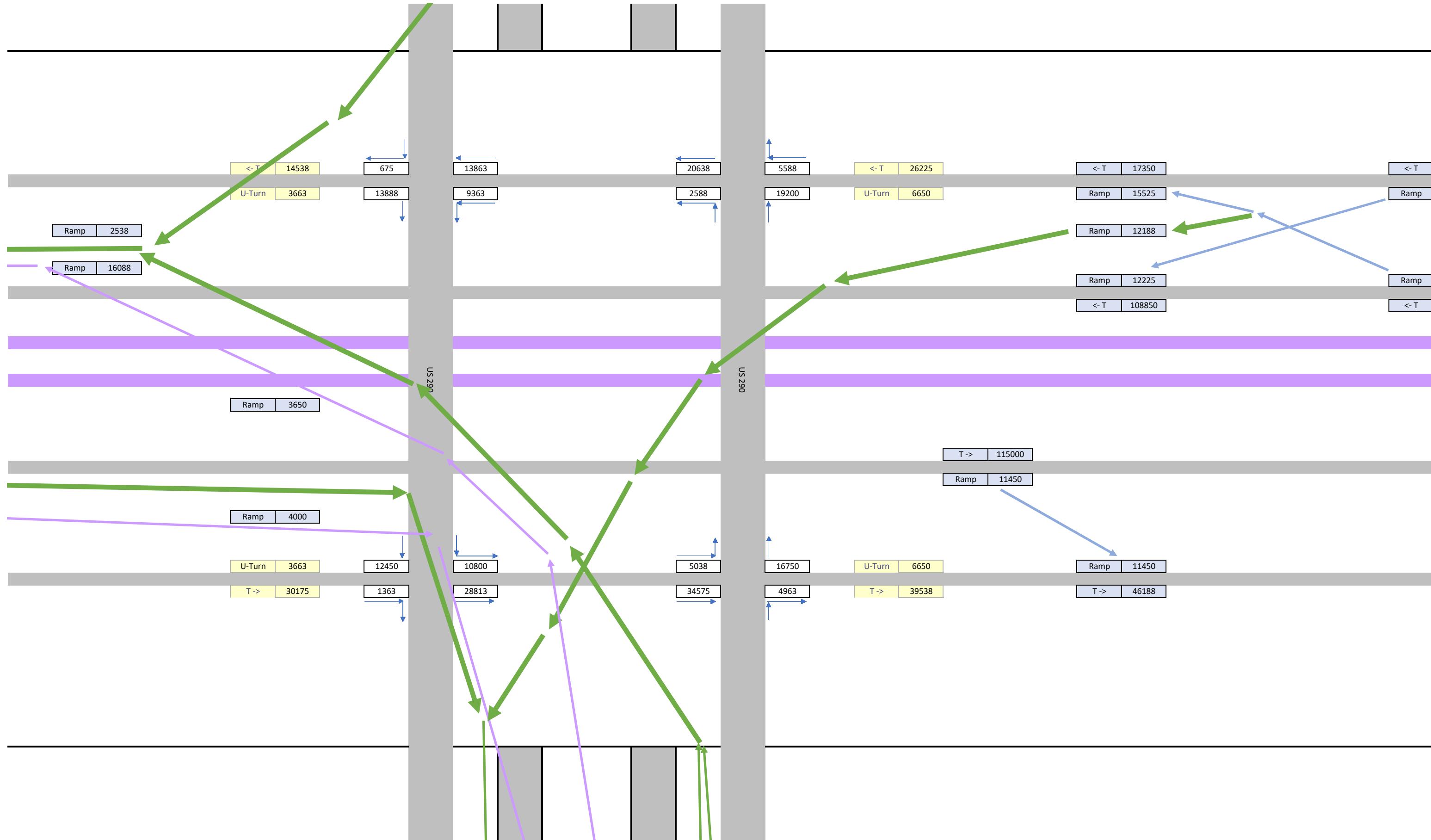


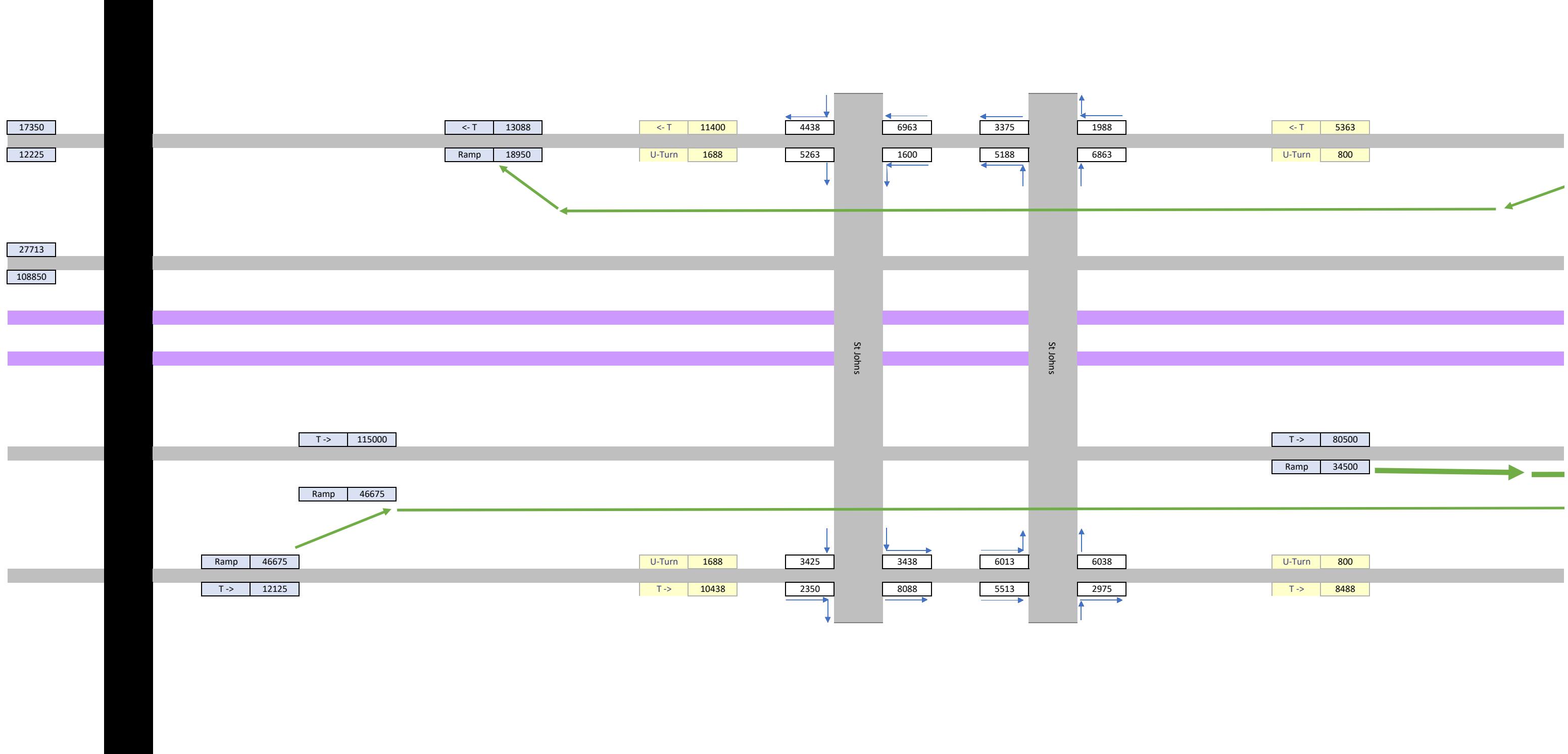


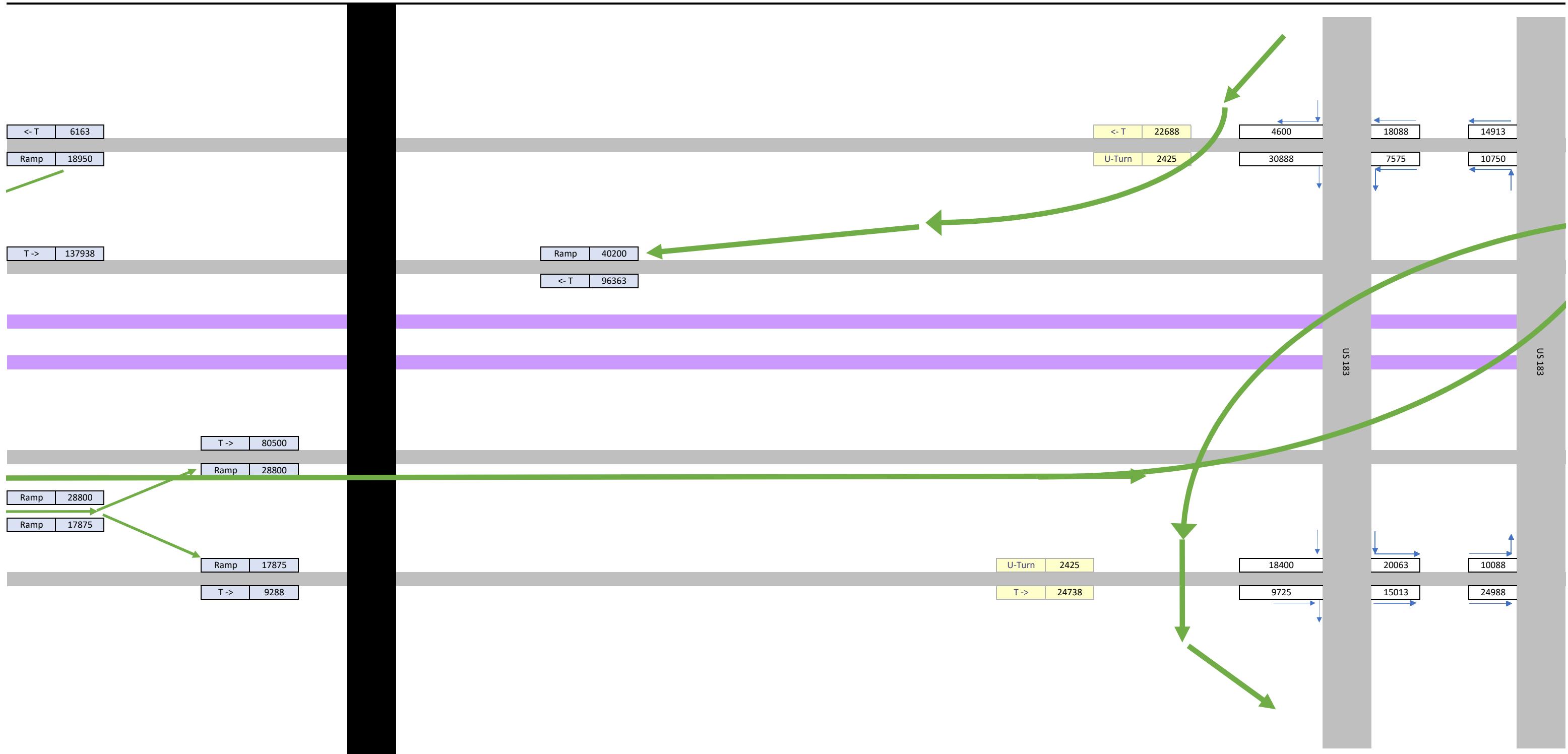


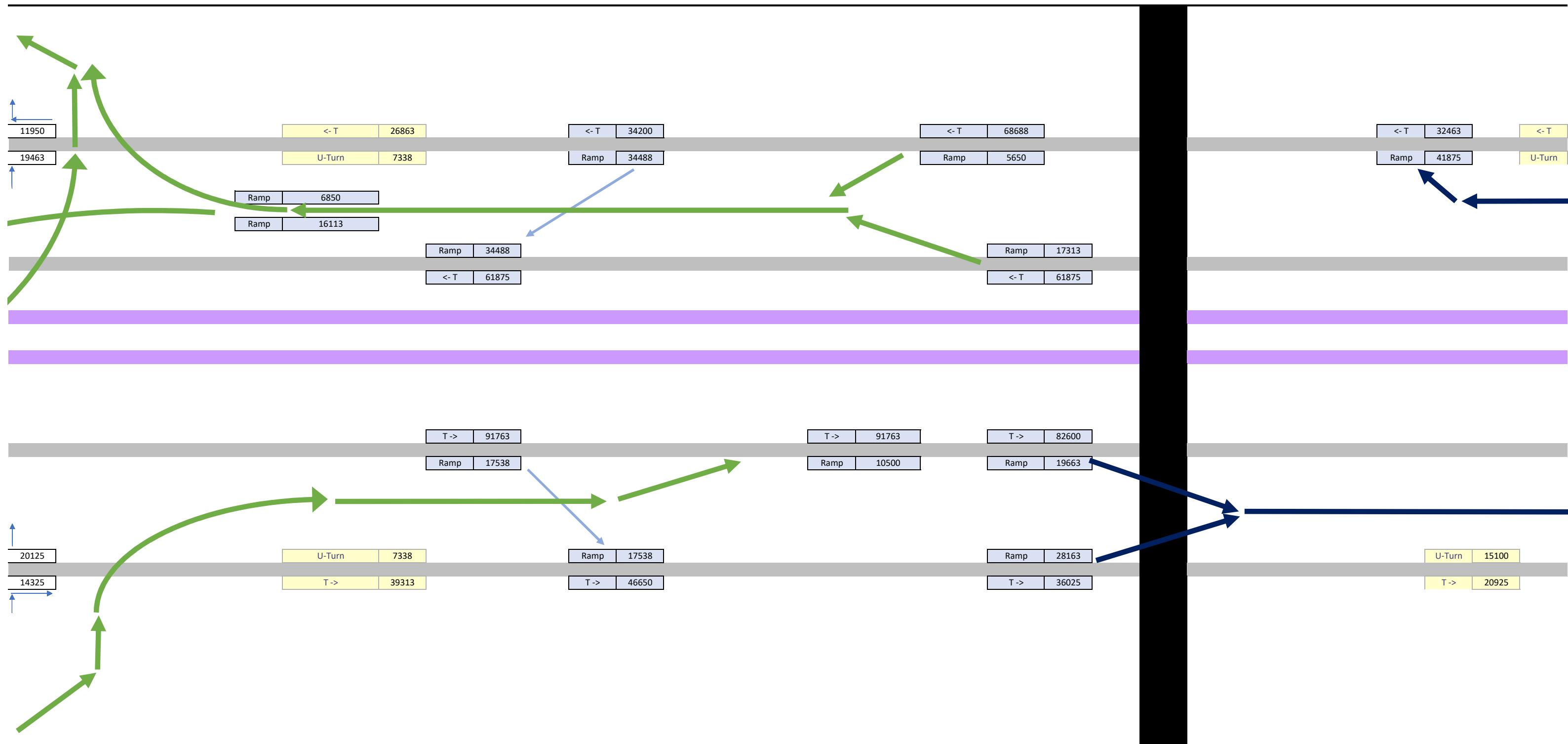
Project Limit

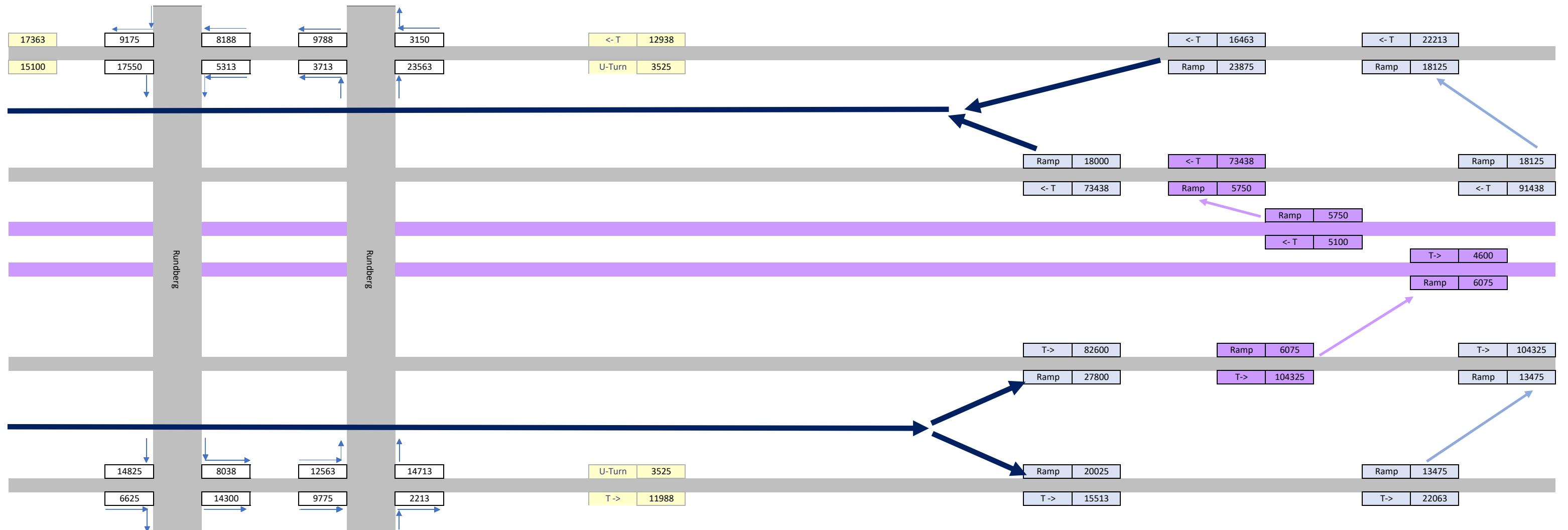
BUILD 2045

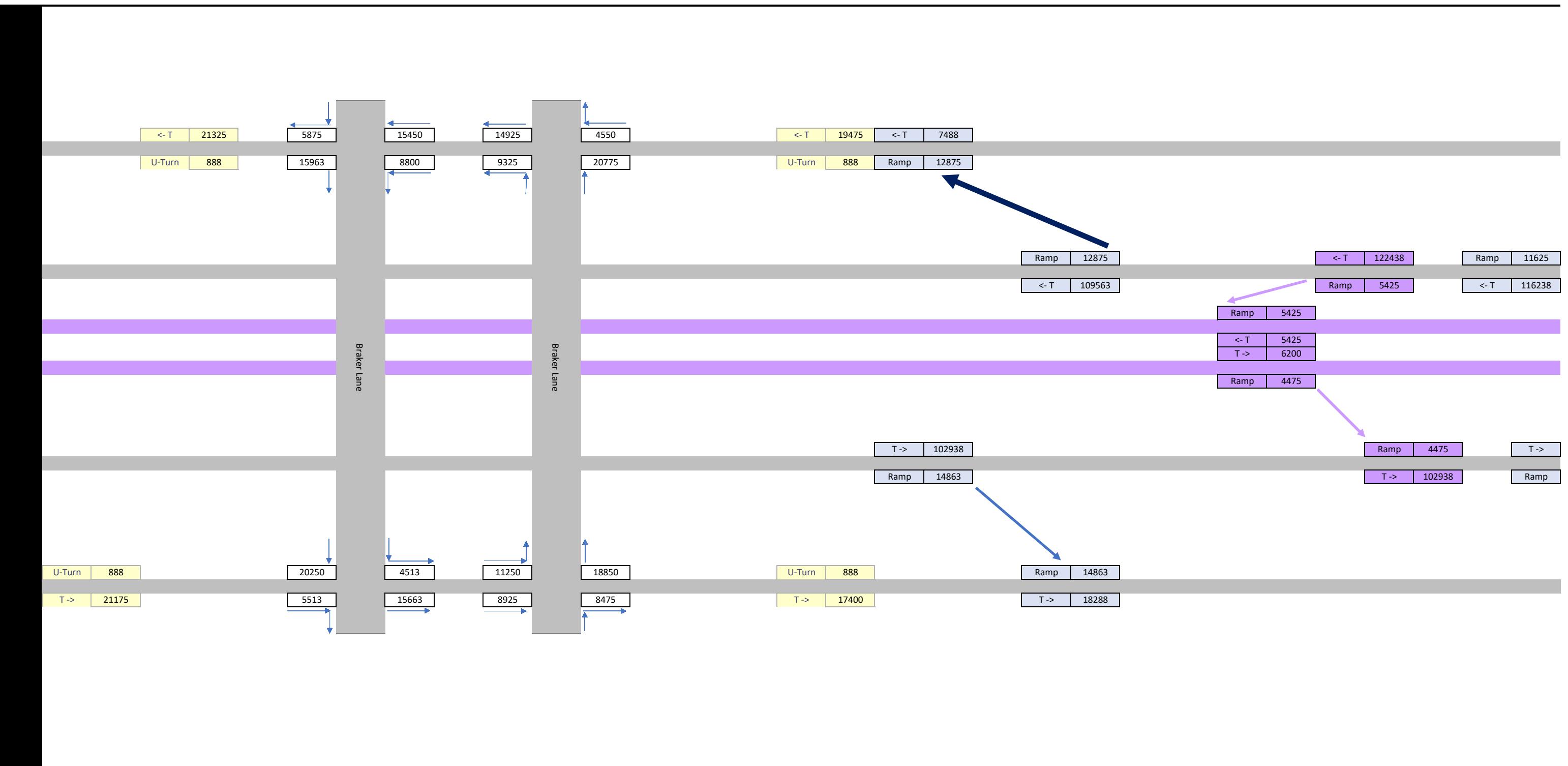


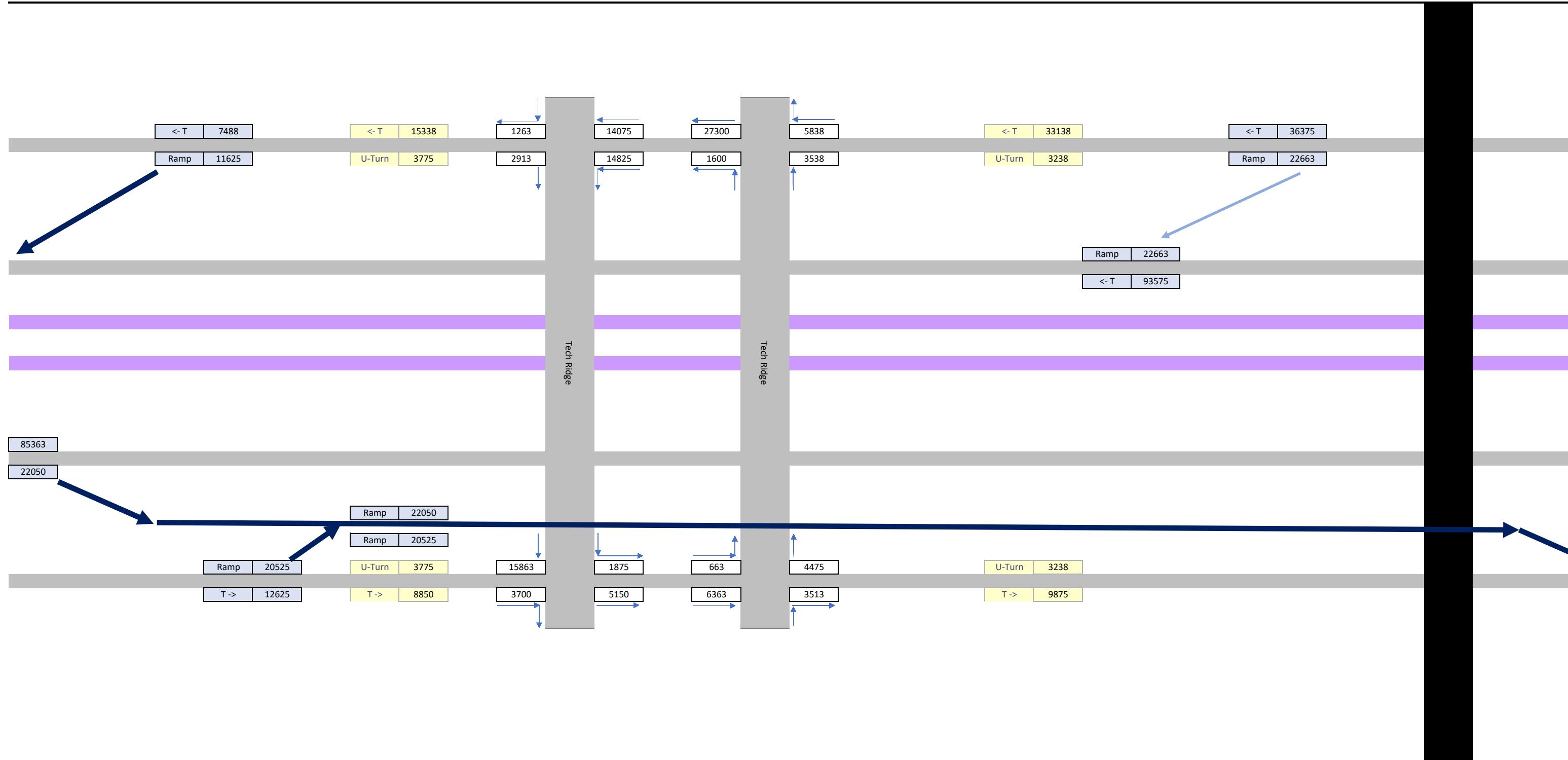


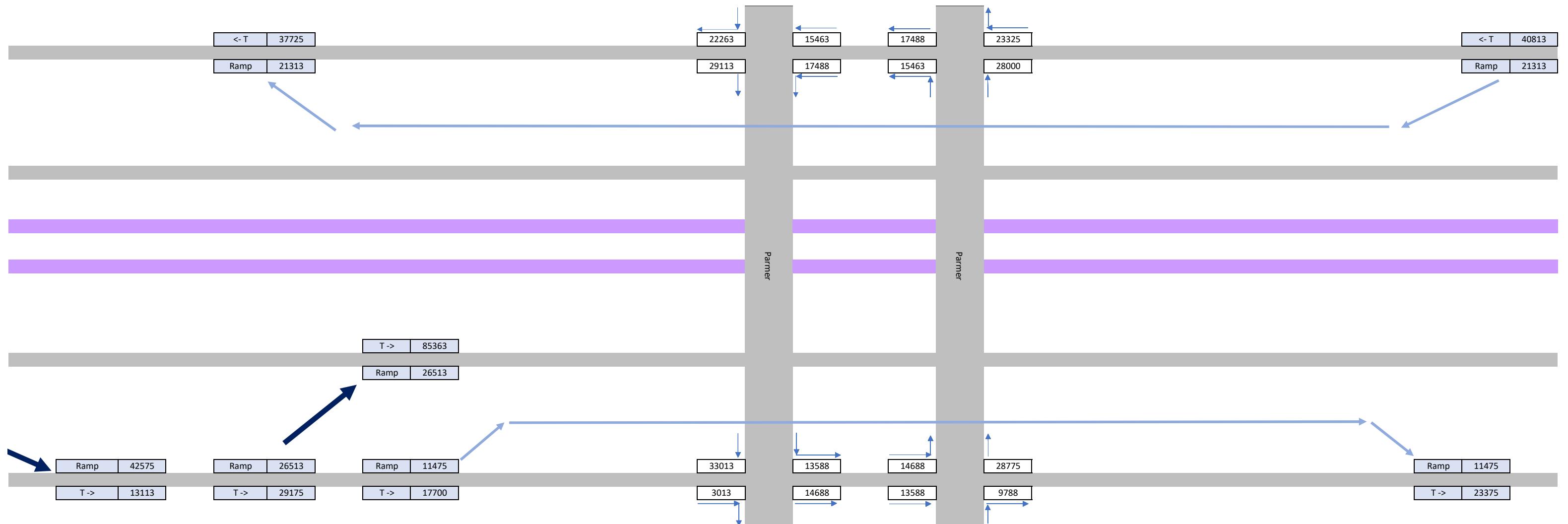


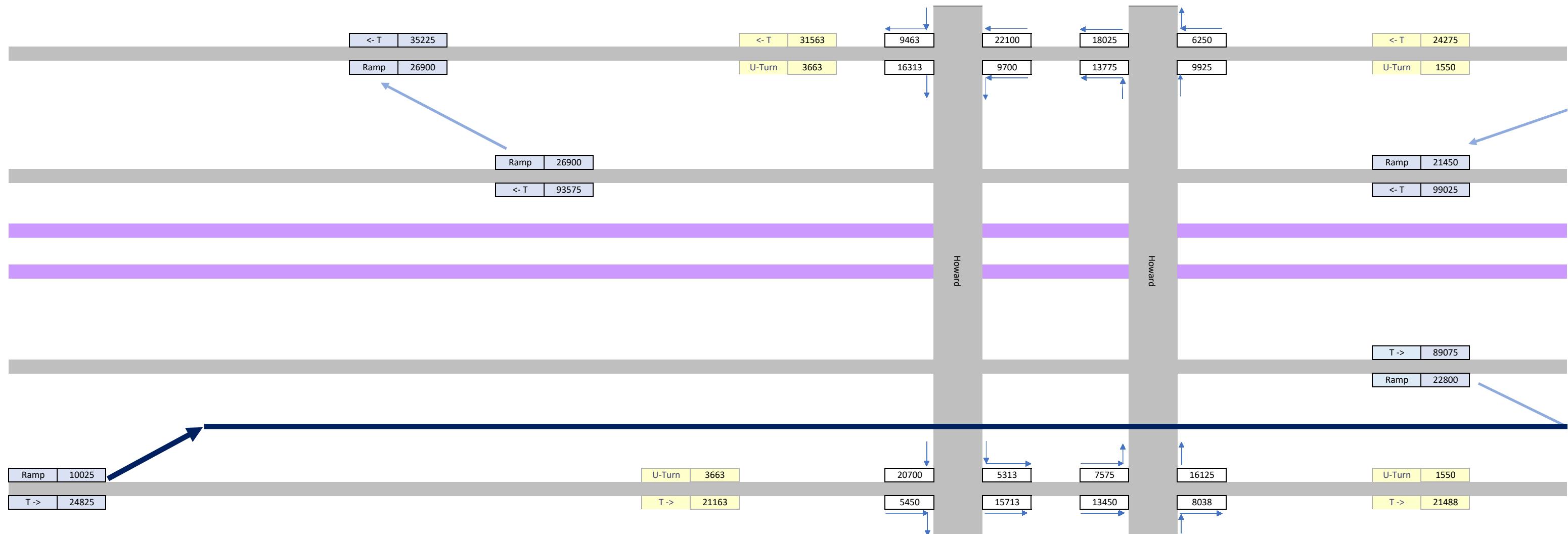


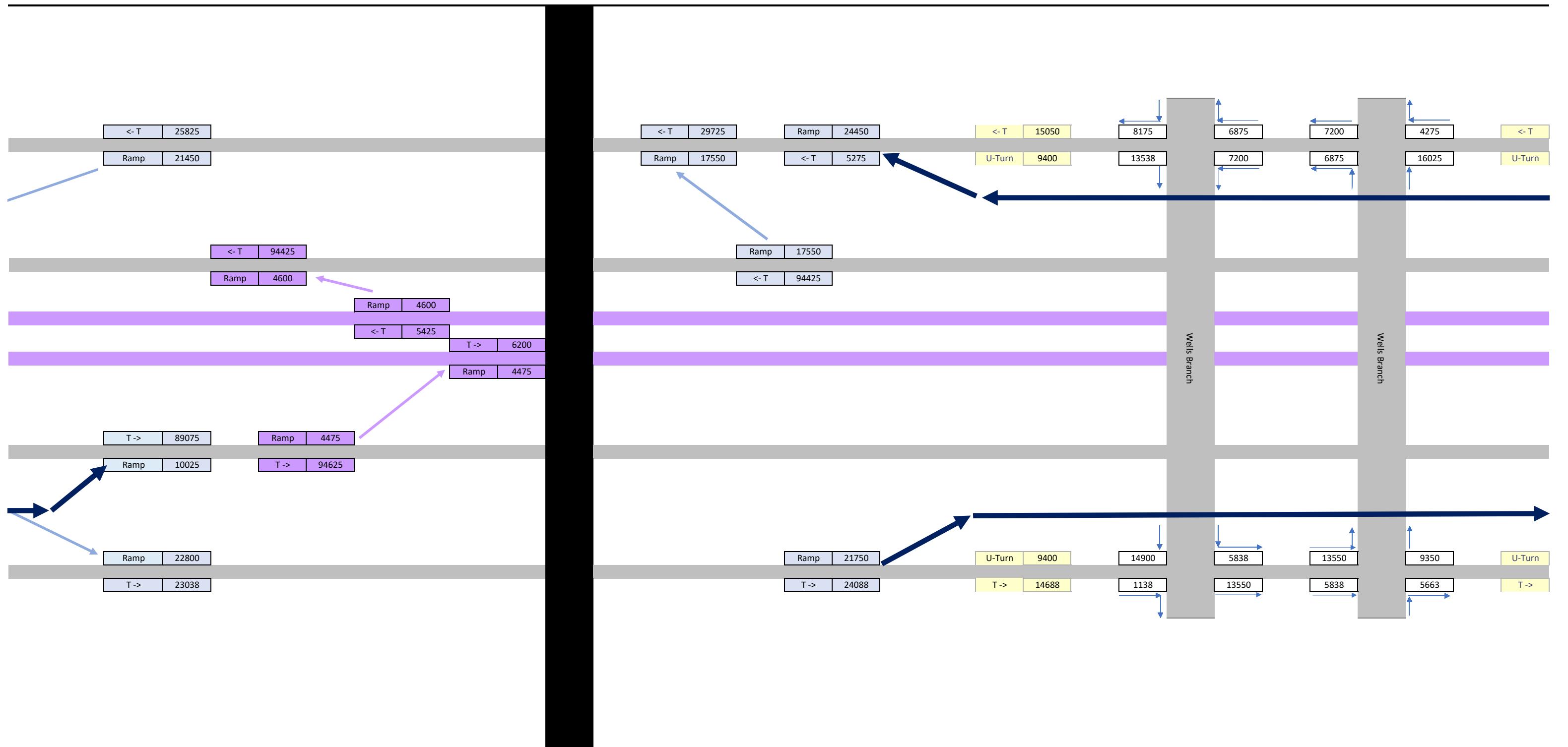


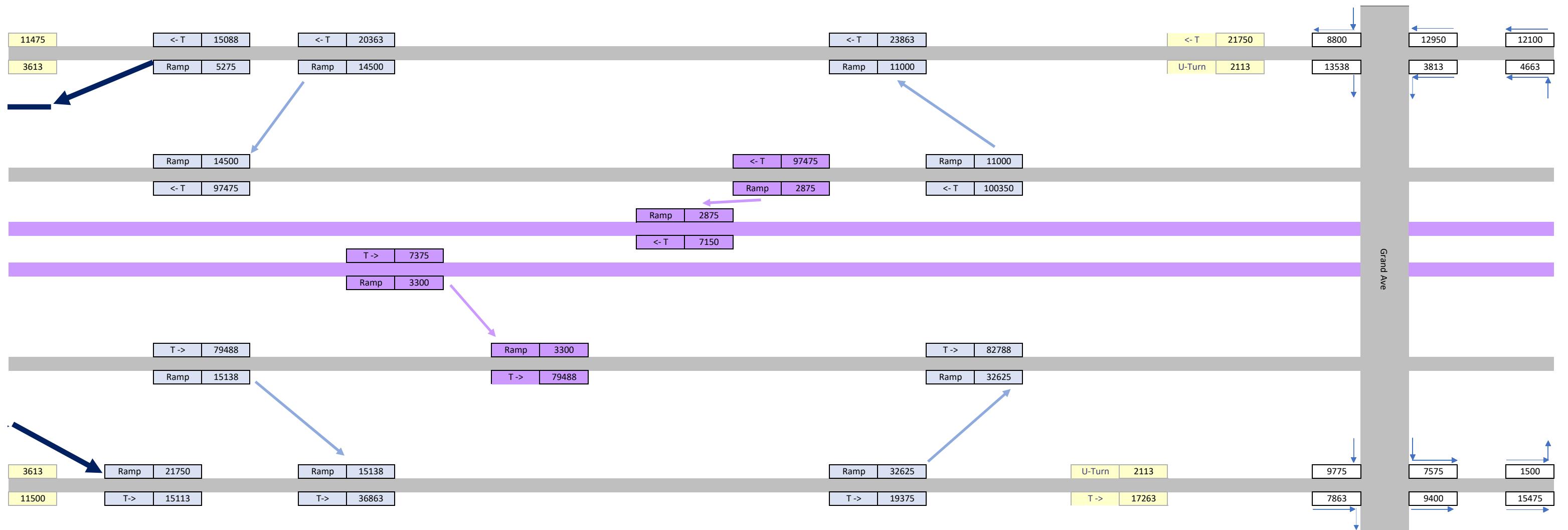


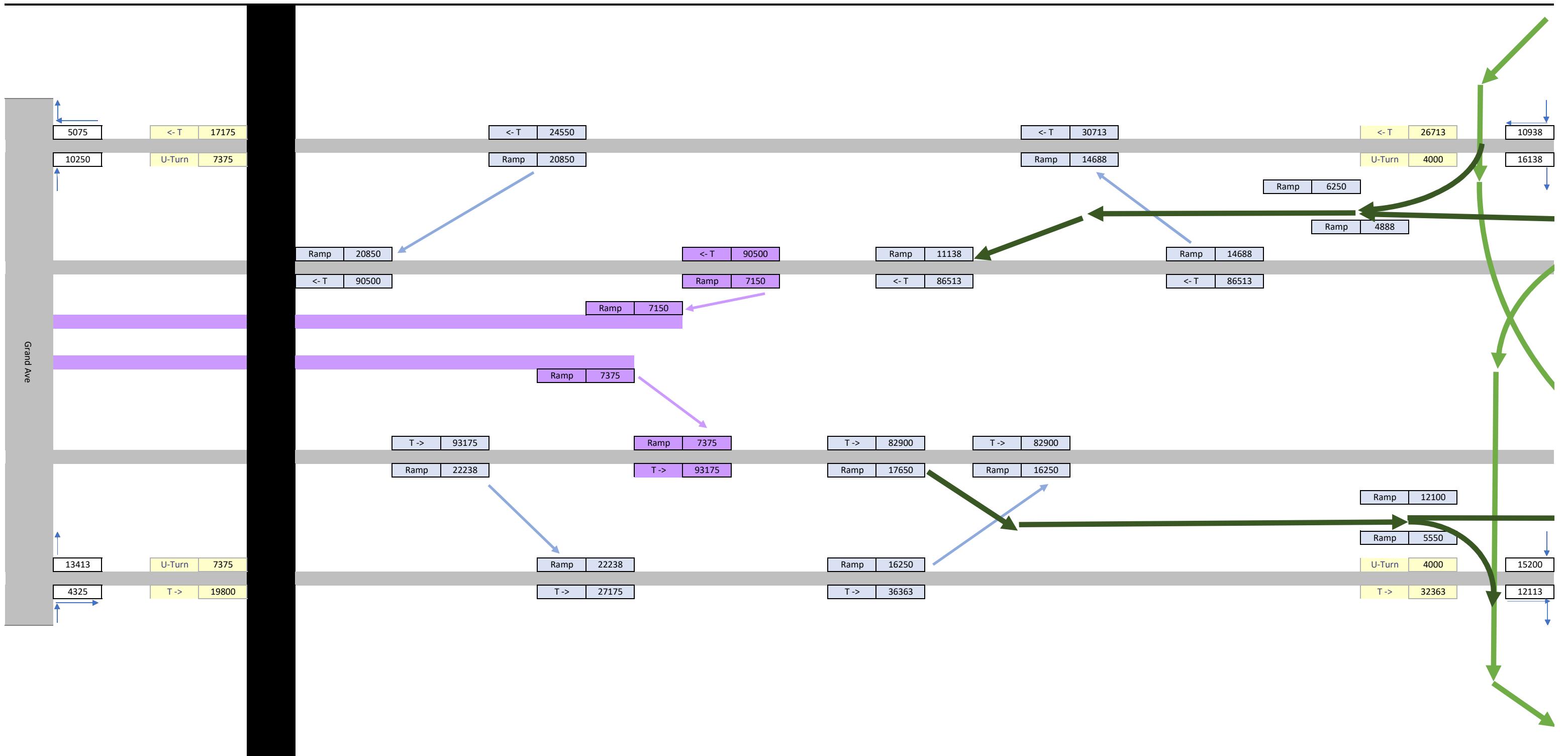




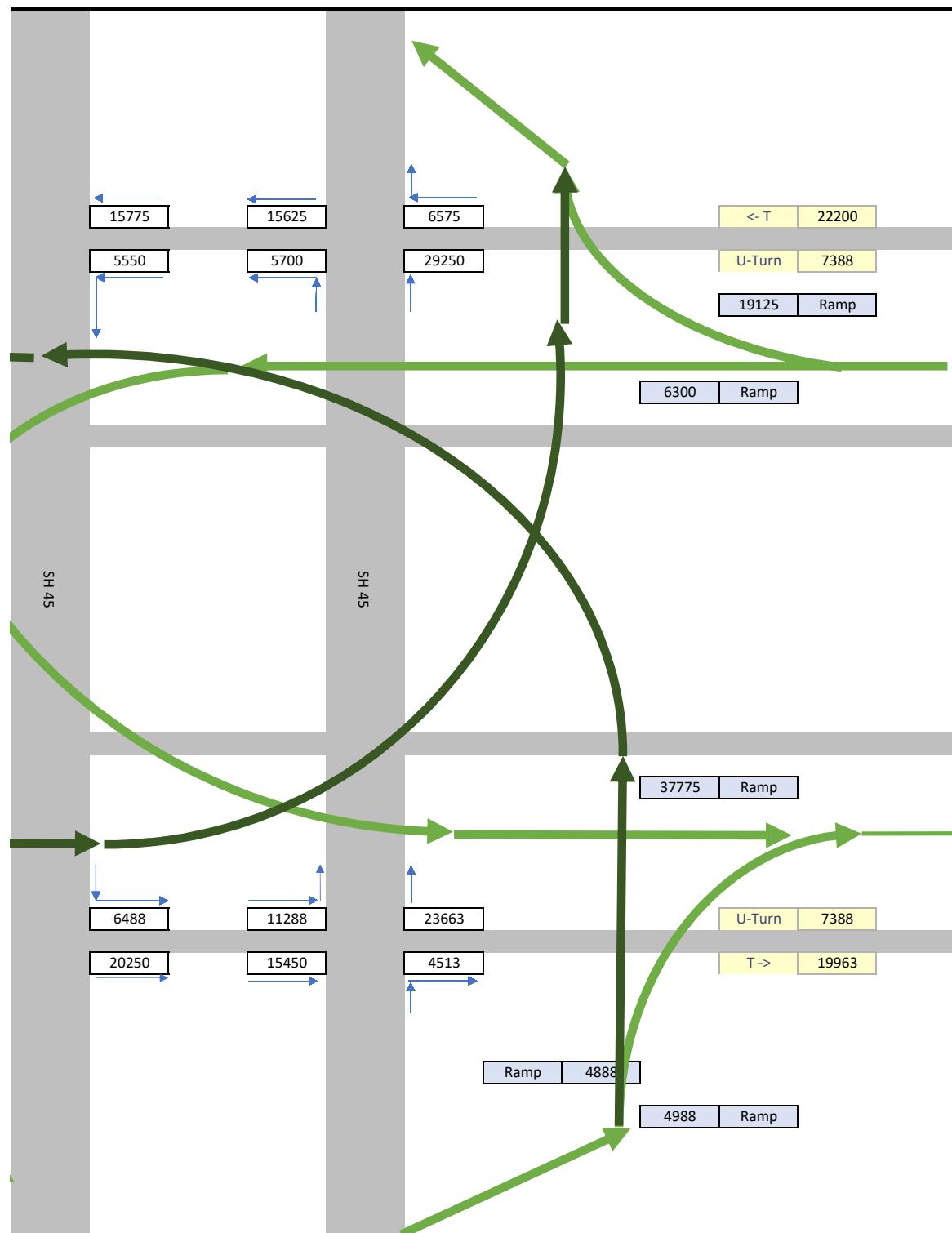








Project Limit



APPENDIX D
Analysis Tables

BASE 2018							RATES (Grams/Mile)								MSAT TOTALS (Grams/Day)									
Year	Link Name	Classification	Length	Speed	ADT	Daily VMT	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene
2018	I35_ML_NB_1	Urban Restricted Access	0.026179	60	93800	2455.5902	0.001125389	0.000191613	0.000132661	0.001772097	0.000115639	0.008994983	7.40553E-05	0.00082	0.00060229	2.763493159	0.47052222	0.325761709	4.351543031	0.283961959	22.08799268	0.181849532	2.013584002	1.478976841
2018	I35_ML_NB_2	Urban Restricted Access	0.545589	60	85500	46647.8595	0.001125389	0.000191613	0.000132661	0.001772097	0.000115639	0.008994983	7.40553E-05	0.00082	0.00060229	52.49696818	8.938321391	6.188364181	82.66451295	5.394311135	419.5967141	3.454522421	38.25124552	28.09552827
2018	I35_ML_NB_3	Urban Restricted Access	0.332752	70	105700	35171.8864	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	46.50962213	6.524577744	4.805631987	59.14767837	3.794338862	322.0691061	2.561457158	27.78579096	21.95234894
2018	I35_ML_NB_4	Urban Restricted Access	0.43546	70	75300	32790.138	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	43.36011184	6.082750359	4.480207124	55.14235188	3.537396132	300.2594263	2.388001961	25.90420968	20.46579314
2018	I35_ML_NB_5	Urban Restricted Access	1.215627	70	63650	77374.65855	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	102.3165517	14.35342334	10.57191331	130.1190208	8.34716883	708.520614	5.634951472	61.12598181	48.29298846
2018	I35_ML_NB_6	Urban Restricted Access	0.430177	70	87300	37554.4521	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	49.66021318	6.966556743	5.131168519	63.15437929	4.051369762	343.8862698	2.734971877	29.66801791	23.43941486
2018	I35_ML_NB_7	Urban Restricted Access	0.962741	70	74450	71676.06745	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	94.78100705	13.29630345	9.793299072	120.5358432	7.73240551	656.3380396	5.219941119	56.62409472	44.73624262
2018	I35_ML_NB_8	Urban Restricted Access	0.427492	70	84350	36058.9502	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	47.68263292	6.689132942	4.926833964	60.63943129	3.890035197	330.1919529	2.626059207	28.48657138	22.50605157
2018	I35_ML_NB_9	Urban Restricted Access	1.286043	70	74650	96003.10995	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	126.9499258	17.8091302	13.11717008	161.4460199	10.35680862	879.1008662	5.91602623	75.84245879	59.91983897
2018	I35_ML_NB_10	Urban Restricted Access	0.210438	70	85250	17939.8395	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	23.72278662	3.327938576	2.451169822	30.16897771	1.935347721	164.2751829	1.306501727	14.17247356	11.197057
2018	I35_ML_NB_11	Urban Restricted Access	1.550053	70	70800	109743.7524	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	145.1198948	20.3580677	14.99459201	184.5533133	11.83914277	1004.923985	7.99229012	86.6975666	68.49598909
2018	I35_ML_NB_12	Urban Restricted Access	0.293135	70	84600	24799.221	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	32.79330499	4.600391448	3.388386063	41.70422737	2.67533697	227.086567	1.80604877	19.59138509	15.47830408
2018	I35_ML_NB_13	Urban Restricted Access	0.762493	70	68850	52497.64305	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	69.42037493	9.738600584	7.172897973	88.28396837	5.663439399	480.7211298	3.823237175	41.47313906	32.76612934
2018	I35_ML_NB_14	Urban Restricted Access	0.311748	70	78750	24550.155	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	32.46395201	4.55418834	3.354555488	41.2857933	2.64846776	224.8058687	1.787910081	19.39462294	15.32285084
2018	I35_ML_NB_15	Urban Restricted Access	0.806543	70	65300	52667.2579	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	69.64466551	9.770065069	7.196072919	88.5692054	5.681737429	482.2742937	3.835589687	41.6071348	32.87199356
2018	I35_ML_NB_16	Urban Restricted Access	0.785356	70	73600	57668.2496	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	76.25773799	10.69777645	7.879372228	96.9792476	6.22124381	528.06839494	4.199796084	45.55791834	35.99333638
2018	I35_ML_NB_17	Urban Restricted Access	0.221083	70	83250	18405.15975	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	24.33810389	3.414258033	2.514747813	30.95149509	1.985546413	168.5361223	1.340389528	14.54007657	11.4874842
2018	I35_ML_NB_18	Urban Restricted Access	0.920355	70	65050	59869.09275	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	79.16802782	11.10604492	8.180079507	100.6803503	6.458670503	548.2215245	4.360076524	47.29658447	37.36698112
2018	I35_Frntg_NB_1	Urban Unrestricted Access	0.190209	55	30200	5744.3118	0.001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	6.41130374	0.679501923	0.684465583	5.96837668	0.364067358	20.60192142	0.292153006	2.987042144	3.271553259
2018	I																							

BASE 2018							RATES (Grams/Mile)								MSAT TOTALS (Grams/Day)									
Year	Link Name	Classification	Length	Speed	ADT	Daily VMT	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene
2018	I35_ML_SB_8	Urban Restricted Access	1.448118	70	67300	97458.3414	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	128.8742543	18.07905661	13.31600237	163.893246	10.51379411	892.4264265	7.097582523	76.99209166	60.82811407
2018	I35_ML_SB_9	Urban Restricted Access	0.237195	70	82300	19521.1485	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	25.81383409	3.621280064	2.667228439	32.82822536	1.205939145	178.7552358	1.421663456	15.42170771	12.18402274
2018	I35_ML_SB_10	Urban Restricted Access	1.182842	70	71100	84100.0662	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	111.2099094	15.60102333	11.49082434	141.42897	9.072704996	770.1046464	6.124741623	66.43905399	52.49061647
2018	I35_ML_SB_11	Urban Restricted Access	0.778154	70	79350	61746.5199	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	81.65064778	11.45431794	8.436597564	103.8375724	6.661207118	565.4131325	4.496803601	48.77975196	38.53876745
2018	I35_ML_SB_12	Urban Restricted Access	0.780084	70	67400	52577.6616	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	69.52618764	9.753444464	7.183831129	88.41853355	5.67207179	481.45386	3.829064673	41.53635372	32.8160725
2018	I35_ML_SB_13	Urban Restricted Access	0.704131	70	81600	57457.0896	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	75.9785101	10.65860511	7.850520854	96.62414512	6.198463894	526.1348019	4.184417969	45.39110194	35.86154197
2018	I35_ML_SB_14	Urban Restricted Access	0.862608	70	60750	52403.436	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	69.29580003	9.72112466	7.160026204	88.12554274	5.653276354	479.8584754	3.816376374	41.39871549	32.7073305
2018	I35_ML_SB_15	Urban Restricted Access	0.44756	70	73000	32671.88	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	43.20373311	6.060812851	4.464049207	54.94348037	3.524638473	299.1765373	2.379389606	25.81078586	20.39198302
2018	I35_ML_SB_16	Urban Restricted Access	0.400978	70	99250	39797.0665	0.001322352	0.000185505	0.000136633	0.001681675	0.00010788	0.009157004	7.28268E-05	0.00079	0.000624145	52.62573931	7.382574008	5.437583119	69.92572763	4.493302733	364.4218989	2.898294385	31.43968333	24.83913091
2018	I35_ML_SB_17	Urban Restricted Access	0.346447	60	81050	28079.52935	0.0001125389	0.000191613	0.000132661	0.001772097	0.000115639	0.008994983	7.40553E-05	0.00082	0.00060229	31.60038155	5.380393882	3.725065963	49.759638333	3.24708279	252.5748957	0.709438687	23.02521451	16.91201309
2018	I35_ML_SB_18	Urban Restricted Access	0.248428	60	91250	22669.055	0.0001125389	0.000191613	0.000132661	0.001772097	0.000115639	0.008994983	7.40553E-05	0.00082	0.00060229	25.51149553	4.34367839	3.007305576	40.17175516	2.621426516	203.9077697	1.678764247	18.58862546	13.65333978
2018	I35_Frntg_SB_1	Urban Unrestricted Access	0.467351	55	24450	11426.73195	0.0001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	12.7532938	1.351682603	1.361556444	11.87244754	0.724212099	40.98186901	0.581158231	5.94190063	6.507857416
2018	I35_Frntg_SB_2	Urban Unrestricted Access	0.847757	55	6500	5510.4205	0.0001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	6.150254511	0.651834624	0.656596179	5.725362124	0.349243617	19.76307243	0.280257404	2.865418668	3.138345336
2018	I35_Frntg_SB_3	Urban Unrestricted Access	0.423975	55	16150	6847.19625	0.0001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	7.642247924	0.809963522	0.815880185	7.114280673	0.433966806	24.55740636	0.348245192	3.56054206	3.899678148
2018	I35_Frntg_SB_4	Urban Unrestricted Access	0.303461	55	17750	5386.43275	0.0001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	6.011870114	0.637167956	0.641822373	5.596538059	0.341385427	19.3183915	0.273951445	2.800945038	3.06730692
2018	I35_Frntg_SB_5	Urban Unrestricted Access	0.321003	55	25000	8025.075	0.0001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	8.956894256	0.949269292	0.956230706	8.338104224	0.508613901	28.78185766	0.408151553	4.173039011	4.570154481
2018	I35_Frntg_SB_6	Urban Unrestricted Access	0.47531	55	13150	6250.3265	0.0001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	6.97607356	0.739359043	0.744759951	6.494129188	0.396137942	22.41673849	0.31788676	3.250169789	3.559743402
2018	I35_Frntg_SB_7	Urban Unrestricted Access	0.348818	55	19950	6958.9191	0.0001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	7.766943301	0.823179359	0.829192562	7.230361429	0.441047662	24.95809933	0.353927364	3.618637942	3.963307573
2018	I35_Frntg_SB_8	Urban Unrestricted Access	0.232475	55	31800	7392.705	0.0001116113	0.000118291	0.000119155	0.001039006	6.33788E-05	0.003586491	5.08595E-05	0.00052	0.000569529	8.251097585	0.874492443	0.88088048	7.681067752	0.468540474	26.51386847	0.375989511	3.84420661	4.

NO BUILD 2045							RATES (Grams/Mile)								MSAT TOTALS (Grams/Day)									
Year	Link Name	Classification	Length	Speed	ADT	Daily VMT	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene
2040	I35_ML_NB_1	Urban Restricted Access	0.026179	70	130150	3407.19685	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	0.9911592	0.162619875	0.006113583	1.94680156	0.090255293	3.843894292	0.047274872	0.647367422	0.607153384
2040	I35_ML_NB_2	Urban Restricted Access	0.878341	70	118700	104259.0767	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	30.32913788	4.976113448	0.187073575	59.57147241	2.761781581	117.6218714	1.446595177	19.80922521	18.57868916
2040	I35_ML_NB_3	Urban Restricted Access	0.158191	70	84113	13305.91958	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	3.870714017	0.635069554	0.023875005	7.60272627	0.352468531	15.01132767	0.184619696	2.528124802	2.371079351
2040	I35_ML_NB_4	Urban Restricted Access	0.277269	70	113901	31581.21637	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	9.187028083	1.507319271	0.056666635	18.04485153	0.836573893	35.62895327	0.438189525	6.000431303	5.627688455
2040	I35_ML_NB_5	Urban Restricted Access	0.446491	70	96288	42991.72541	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	12.50636404	2.051924012	0.077140677	24.56457955	1.138833751	48.50193728	0.596510391	8.16842809	7.661010707
2040	I35_ML_NB_6	Urban Restricted Access	0.769136	70	105476	81125.38874	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	23.59950978	3.871980749	0.145564463	46.35336327	2.148979364	91.52315891	1.125615148	15.41382436	14.45632772
2040	I35_ML_NB_7	Urban Restricted Access	0.430177	70	133275	57331.83968	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	16.677927	2.73635397	0.102871352	32.7582232	1.518697689	64.68001146	0.795479544	10.89304989	10.21638079
2040	I35_ML_NB_8	Urban Restricted Access	0.962741	70	113613	109379.8932	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	31.81879188	5.220521559	0.196261931	62.49740069	2.89742997	123.3990185	0.151764653	20.78218038	19.491205
2040	I35_ML_NB_9	Urban Restricted Access	0.427492	70	128476	54922.46219	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	15.9770351	2.621358364	0.098548171	31.38155492	1.454874235	61.96182617	0.76204942	10.43526815	9.787036154
2040	I35_ML_NB_10	Urban Restricted Access	1.286043	70	113613	146111.2034	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	42.50399075	6.973646295	0.262169454	83.4890889	3.870427813	164.8381486	0.202729363	27.76112953	26.03662641
2040	I35_ML_NB_11	Urban Restricted Access	0.210438	70	129638	27280.76144	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	7.936018632	1.302065664	0.048950266	15.58766085	0.722656548	30.77731279	0.378520693	5.183344841	4.861358867
2040	I35_ML_NB_12	Urban Restricted Access	1.412301	70	107588	151946.64	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	44.20152892	7.252162043	0.272640062	86.81915626	4.025006214	171.421508	2.10826034	28.86986253	27.07648564
2040	I35_ML_NB_13	Urban Restricted Access	0.43089	70	128526	55380.56814	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	16.11029888	2.643223004	0.099370157	31.64330715	1.46700928	62.47864716	0.768405642	10.52230829	9.868669411
2040	I35_ML_NB_14	Urban Restricted Access	0.762493	70	104588	79747.61788	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	23.19871396	3.806222023	0.143092309	45.5661336	2.112482761	89.96880037	1.106498571	15.15204789	14.21081263
2040	I35_ML_NB_15	Urban Restricted Access	0.311748	70	119626	37293.16625	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	10.84864375	1.7799412	0.06691567	21.30854113	0.987881179	42.07299877	0.517442856	7.085701815	6.645542676
2040	I35_ML_NB_16	Urban Restricted Access	0.806543	70	100813	81310.01946	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	23.65321916	3.880729868	0.145895748	2.153870159	91.73145359	1.1281769	15.44890419	14.4892842	
2040	I35_ML_NB_17	Urban Restricted Access	0.783536	70	113376	88834.17754	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	25.84200919	4.2399085	0.159396455	50.75800519	2.353182121	100.2199764	1.232574629	16.87849427	15.83001331
2040	I35_ML_NB_18	Urban Restricted Access	0.221083	60	84125	18598.60738	0.00022605	5.04959E-05	2.0951E-06	0.000627538	2.90095E-05	0.001103702	1.21168E-05	0.00021	0.000173389	4.204209411	0.939153802	0.038965915	11.67132987	0.539536201	20.52732277	0.225356013	3.905707518	3.224790746
2040	I35_ML_NB_19	Urban Restricted Access	0.920355	60	100375	92380.63313	0.00022605	5.04959E-05	2.0951E-06	0.000627538	2.90095E-05	0.001103702	1.21168E-05	0.00021	0.000173389	20.88261338	4.664845121	0.193546531	5.97234282	2.67991548	101.9607025	1.119359675	19.3999328	16.01776976
2040</td																								

NO BUILD 2045							RATES (Grams/Mile)							MSAT TOTALS (Grams/Day)										
Year	Link Name	Classification	Length	Speed	ADT	Daily VMT	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene
2040	I35_ML_SB_3	Urban Restricted Access	0.690569	70	114075	78776.65868	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	22.91626032	3.759879744	0.141350102	45.01134767	2.086762437	88.87339417	1.093026508	14.96756563	14.03779029
2040	I35_ML_SB_4	Urban Restricted Access	0.653877	70	103075	67398.37178	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	19.60629784	3.216812912	0.120933877	38.5100307	1.785535613	76.03676218	0.935152724	12.80569105	12.01020994
2040	I35_ML_SB_5	Urban Restricted Access	0.445161	70	121188	53948.17127	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	15.69361226	2.574857068	0.096799987	30.82486531	1.429065655	60.86266123	0.748531129	10.25015287	9.613420112
2040	I35_ML_SB_6	Urban Restricted Access	0.684822	70	103263	70716.77419	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	20.57162659	3.375194776	0.12688135	40.40609696	1.873259294	79.78048133	0.981195573	13.43618753	12.60154039
2040	I35_ML_SB_7	Urban Restricted Access	0.444122	70	125701	55826.57952	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	16.24004433	2.66451039	0.100170442	31.89814879	1.478823944	62.98182343	0.774594052	10.60705045	9.948147449
2040	I35_ML_SB_8	Urban Restricted Access	1.448118	70	102850	148938.9363	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	43.32658294	7.108609316	0.267243296	85.1006168	3.945333337	168.0283096	2.066528438	28.29839881	26.54052088
2040	I35_ML_SB_9	Urban Restricted Access	0.237195	70	125700	29815.4115	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	8.673352526	1.423040322	0.053498226	17.03590728	0.789798422	33.63682673	0.413688974	5.664928367	5.313026741
2040	I35_ML_SB_10	Urban Restricted Access	1.182842	70	108775	128663.6386	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	37.42846529	6.140902858	0.230863035	73.5157325	3.408248743	145.1543446	1.785208587	24.44609211	22.9751694
2040	I35_ML_SB_11	Urban Restricted Access	0.778154	70	121388	94458.55775	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	27.4781507	4.508350874	0.169483632	53.9716593	2.50216972	106.5652285	1.310612931	17.94712655	16.83226285
2040	I35_ML_SB_12	Urban Restricted Access	0.780084	70	103263	80553.81409	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	23.43323777	3.844700436	0.1445338878	46.02677738	2.133838579	90.87832604	1.117684547	15.30522517	14.35447464
2040	I35_ML_SB_13	Urban Restricted Access	0.704131	70	124888	87937.51233	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	25.5811678	4.197112151	0.157787555	50.2456693	2.329429816	99.20838642	1.220133395	16.70812788	15.67022996
2040	I35_ML_SB_14	Urban Restricted Access	0.545935	70	106888	58353.90028	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	16.97524612	2.785153234	0.104705251	33.34220742	1.545771669	65.83306868	0.809660639	11.08724141	10.39850926
2040	I35_ML_SB_15	Urban Restricted Access	0.41692	70	83925	34990.011	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	10.17865208	1.670015406	0.062783085	19.99256603	0.92687151	39.47465013	0.485486566	6.648102304	6.235126559
2040	I35_ML_SB_16	Urban Restricted Access	0.347311	70	101450	35234.70095	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	10.24983279	1.681694053	0.063222135	20.13237679	0.93335325	39.75070178	0.4888164	6.694593396	6.278729655
2040	I35_ML_SB_17	Urban Restricted Access	0.420711	70	141538	59546.59352	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	17.3222056	2.842060511	0.106845317	34.02368758	1.577365639	67.17862836	0.826209264	11.31385313	10.61104401
2040	I35_ML_SB_18	Urban Restricted Access	0.324041	70	112475	36446.51148	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	10.60235048	1.739531767	0.065396505	20.82478017	0.965453633	41.117829	0.505695517	6.924837403	6.494671056
2040	I35_ML_SB_19	Urban Restricted Access	0.248428	70	125713	31230.62916	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	9.085041686	1.490586323	0.056037571	17.84453328	0.827286977	35.23343161	0.433325126	5.933819732	5.565214751
2040	I35_Frntg_SB_1	Urban Unrestricted Access	0.467351	55	37288	17426.58409	0.000219342	2.84941E-05	9.99845E-07	0.000332525	1.5446E-05	0.000444237	1.06778E-05	0.00011	0.000176619	3.822378274	0.496555124	0.017423881	5.794777093	0.269170405	7.741528287	0.186078099	1.916924265	3.077859283
2040	I35_Frntg_SB_2	Urban Unrestricted Access	0.847757	55	9875	8371.600375	0.000219342	2.84941E-05	9.99845E-07	0.000332525	1.5446E-05	0.000444237	1.06778E-05	0.00011	0.000178197	2.74781507	0.008370302	0.2783767481	0.129307445	3.718972162	0.089390524	0.920876048	1.478580529	
20																								

NO BUILD 2045						RATES (Grams/Mile)						MSAT TOTALS (Grams/Day)												
Year	Link Name	Classification	Length	Speed	ADT	Daily VMT	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene
Daily Total						3,510,643.63										940.0274994	155.7819379	5.90725747	1870.7137	86.70586485	3472.194823	45.64881427	620.8257722	624.5954934
Tons/Day																0.001036203	0.00017172	6.51164E-06	0.002062109	9.55769E-05	0.00382744	5.03192E-05	0.000684343	0.0006848499
Yearly Total						1,281,384,926.56										0.378214075	0.06267787	0.002376747	0.752669738	0.034885552	1.397015464	0.01836651	0.249785294	0.251302017

BUILD 2045							RATES (Grams/Mile)								MSAT TOTALS (Grams/Day)									
Year	Link Name	Classification	Length	Speed	ADT	Daily VMT	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene
2040	I35_ML_NB_1	Urban Restricted Access	0.026179	70	126450	3310.33455	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	0.962981797	0.157996798	0.005939781	1.891456452	0.087689449	3.734617236	0.045930907	0.628963585	0.58989278
2040	I35_ML_NB_2	Urban Restricted Access	0.878294	70	115000	101003.81	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	29.38217541	4.820744948	0.181232603	57.71148058	2.675550857	113.94938	1.401428336	19.19072452	17.99860933
2040	I35_ML_NB_3	Urban Restricted Access	0.158191	70	805000	127343.755	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	37.04450898	6.077906997	0.228494749	72.76157844	3.373285551	143.6652928	1.766895196	24.19531423	22.69231721
2040	I35_ML_NB_4	Urban Restricted Access	0.277262	70	109300	30304.7366	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	8.815698007	1.446395001	0.054376229	17.31549748	0.80276045	34.1888682	0.420478362	5.757900139	5.400223168
2040	I35_ML_NB_5	Urban Restricted Access	0.44649	70	91763	40971.26187	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	11.91860785	1.955490626	0.07351533	23.41012863	1.085312473	46.22251269	0.56847645	7.784540006	7.300969498
2040	I35_ML_NB_6	Urban Restricted Access	0.27186	70	102263	27801.21918	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	8.087420648	1.326906251	0.049884131	15.88503959	0.736443267	31.36447714	0.385742046	5.282231814	4.954103046
2040	I35_ML_NB_7	Urban Restricted Access	1.158295	70	82600	95675.167	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	27.83206435	4.566417623	0.171671341	54.66680457	2.534397218	107.9377695	1.32749339	18.1782231	17.04905937
2040	I35_ML_NB_8	Urban Restricted Access	0.257437	70	110400	28421.0448	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	8.267728946	1.356489504	0.050996293	16.23919509	0.75262202	32.06374527	0.39434213	5.399986868	5.064554317
2040	I35_ML_NB_9	Urban Restricted Access	0.514881	70	104325	53714.96033	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	15.62577081	2.563726295	0.096381533	30.69161341	1.42288791	60.5599589	0.745295326	10.20584279	9.571862545
2040	I35_ML_NB_10	Urban Restricted Access	0.38699	70	117800	45587.422	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	13.26145647	2.175812321	0.081798173	26.04770671	1.207592724	51.43032203	0.632525693	8.661610459	8.123556911
2040	I35_ML_NB_11	Urban Restricted Access	0.684932	70	102938	70505.53022	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	20.51017537	3.36511245	0.126509097	40.28539654	1.867663525	79.5421624	0.978264561	13.39605117	12.56389728
2040	I35_ML_NB_12	Urban Restricted Access	0.051279	70	107413	5508.031227	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	1.602295395	0.262889229	0.00988314	3.147174717	0.145905562	6.213990775	0.076423959	1.046525967	0.981516462
2040	I35_ML_NB_13	Urban Restricted Access	1.065304	70	85363	90937.54535	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	26.45388237	4.34029877	0.163170558	51.9598259	2.4088995	102.5929311	1.261758867	17.27813417	16.20482784
2040	I35_ML_NB_14	Urban Restricted Access	1.537971	70	111876	172062.0436	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	50.05313311	8.212237017	0.308733423	98.31268036	4.557855276	194.1150853	3.269178934	30.66099687	
2040	I35_ML_NB_15	Urban Restricted Access	0.508793	70	89075	45320.73648	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	13.18387721	2.163083862	0.08139655	25.89532814	1.20052833	51.12945566	0.628825431	8.610940207	8.076034262
2040	I35_ML_NB_16	Urban Restricted Access	0.2537	70	99100	25141.67	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	7.31753392	1.199970364	0.045112064	14.36542893	0.665992864	28.364505587	0.348840789	4.776917454	4.480178482
2040	I35_ML_NB_17	Urban Restricted Access	0.538328	70	94625	50939.287	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	14.81832285	2.431247994	0.091401102	29.105651219	1.349361504	57.46813089	0.706782845	9.678464841	9.077244968
2040	I35_ML_NB_18	Urban Restricted Access	0.132459	70	79488	10528.90099	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	3.062874715	0.502527046	0.01889216	6.015995487	0.27890641	11.87838103	0.146088551	2.000491253	1.87622051
2040	I35_ML_NB_19	Urban Restricted Access	0.537564	70	82788	44503.84843	0.000290902	4.77283E-05	1.79431E-06	0.000571379	2.64896E-05	0.001128169	1.3875E-05	0.00019	0.000178197	12.94624313	2.124095145	0.079853901	25.42857526	1.17888929	50.20786779	0.617491105	8.455731474	7.930466993
2040	I35_ML_NB_20</																							

BUILD 2045							RATES (Grams/Mile)								MSAT TOTALS (Grams/Day)												
Year	Link Name	Classification	Length	Speed	ADT	Daily VMT	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene			
2040	I35_Rmp_NB_19	Urban Restricted Access	0.213158	55	16250	3463.8175	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.796810768	0.187651498	0.007891186	2.344467095	0.108335966	4.090712691	0.043102497	0.762039856	0.637393268			
2040	I35_CD_NB_1	Urban Restricted Access	0.653384	55	46675	30496.6982	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	7.0154093	1.652151447	0.069476848	20.64153364	0.953828909	36.0161095	0.379489921	6.709273656	5.611840151			
2040	I35_CD_NB_2	Urban Restricted Access	0.783504	55	47826	37471.8623	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	8.619964351	2.03002932	0.085367499	25.36263766	1.171987383	44.25366598	0.46628635	8.243809771	6.89537274			
2040	I35_CD_NB_3	Urban Restricted Access	0.540694	55	42575	23020.04705	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	5.295493011	1.247105631	0.05244372	15.58100069	0.719985692	27.18630488	0.286453169	5.064410391	4.236026585			
2040	I35_CD_NB_4	Urban Restricted Access	0.421276	55	11475	4834.1421	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.11203794	0.26188851	0.011013027	3.271964267	0.151194875	5.709043977	0.060154322	1.06351127	0.88955311			
2040	I35_CD_NB_5	Urban Restricted Access	1.347679	55	10025	13510.48198	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	3.107928612	0.731927181	0.030779257	9.144500377	0.422560114	15.95566166	0.168119569	2.972306058	2.486127013			
2040	I35_CD_NB_6	Urban Restricted Access	0.437085	55	21750	9506.59875	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	2.186882031	0.51501775	0.02165706	6.434492567	0.297332801	11.22714004	0.118296689	2.091451741	1.749353724			
2040	I35_HOV_NB_1	Urban Restricted Access	1.255786	70	7375	9261.42175	0.000290902	5.41743E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	2.64896E-05	0.00019	0.000178197	2.694162907	0.042032356	0.016617904	5.291784156	0.245331388	10.44845008	0.12850227	1.759670189	1.650360634
2040	I35_HOV_NB_2	Urban Restricted Access	0.923482	70	10675	9858.17035	0.000290902	5.41728E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	2.64896E-05	0.00019	0.000178197	2.867758062	0.470514181	0.017688558	5.63275392	0.261139022	11.12168343	0.13678216	1.873052427	1.75669641
2040	I35_HOV_NB_3	Urban Restricted Access	3.170223	70	6200	19655.3826	0.000290902	5.41728E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	2.64896E-05	0.00019	0.000178197	5.717783312	0.938118932	0.035267938	11.23067765	0.520663288	22.17459581	0.272718525	3.734522814	3.502536712
2040	I35_HOV_NB_4	Urban Restricted Access	1.581108	70	10675	16878.3279	0.000290902	5.41728E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	4.909933506	0.8055747	0.030285029	9.643926233	0.44710021	19.04160844	0.234186879	3.206882404	3.007629777			
2040	I35_HOV_NB_5	Urban Restricted Access	3.477169	70	4600	15994.9774	0.000290902	5.41728E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	2.186882031	0.51501775	0.02165706	6.434492567	0.297332801	11.22714004	0.118296689	2.091451741	1.749353724			
2040	I35_DC_NB_1	Urban Restricted Access	0.623018	55	10500	6541.689	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.504839165	0.354394462	0.014903119	4.422770862	0.204600906	7.72562937	0.081402424	1.439171591	1.203766806			
2040	I35_DC_NB_2	Urban Restricted Access	0.688942	55	34500	23768.499	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	5.467665642	1.287652839	0.054148825	16.08758655	0.743394623	28.07021458	0.295766635	5.229069821	4.3735273			
2040	I35_ML_SB_1	Urban Restricted Access	0.312219	60	101201	31596.87502	0.00022605	5.04959E-05	2.90095E-05	0.0001103702	2.1168E-05	0.00021	0.000173389	7.142463768	1.595513294	0.066198567	19.82823465	34.87353858	0.382853706	6.635343701	5.478545146						
2040	I35_ML_SB_2	Urban Restricted Access	0.453486	60	86513	39232.43432	0.00022605	5.04959E-05	2.90095E-05	0.0001103702	2.1168E-05	0.00021	0.000173389	8.868479572	1.981077891	0.08219586	24.61983703	1.138113093	43.40392172	0.475372418	8.238811141	6.802456829					
2040	I35_ML_SB_3	Urban Restricted Access	0.738454	70	79363	58605.9248	0.000290902	5.41728E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.504839165	0.354394462	0.014903119	4.422770862	0.204600906	7.72562937	0.081402424	1.439171591	1.203766806			
2040	I35_ML_SB_4	Urban Restricted Access	0.326035	70	111350	36303.99725	0.000290902	5.41728E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.504839165	0.354394462	0.014903119	4.422770862	0.204600906	7.72562937	0.081402424	1.439171591	1.203766806			
2040	I35_ML_SB_5	Urban Restricted Access	0.398489	70	100350	39988.37115	0.000290902	5.41728E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.504839165	0.354394462	0.014903119	4.422770862	0.204600906	7.72562937	0.081402424					

BUILD 2045							RATES (Grams/Mile)								MSAT TOTALS (Grams/Day)									
Year	Link Name	Classification	Length	Speed	ADT	Daily VMT	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene	Benzene	Naphthalene	Butadiene	Formaldehyde	Acrolein	DPM	POM	Acetaldehyde	Ethylbenzene
2040	I35_Rmp_SB_4	Urban Restricted Access	0.15778	55	14500	2287.81	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.526283975	0.123941568	0.005212034	1.548492455	0.071554609	2.70186677	0.028468683	0.503318204	0.420990624
2040	I35_Rmp_SB_5	Urban Restricted Access	0.208577	55	17550	3660.52635	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.842061342	0.198308153	0.008339323	2.477608471	0.114488324	4.323022675	0.045550271	0.805315803	0.673590584
2040	I35_Rmp_SB_6	Urban Restricted Access	0.178684	55	21450	3832.7718	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.881684396	0.20763951	0.008731729	2.59419192	0.119875552	4.526441778	0.047693631	0.843209803	0.705286275
2040	I35_Rmp_SB_7	Urban Restricted Access	0.218844	55	26900	5886.9036	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.35421343	0.318921617	0.013411403	3.984520485	0.184121533	6.952338357	0.073254507	1.295118802	1.08327668
2040	I35_Rmp_SB_8	Urban Restricted Access	0.08169	55	22663	1851.34047	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.425879256	0.100295934	0.00421768	1.253070294	0.057903385	2.186403284	0.023037414	0.407294907	0.340673824
2040	I35_Rmp_SB_9	Urban Restricted Access	0.133759	55	11625	1554.948375	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.357697716	0.084238962	0.003542446	1.052458826	0.048633288	1.836368992	0.019349217	0.342088645	0.286133327
2040	I35_Rmp_SB_10	Urban Restricted Access	0.120047	55	12875	1545.605125	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.35554841	0.083732794	0.003521161	1.046134895	0.048341064	1.825334764	0.019232953	0.34003313	0.284414032
2040	I35_Rmp_SB_11	Urban Restricted Access	0.198114	55	18125	3590.81625	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.826025347	0.194531625	0.008180512	2.430425547	0.112308038	4.240696169	0.044682823	0.789979581	0.660762902
2040	I35_Rmp_SB_12	Urban Restricted Access	0.214076	55	18000	3853.368	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.886422311	0.208755304	0.008778651	2.608132352	0.120519729	4.550765558	0.047949923	0.847740967	0.709076278
2040	I35_Rmp_SB_13	Urban Restricted Access	0.110431	55	23875	2636.540125	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.606505268	0.142833941	0.006006503	1.78452865	0.082461654	3.113711432	0.032808155	0.580038832	0.485162087
2040	I35_Rmp_SB_14	Urban Restricted Access	0.253871	55	17313	4395.268623	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.011080222	0.238112643	0.010013196	2.974915007	0.137468464	5.190741468	0.054693139	0.966959105	0.808793948
2040	I35_Rmp_SB_15	Urban Restricted Access	0.110123	55	5650	622.19495	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.143128683	0.033707265	0.00141747	0.421129458	0.019460058	0.734802217	0.00774237	0.13688289	0.114493004
2040	I35_Rmp_SB_16	Urban Restricted Access	0.187178	55	34488	6455.394864	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.484988207	0.349719497	0.014706526	4.369300879	0.20190193	7.623717385	0.080328607	1.420186881	1.187887418
2040	I35_Rmp_SB_17	Urban Restricted Access	0.166418	55	27713	4611.942034	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.06092341	0.249850874	0.010506816	3.121569293	0.144245243	5.446629278	0.057389345	1.014627255	0.848665036
2040	I35_Rmp_SB_18	Urban Restricted Access	0.189905	55	12225	2321.588625	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.534054353	0.125771517	0.005288988	1.571355344	0.072611085	2.741758782	0.028889012	0.510749501	0.427206387
2040	I35_Rmp_SB_19	Urban Restricted Access	0.297846	55	15525	4624.05915	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	1.063710811	0.250507316	0.010534421	3.129770701	0.144624223	5.460939396	0.057540126	0.107293021	0.850894763
2040	I35_CD_SB_1	Urban Restricted Access	0.435987	55	5275	2299.831425	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	0.529049363	0.124592826	0.005239421	1.556629095	0.071930597	2.716063879	0.028618273	0.505962917	0.423202743
2040	I35_CD_SB_2	Urban Restricted Access	0.45446	55	21313	9685.90598	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	2.228129565	0.524731677	0.022066199	6.555855746	0.302940898	11.43889899	0.120527923	2.130899332	1.782348887
2040	I35_CD_SB_3	Urban Restricted Access	0.582261	55	41875	24382.17938	0.000230038	5.41748E-05	2.27818E-06	0.000676845	3.12765E-05	0.001180984	1.24436E-05	0.00022	0.000184015	5.608835646	1.320898829	0.055546897	16.50295296	0.762588376	28.79496122	0.303403053	5.364079504	4.486678928</td