Traffic Study

NYS Route 5 (Buffalo Skyway)

PIN 5134.48

City of Buffalo, Erie County
New York

August, 2020

PREPARED FOR:

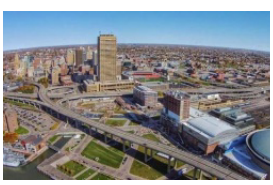
New York State
Department of Transportation

PREPARED BY:

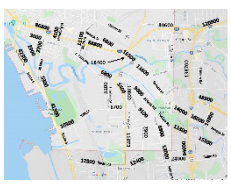
Stantec
61 Commercial Street, Suite 100
Rochester, New York 14614

Sam Schwartz
322 Eighth Avenue, 5th Floor
New York, NY 10001

T.Y. Lin International
77 Broadway, Suite 208
Buffalo, NY 14203
USA







1.0 Introduction

1.1 BACKGROUND

The NYS Route 5 (Buffalo Skyway) Project (hereafter, "the Project") focuses on the Buffalo Skyway/NYS Route 5 interchanges, approaches and infrastructure between Tifft Street and Church Street in the City of Buffalo, Erie County, New York. The Buffalo Skyway is a New York State Department of Transportation (NYSDOT)-owned facility. The southern limit of the Buffalo Skyway corridor is at Tifft Street, with the Buffalo Outer Harbor to the west and Tifft Nature Preserve to the east. Extending north along the Buffalo Skyway corridor, the Buffalo Outer Harbor continues to the west and the City Ship Canal is to the east. The Buffalo Skyway corridor then traverses both the City Ship Canal and Buffalo River with a 110-foot-high bridge ("high-level bridge"), and continues to an interchange with Interstate 190 (I-190). The northern limit of the Buffalo Skyway corridor at Church Street across from Delaware Avenue in Downtown Buffalo. The general project Study Area is presented in Figure 1.

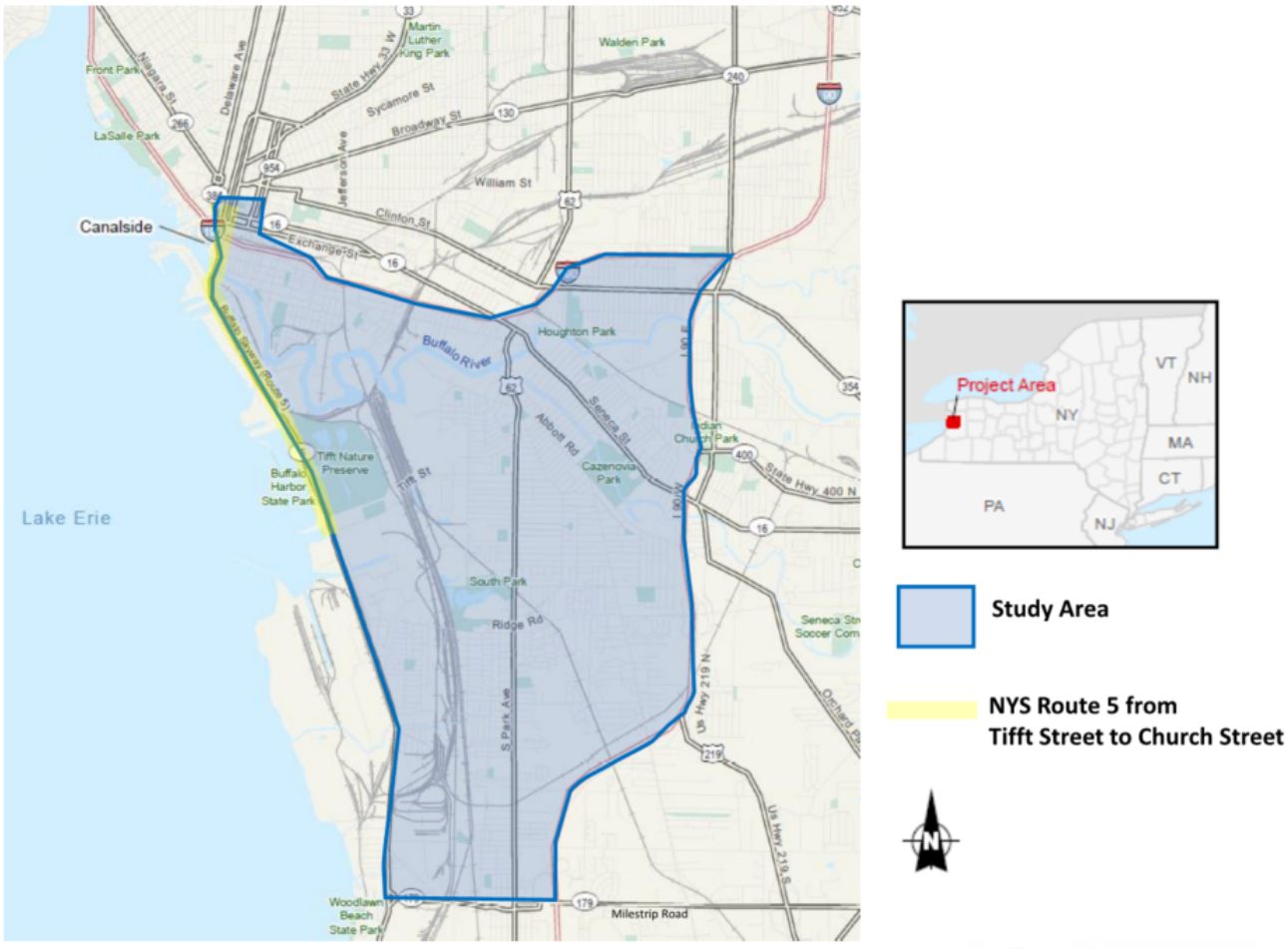


Figure 1: General Project Study Area

The area within the vicinity of the Buffalo Skyway corridor is comprised of a variety of land uses, including residential, commercial, recreational and entertainment, public parks, and industrial. Neighborhoods include the Central and Hopkins-Tifft Neighborhoods. Commercial uses range from neighborhood-based establishments in the Cities of Buffalo and Lackawanna to dedicated districts located near expressways and major arterials. The Buffalo central business district and Canalside, a core recreational development site on the downtown waterfront, are located near the northern portion of the Buffalo Skyway corridor.

Recreational and parks facilities along the southern and central portions of the Buffalo Skyway corridor include Tifft Nature Preserve, Buffalo Harbor State Park, Times Beach Nature Preserve, Lakeside Bike Park, Bell Slip Preserve, and Wilkeson Pointe. The Buffalo Lakeside Commerce Park and the RiverBend site, located to the south and east of the Buffalo Skyway corridor, occupy the former Bethlehem Steel and Republic Steel and Donner Hanna Coke sites, respectively.

1.2 PROJECT PURPOSE AND OBJECTIVES

The purpose of the Project is to realign the existing transportation network to support existing and planned recreational, mixed-use, and waterfront development in the Buffalo Outer Harbor and Inner Harbor areas. The Project will also address the safety, operational, and capacity deficiencies of the highway connections that serve economic development areas and local communities within South Buffalo.

The following objectives have been established to further refine the Project purpose:

- Remove the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street;
- Accommodate the traffic currently carried by the Buffalo Skyway structure and approaches on an improved transportation network;
- Provide safety, operational, and capacity improvements to the highway connections between NYS Route 5 and I-190;
- Reduce commercial vehicular traffic traveling on local residential streets near the RiverBend site by providing improved commercial vehicular access between I-190 and the site

The project purpose and objectives were developed in consultation with the Federal Highway Administration (FHWA) to address the identified transportation needs within the area and define the fundamental reasons why the Project is being proposed. Traffic is an important component of the Project, supporting development that improves economic opportunity and supports community cohesion particularly in environmental justice neighborhoods.

1.3 MODEL/ANALYSIS SELECTION

With over 70 miles of roadways in the Study Area, including interstates and other freeways, major arterials, and local streets, a variety of analysis tools were available ranging from higher-level macroscopic travel demand models to more detailed microsimulation models. Definitions of these terms are below and reference those provided in FHWA's Traffic Analysis Toolbox:

Macroscopic/Travel Demand Models: Macroscopic travel demand models are used to forecast traffic flows on the transportation system. These models are used to project future traffic growth and identify associated deficiencies, as well as to evaluate the impact of alternative transportation solutions on large transportation networks at a regional scale. For the Project, a travel demand model could be used to project how volume would redistribute under various alternatives and provide estimated link volumes which could be used to identify roadway segments where capacity deficiencies may occur.

Microscopic: Microscopic models simulate the movement of individual vehicles based on car-following and lane-changing characteristics. They provide detailed results that include movement delay, queueing, and level of service, among other measures of effectiveness (MOEs). These measures are extremely effective when evaluating heavily congested conditions, complex intersection/interchange configurations, and highway operations. However, given the detailed level of analysis, they can be time consuming and costly to develop, calibrate, and simulate depending on the size of the geography covered and the complexity of the network (e.g., number of signals, roadway geometry, etc.).

Mesoscopic: Mesoscopic models combine the properties of microscopic and macroscopic models. They provide less detail than microscopic tools but greater detail than a travel demand model. Results are compiled on a section by section basis utilizing aggregated vehicles and simpler driver behavior parameters than microscopic models, rather than the simulation of individual vehicles. At the same time, they provide more detail than macroscopic models by incorporating details such as intersection operations into the trip assignment algorithms. Many microscopic tools have mesoscopic capabilities.

Hybrid: A hybrid model combines microscopic analyses and macroscopic/mesoscopic analyses within one model. A single model can be sectioned into areas for various types of analyses, which allows the modeler to extract the most detailed parameters only where required, in order to reduce processing time while still obtaining the information needed to make proper design and operational decisions.

The FHWA's Traffic Analysis Toolbox website (https://ops.fhwa.dot.gov/trafficanalysistools/index.htm) contains guidance for model selection based on the type of project as described by seven categories: 1) geographic scope, 2) facility type, 3) travel mode, 4) management strategy, 5) traveler response, 6) performance measures, and 7) tool/cost-effectiveness. The guidance provides a breakdown of modelling methods based on the needs of a particular project. The guidebook, *Traffic Analysis Toolbox Volume II: Decision Support Methodology for Selecting Traffic Analysis Tools*, provides a detailed description of how the various categories are addressed by each type of tool. Figure 2 includes two tables from the guidebook relative to the appropriateness of each type of model.

Analytical Context	Analytical Tools/Methodologies						
	Sketch Planning	Travel Demand Models	Analytical/ Deterministic Tools (HCM-Based)	Traffic Optimi-zation	Macroscopic Simulation	Mesoscopic Simulation	Microscopic Simulation
Planning	●	●	⌀	○	⌀	⌀	○
Design	N/A	⌀	●	●	●	●	●
Operations/ Construction	⌀	○	●	●	●	●	●

Analytical Context/ Geographic Scope	Analytical Tools/Methodologies						
	Sketch Planning	Travel Demand Models	Analytical/ Deterministic Tools (HCM-Based)	Traffic Optimi-zation	Macroscopic Simulation	Mesoscopic Simulation	Microscopic Simulation
Planning							
Isolated Location	○	○	●	⌀	○	○	○
Segment	●	○	●[1]	○	⌀	⌀	⌀
Corridor/ Small Network	⌀	●	○	○	⌀	⌀	⌀
Region	⌀	●	N/A	N/A	N/A	N/A	N/A
Design							
Isolated Location	N/A	N/A	●	●	●	⌀	●
Segment	N/A	○	●	⌀	●	●	●
Corridor/ Small Network	N/A	⌀	○	○	●	●	●
Region	N/A	⌀	N/A	N/A	○	○	⌀
Operations/Construction							
Isolated Location	N/A	N/A	●	●	●	⌀	●
Segment	⌀	○	●	●	●	●	●
Corridor/ Small Network	N/A	⌀	○	⌀	●	●	●
Region	N/A	⌀	N/A	N/A	⌀	○	⌀

Notes:
● Specific context is generally addressed by the corresponding analytical tool/methodology.
⌀ Some of the analytical tools/methodologies address the specific context and some do not.
○ The particular analytical tool/methodology does not generally address the specific context.
N/A The particular methodology is not appropriate for use in addressing the specific context.
[1]For linear networks

Figure 2: Relevance of Traffic Analysis Tool Categories with Respect to Analysis Type and Geographic Scope

Although the large Study Area associated with this project would typically lend itself to a macroscopic or mesoscopic level of analysis, a microscopic model developed for the Project will be utilized to produce an

Environmental Impact Statement (EIS) and define the capacity requirements from an intersection-by-intersection design perspective as the Project moves forward. Therefore, it was determined that a combined approach that used both a macroscopic model and microscopic model together would be utilized. Specifically, the Greater Buffalo Niagara Regional Transportation Committee's (GBNRTC) TransCAD regional travel demand model (a macroscopic model) was utilized to understand regional travel pattern changes under various alternatives and the VISSIM microsimulation software was used to provide a detailed analysis of intersections and freeway segments.

The NYSDOT prepared a base condition VISSIM microsimulation model in 2019. VISSIM is a microscopic model as described above. The dynamic trip assignment function of VISSIM can be utilized to project how trips redistribute across the network based on the changes proposed in each concept or alternative. In addition to the development of the base VISSIM model, the NYSDOT also created a Synchro model for the evaluation of Concept H (see Section 5.1). Concept H would remove the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street and improve existing intersections at key locations through the addition of turn lanes traffic signal optimization. It was determined that Synchro, which is better suited for analysis of signalized arterials rather than highway/freeway systems, is the appropriate analysis software to use for a scoping-level analysis of Concept H. Synchro also has built-in algorithms to assist in generating signal timing plans that optimize cycle lengths, signal phasing, and progression/ coordination between intersections along the same roadway. It is important to note that the No Build condition results in Synchro and VISSIM differ due to their deterministic vs. stochastic analysis methods, respectively. As such, concepts modeled in VISSIM need to be compared to No Build results from VISSIM and concepts modeled in Synchro need to be compared to No Build results from Synchro.

Based on the evaluation of appropriate modelling methodologies, it was determined that a combination of VISSIM (version 11) and Synchro (version 10) would be utilized to conduct a scoping-level traffic analysis of the following alternatives:

- Existing – VISSIM
- Estimated Time of Completion or ETC (2025) No Build – Synchro and VISSIM
- ETC (2025) Concept H – Synchro
- ETC (2025) Concept I – VISSIM
- ETC (2025) Concept J – VISSIM
- ETC (2025) Concept K – VISSIM
- ETC (2025) Boulevard Concept – VISSIM

The VISSIM models cover the typical morning (AM) peak period (6:00 AM – 9:00 AM) and afternoon (PM) peak period (3:00 PM – 6:00 PM). The Synchro models cover the highest AM (7:00 AM – 8:00 AM) and PM (4:00 PM – 5:00 PM) peak hours only.

2.0 Data Sources

Multiple data sources were used for development of the base year microscopic models that were used to conduct the preliminary scoping-level assessment of the future 2025 No Build and 2025 concepts. The peak period volumes utilized in the VISSIM models were based on a combination of data sources that included available traffic sources (the NYSDOT and New York State Thruway Authority or NYSTA), StreetLight origin-destination data, field-collected data, and the GBNRTC regional travel demand model.

2.1 DATA COLLECTED FROM AVAILABLE SOURCES

- Freeway Mainline Volumes (from the *NYSDOT Traffic Data Viewer*[1])
- Select Ramp Volumes (from the *NYSDOT Traffic Data Viewer*[1])
- Automatic traffic recorder (ATR) counts (from the NYSTA)
- Signal Timing and Phasing (from the NYSDOT)
- Regional Travel Demand Model Outputs (from the GBNRTC)

These data sources contained data that was collected/developed over the past few years. Generally, data from 2016 or later was utilized and was adjusted to match more recent data to establish the existing condition peak period volumes.

2.2 STREETLIGHT ORIGIN-DESTINATION DATA

StreetLight Data combines anonymized location records from smart phones and navigation devices in connected cars and trucks combined with existing sources of digital road network data using proven algorithms to provide origin-destination (OD) data between user-selected zones. Given the large study area required for this project, and the desire to utilize VISSIM's dynamic trip assignment module, it was determined that OD data would be the most appropriate source for traffic volume data.

Prior to and during the development of the models for the Project, the Buffalo Skyway was undergoing significant maintenance that required directional closures of the roadway from early-2018 through September 2019. As such, StreetLight OD data from 2018 and most of 2019 could not be utilized because traffic patterns within the Study Area were not representative of baseline conditions. Therefore, the preliminary scoping-analysis models were developed utilizing 2017 AM (6:00 AM – 9:00 AM) and PM (3:00 PM – 6:00 PM) hourly OD traffic volume data obtained from StreetLight from before the Buffalo Skyway maintenance closures. The StreetLight data was averaged across typical weekdays (Tuesday – Thursday) during March, April, September, and October 2017, before the Buffalo Skyway was partially closed for maintenance. This data was used to develop a network-wide OD matrix in VISSIM. Middle-filters within StreetLight were employed to remove repetitive or illogical trips, and portions of the OD matrix were revised to eliminate origin trips to destination-only zones and destination trips from origin-only zones based on field collected data.

Following the scoping modelling effort, StreetLight OD data was obtained for a period from October 1, 2019 through December 31, 2019 (excluding October 31, November 25-December 1, and December 23-31 to avoid days affected by holidays). This data provides better alignment with the 2019 field-collected data and will allow further refinement and calibration of the existing condition model.

2.3 FIELD-COLLECTED DATA

Furthermore, as with any modelling effort, knowledge of the local area and typical traffic patterns, congestion sources, and other information is critical to the calibration and validation process. In addition to the above listed quantitative data, local staff with knowledge of the area were consulted in order to verify and validate areas of congestion in the model. The following data was collected:

- Travel Time & Speed Runs (including video): Travel time runs were conducted during the AM and PM peak periods on NYS Route 5, I-190, I-90, South Park Avenue, Ridge Road, Ohio Street, Louisiana Street, Seneca Street in October/November 2019 and on Broadway, Clinton Street, William Street, Genesee Street, NYS Route 33 (Kensington Expressway), and Walden Avenue in February 2020. Vehicles were equipped with Go-Pro cameras and stop watches were utilized to measure any stops (less than 5 mph) along with their duration along each roadway segment. The travel time data collection periods are as follows:
  - October 22-24, 29-31, 2019 and November 5-6, 2019 (all routes except NYS Route 33)
  - February 4-6, 2020 (NYS Route 33 only)

- Intersection Queue Lengths: Field staff conducted observations of queueing on all intersection approaches at the following 15 intersections over the time periods of October 22-24 and 29-31, 2019 and November 5-6, 2019. Field staff noted the number of vehicles that were in queue right before the approach received a green indication. If all vehicles in the original queue did not make it through on one green cycle, staff noted this number as the unmet demand. Intersection queue lengths were measured at the following intersections:
  1. Mile Strip Expressway and I-90 Ramps
  2. NYS Route 5 and Lake Avenue
  3. Ridge Road and South Park Avenue
  4. South Park Avenue and Tifft Street
  5. South Park Avenue and Bailey Avenue
  6. Hamburg Street and Seneca Street
  7. Seneca Street and Louisiana Street
  8. Louisiana Street and South Park Avenue
  9. NYS Route 5 Off-Ramp and Ohio Street
  10. Ohio Street and Louisiana Avenue
  11. Michigan Avenue and Ohio Street
  12. Michigan Avenue and Swan Street
  13. Elm Street and Swan Street
  14. Church Street/Buffalo Skyway/Delaware and Church Street/Lower Terrace/Buffalo Skyway
  15. Pearl Street and Swan Street

- Turning Movement Counts: Quality Counts conducted turning movement counts at the fifteen intersections listed above. Turning movements counts were conducted October 22-24, 29-31, 2019 and November 5-6, 2019 utilizing cameras.

- Ramp Counts: Quality Counts also provided ATR volumes at I-90 Interchanges 53, 54, 55, and 56, I-190 Interchanges 1, 2, 3, 4, 5, 6, and 7, and the NYS Route 5 EB ramp to Pearl Street. ATRs were placed during the following periods:
  - October 22-24 and 29-31, 2019 and November 5-6, 2019

- Signal timing and phasing was collected by field staff for all signalized intersections in the analysis model during the following times:
  - September 10-12, 2019, January 3, 8-9, 22-23, and 29, 2020

2.4 SCOPING MODEL DEVELOPMENT

As discussed in the previous section, the microscopic models for Project scoping were developed during a period when the Buffalo Skyway was undergoing significant maintenance that required directional closures of the roadway from early-2018 through September 2019. Thus, field data could not be collected to use for model calibration and StreetLight OD data from 2017 was obtained. The microscopic models that were utilized to generate the results discussed in this study were not fully calibrated. Available volume data was utilized, as well as local knowledge of the Study Area, to develop a preliminary base model that was representative of existing conditions. Although the base model was not fully calibrated, it was determined to be a reasonable representation of existing conditions. The evaluation of the future Build alternatives should be considered preliminary and order-of-magnitude, which is appropriate at the Project scoping stage to screen alternatives.

A fully calibrated model is currently being developed utilizing 2019 data. This model will be utilized to conduct the analysis for the draft EIS (DEIS). Accordingly, the capacity analysis results presented in this study may differ from those presented in the DEIS.

3.0 Existing Condition

3.1 VOLUMES

Existing AM and PM peak volume data was obtained from available NYSDOT and NYSTA sources, and evaluated to determine the duration of the AM and PM volume peaks on NYS Route 5, I-190, and I-90. Data for NYS Route 5 was obtained in 15-minute intervals from a count conducted just south of the I-190 interchange. Similar hourly volume data was obtained from NYSTA ATRs on October 30, 2019 at I-190 milepost (MP) 3.0/3.2 (NB/SB) and I-90 MP 426.8/427.2 (EB/WB). Figure 3 presents 2019 AADT volumes for the major study corridors.

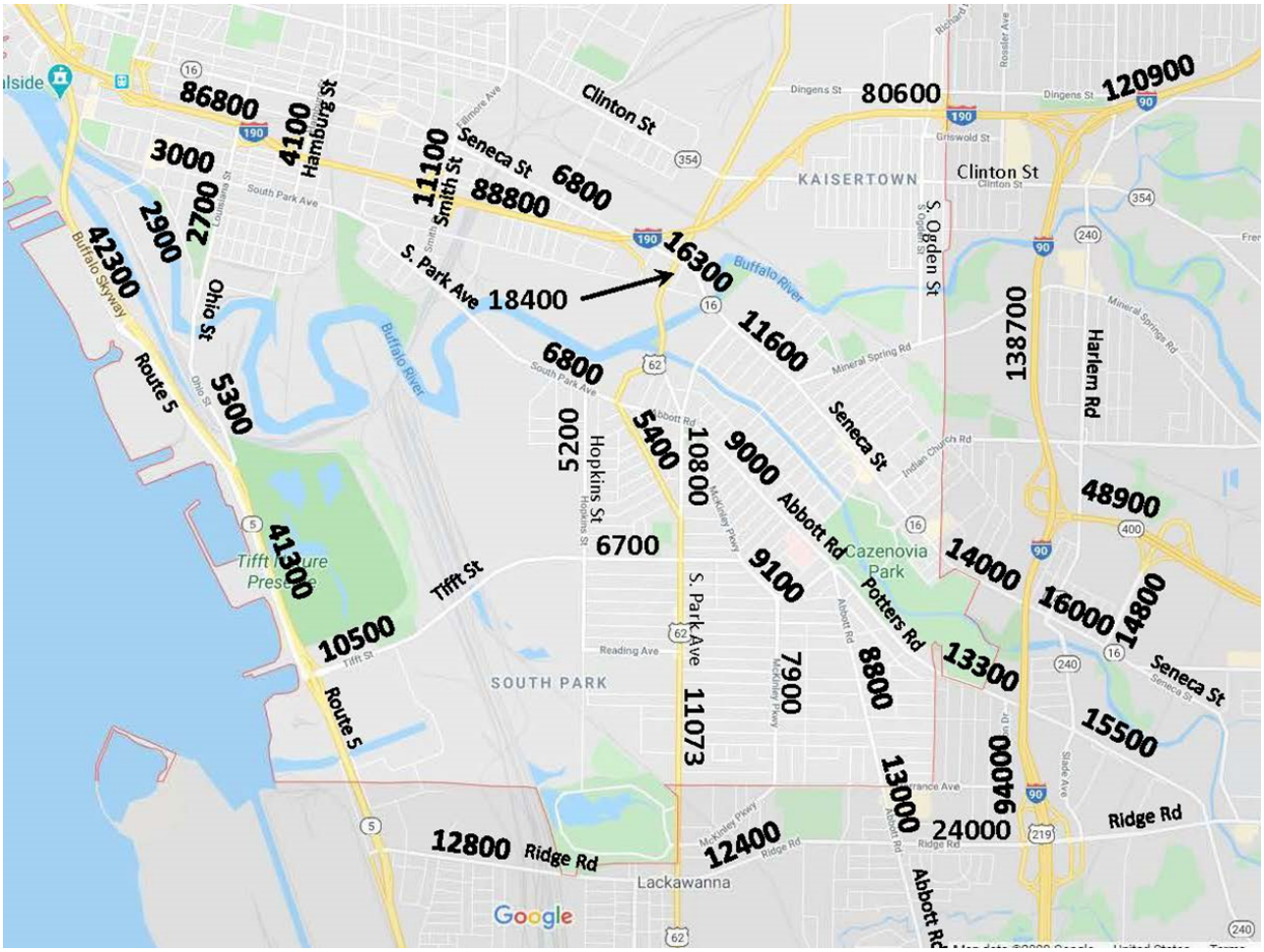


Figure 3: 2019 AADT Link Volumes

The distribution of NYS Route 5 traffic in 15-minute intervals is shown in Table 1, and the distributions of hourly I-190 and I-90 traffic are shown in Table 2 (I-190) and Table 3 (I-90). At the request of the NYSDOT, the duration of the volume peaking was evaluated based on volumes that fall within 75% of the peak volume as well as exceed a Level of Service (LOS) D threshold, which is the threshold established by the NYSDOT for peak traffic conditions in the Study Area. The results show that on NYS Route 5 in the AM peak period, volumes exceed the LOS D threshold (780 vehicles per 15-minute period for 2 lanes) between 7:15 AM and 8:15 AM. This is also consistent with the periods where the 15-minute volumes exceed 75% of the peak 15-minute volume. The PM distribution is much flatter; no 15-minute volume exceeds the LOS D threshold, and 15-minute volumes are within 75% of the peak 15-minute volume between 3:15 PM and 5:30 PM. This indicates that NYS Route 5 PM volumes are more evenly distributed

over a longer period, minimizing volume peaking and delay during the PM peak period, as compared to the AM peak period.

Table 1: NYS Route 5 AM and PM Peak Period 15 Minute Volume Distribution (Periods Exceeding LOS D Threshold are Highlighted)

Period Starting	15 Min Flow	% of Peak 15 Min	LOS D Threshold
7:00 AM	632	69%	780
7:15 AM	826	91%	780
7:30 AM	895	98%	780
7:45 AM	910	100%	780
8:00 AM	877	96%	780
8:15 AM	720	79%	780
8:30 AM	630	69%	780
8:45 AM	594	65%	780
3:00 PM	502	67%	780
3:15 PM	590	78%	780
3:30 PM	619	82%	780
3:45 PM	625	83%	780
4:00 PM	689	91%	780
4:15 PM	754	100%	780
4:30 PM	691	92%	780
4:45 PM	667	88%	780
5:00 PM	715	95%	780
5:15 PM	641	85%	780
5:30 PM	508	67%	780
5:45 PM	388	51%	780

Table 2: I-190 AM and PM Peak Period Hourly Volume Distribution (Periods Exceeding LOS D Threshold are Highlighted)

Period Starting	Hourly Flow	% of Peak Hour	LOS D Threshold
6:00 AM	3609	60%	4680
7:00 AM	5969	100%	4680
8:00 AM	5225	88%	4680
9:00AM	2728	46%	4680
3:00 PM	4889	87%	4680
4:00 PM	5593	100%	4680
5:00 PM	4563	82%	4680
6:00 PM	2469	44%	4680

On I-190, the results show that AM inbound (NB) volumes exceed the LOS D threshold volume (4,680 vehicles/hour in a three-lane cross-section) between the hours of 7:00 AM and 9:00 AM, which is also consistent with the hours that were at least 75% of the peak hourly volume. I-190 PM outbound (SB)

volumes exceed the LOS D threshold volume between the hours of 3:00 PM and 5:00 PM and volumes were at or above 75% of the peak hourly volume between the hours of 3:00 PM and 6:00 PM. Volume trends on I-190 indicate at least 2 hours in both the AM and PM that were at or above LOS D.

Table 3: I-90 AM and PM Peak Period Hourly Volume Distribution (Periods Exceeding LOS D Threshold are Highlighted)

Period Starting	Hourly Flow	% of Peak Hour	LOS D Threshold
6:00 AM	5620	74%	6240
7:00 AM	7569	100%	6240
8:00 AM	6375	84%	6240
9:00AM	4663	62%	6240
3:00 PM	4582	64%	6240
4:00 PM	5768	81%	6240
5:00 PM	7131	100%	6240
6:00 PM	4412	62%	6240

AM inbound (EB) volumes on I-90 exceed the LOS D threshold (6,240 vehicles/hr in 4 lanes) from 7:00 AM to 9:00 AM which is also consistent with the hours that are at least 75% of the peak hourly volume. PM outbound (WB) volumes on I-90 exceed the LOS D threshold from 5:00 PM to 6:00 PM and are at least 75% of peak hourly volume between 4:00 PM and 6:00 PM. I-90 AM conditions indicate a longer sustained peak as compared to PM peak conditions.

The 2017 uncalibrated existing condition model utilized morning (6:00 AM – 9:00 AM) and afternoon (3:00 PM – 6:00 PM) hourly OD traffic volume data obtained from StreetLight. The StreetLight data was averaged across typical weekdays (Tuesday – Thursday) during March, April, September, and October of 2017, before the Buffalo Skyway was partially closed for maintenance. StreetLight utilizes anonymized position data from mobile devices such as cell phones and navigation devices, combined with other sources of volume data to estimate the number of vehicles travelling between origin and destination points. The data was used to develop a network-wide OD matrix in VISSIM. Middle-filters within StreetLight were utilized to remove repetitive or illogical trips, and portions of the matrix were revised to eliminate origin trips to destination-only zones and destination trips from origin-only zones.

3.2 TRAVEL TIMES

Based on the existing travel time run information (Table 4), despite peak hour congestion, expressway travel times are less than the arterial streets. For example, the I-90/I-190 segment travel time length was over 12 miles and had about the same travel times as Genesee and William Streets which are half the overall length. The difference in travel times between expressways and local arterials can be attributed to many factors including posted speed, number of traffic signals, and lack of time-based signal coordination. The existing arterials contain a significant number of signalized intersections, many of which are either not warranted (based on volumes) and/or not coordinated for progression of peak hour flows. In addition, some of these unwarranted signals appear to be used to control speeds on arterials like South Park Avenue. Other conditions which contribute to the overall arterial travel times include a heavy presence of school buses, an all pedestrian phase at the South Park Avenue/Abbott Road/Bailey Avenue intersection (Buffalo School No. 28), and multi-leg/offset signalized intersections.

Table 4: Travel Time Run Data Collection Summary

Roadway	Direction	Begin	End	Length (miles)	Avg Speed (mph)		Time (minutes)	
					AM	PM	AM	PM
Route 5	Northbound	Mile Strip Expressway	Church Street	6.89	39.2	44.4	10.5	9.3
	Southbound	Church Street	Mile Strip Expressway		48.5	33.0	8.5	12.5
Seneca Street	Eastbound	Michigan Ave	Michigan Ave	2.51	21.4	20.7	7.5	7.8
	Westbound	Bailey Ave	Michigan Ave	2.67	22.1	23.2	6.8	6.5
Ohio Street	Northbound	Route 5	Swan Street	2.06	22.8	22.5	5.4	5.5
	Southbound	Swan Street	Route 5		23.2	21.9	5.3	5.7
Louisiana Street	Northbound	Ohio Street	Seneca Street	1.07	18.8	21.1	3.4	3.0
	Southbound	Seneca Street	Ohio Street		23.9	25.2	2.7	2.5
Ridge Road	Eastbound	Route 5	I-90 Overpass	3.06	24.5	22.6	7.5	8.1
	Westbound	I-90 Overpass	Route 5		23.2	24.3	7.9	7.5
South Park Avenue	Eastbound	Ridge Road	Scott St/Marine Dr	5.22	22.8	22.0	13.8	14.2
	Westbound	Scott St/Marine Dr	Ridge Road		21.4	20.0	14.6	15.7
I-90 and I-190	EB & NB	I-90 @ Exit 56 Toll Barrier	I-190 Exit 8/9 OSS[1]	12.5	46.7	56.4	15.7	13.7
	WB & SB	I-190 Exit 8/9 OSS[1]	I-90 @ Exit 56 Toll Barrier	12.1	53.5	46.1	13.2	14.4
Broadway	Westbound	Union Overpass	Elm Street	6.0	21.5	25.7	16.8	14.0
	Eastbound	Elm Street	Union Overpass		26.1	24.1	13.8	14.9
Clinton Street	Westbound	French Road	Elm Street	4.98	20.2	18.9	14.8	15.8
	Eastbound	Elm Street	French Road		22.2	21.4	13.5	14.0
William Street	Westbound	Union Street	Elm Street	6.0	23.2	23.5	15.1	14.9
	Eastbound	Elm Street	Union Street		23.0	22.9	15.3	15.3
Genesee Street	Westbound	Union Street	Elm Street	6.3	21.1	24.0	17.8	15.7
	Eastbound	Elm Street	Union Street		25.2	22.4	15.0	16.9
NYS Route 33	Westbound	Union Street	Oak Street	7.5	56.9	58.5	8.0	7.8
	Eastbound	Elm Street	Union Street	7.6	57.3	53.6	7.9	8.4
Walden Ave/ Sycamore St	Westbound	Union Street	Elm Street	6.0	23.7	22.2	15.2	16.2
	Eastbound	Elm Street	Union Street		23.1	17.8	15.6	20.3

[1]The Exit 8/9 Overhead Sign Structures are located 0.4 miles apart on I-190 NB/SB

3.3 BUFFALO SKYWAY ORIGIN-DESTINATION

In addition to understanding how the Study Area roadway network operates, the GBNRTC TransCAD regional travel demand model was used to estimate the approximate origins and destinations of vehicle trips using the Buffalo Skyway during the AM and PM peak periods. Data from this macroscopic model reveals that most trips originate from west of I-90 and south of Downtown with 65% destined for Downtown and the immediate area and 35% utilizing it to access interchanges north of I-190 Interchange 7 or other points north along I-190 northbound (Figure 4).

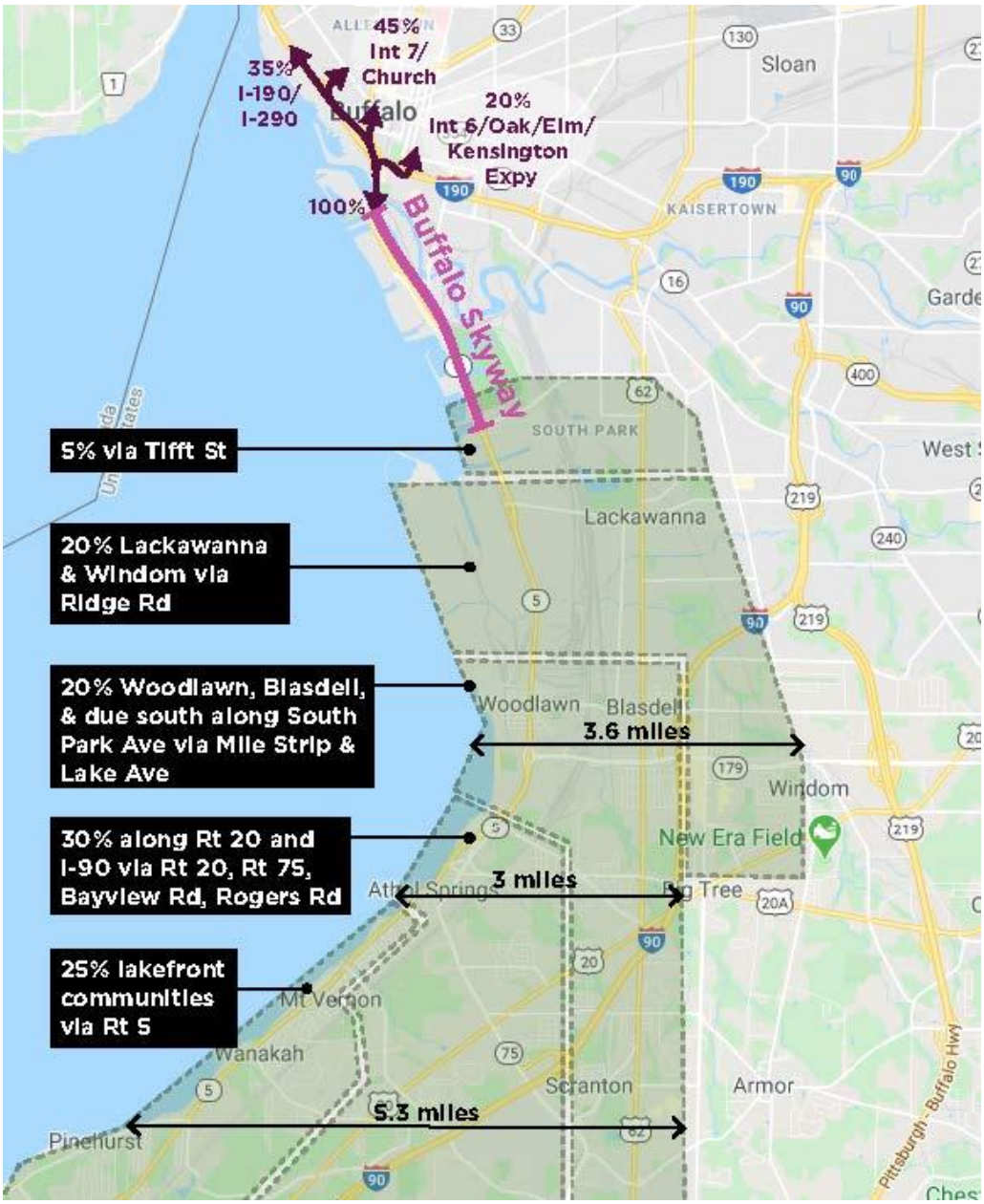


Figure 4: Origins and Destinations of Vehicle Trips Utilizing the Buffalo Skyway

3.4 CAPACITY ANALYSIS RESULTS

VISSIM Version 11 was used to complete a capacity analysis for the Existing, No Build, and Build concepts, with the exception of Concept H, which was analyzed in Synchro. The measures of effectiveness (MOEs) used for this analysis include the following:

- Freeway segment density (vehicles per mile per lane or vpmpl) and volume (vehicles per hour or vph) for the AM and PM peak hours
- Intersection delay (seconds per vehicle or sec/veh) and Level of Service (LOS)
- Total network delay (hours)
- Average travel speed on the network (mph)
- Vehicles processed (number of vehicles in the peak hour that can complete their entire route through the network)
- Unserved vehicles (number of vehicles that were not able to pass through the intersection during a cycle – Synchro evaluation measure only).

Table 5 contains a summary of the capacity analysis results which include the number of freeway segments operating at LOS E or F, the number of intersections that operate at an overall LOS E or F, total delay, average speed, and unmet demand in the AM and PM peak hours. The table also notes the total number of intersections and freeway segments that were analyzed. A list of intersections operating at an overall LOS E or F in the AM and/or PM peak hours is contained in Appendix A. Freeway density results in tabular and diagram formats are contained in Appendix B. The results show that six (AM) and 16 (PM) freeway segments currently operate at LOS E or F in either peak hour, and that five (AM) and 17 (PM) intersections operate at an overall LOS E or F in one or both peak hours.

Table 4: 2019 Existing Condition Capacity Analysis Results Summary

		Number of Intersections Operating at an Overall LOS E or F			Number of Freeway Segments Operating at LOS E or F					Network Measures			
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**LOS E**	**LOS F <90 vpmpl**	**LOS F 90 – 150 vpmpl**	**LOS F >150 vpmpl**	**Total**	**Total Delay (hr)**	**Avg Speed (mph)**	**Latent Demand (# of veh)**	**Veh Proces-sed (# of veh)**
AM Peak	2019 Existing	4	1	5 out of 131	3	3	0	0	6 out of 126	1,423	33	56	30,501
PM Peak	2019 Existing	10	7	17 out of 131	8	6	2	0	16 out of 126	3,411	25	1,054	33,106

4.0 2025 No Build Condition

The 2025 No Build scenario assumes the same network geometry as the 2017 Existing condition but with an annual growth rate of 0.5% per year applied to the 2017 OD volumes, which was determined by a comparison of permanent count stations in the Study Area and confirmed with the NYSDOT. Table 6 contains a summary of the capacity analysis results which include the number of freeway segments operating at LOS E or F, the number of intersections that operate at an overall LOS E or F, total delay,

average speed, and unmet demand in the AM and PM peak hours. A list of intersections operating at an overall LOS E or F in the AM and/or PM peak hours is contained in Appendix A, and freeway density results in tabular and diagram formats are contained in Appendix B. The results show that 10 (AM) and 14 (PM) additional freeway segments would operate at LOS E or F, and eight (AM) and 31 (PM) additional intersections would operate at an overall LOS E or F. The additional freeway segment density occurs primarily on I-190 northbound between I-90 and Hamburg Street in the AM peak hour, and southbound between Oak Street and I-90 in the PM peak hour.

Table 5: 2025 No Build Condition Capacity Analysis Results Summary

		Number of Intersections Operating at an Overall LOS E or F			Number of Freeway Segments Operating at LOS E or F					Network Measures			
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**LOS E**	**LOS F <90 vpmpl**	**LOS F 90 – 150 vpmpl**	**LOS F >150 vpmpl**	**Total**	**Total Delay (hr)**	**Avg Speed (mph)**	**Latent Demand (# of veh)**	**Veh Proces -sed (# of veh)**
AM Peak	2019 Existing	4	1	5 out of 131	3	3	0	0	6 out of 126	1,423	33	56	30,501
	2025 No Build	8	5	13 out of 131	7	8	1	0	16 out of 126	2,363	29	306	31,293
PM Peak	2019 Existing	10	7	17 out of 131	8	6	2	0	16 out of 126	3,411	25	1,054	33,106
	2025 No Build	18	30	48 out of 131	0	15	12	3	30 out of 126	6,965	17	2,265	31,253

5.0 2025 Build Concepts

The following sub-sections summarize the analysis process and results for the evaluation of five concepts: Concepts H, I, J, K, and the Boulevard concept. These four concepts provide a reasonable number of alternatives, ranging from upgrades to the local street network to large-scale capital improvements, to determine the potential effects that would from diverting the traffic currently carried by the Buffalo Skyway structure and approaches to other roadways.

5.1 CONCEPT H: IMPROVEMENTS TO EXISTING ROUTES

This concept would remove the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street. Concept H includes improvements to the local roadways that would take on the Buffalo Skyway traffic, including optimized signal timings (including modified phasing and/or cycle lengths), upgrading of signals from pretimed to actuated and/or from uncoordinated to coordinated, and minor geometric improvements such as optimized lane configurations and/or the addition of right- or left-turn lanes to increase intersection capacity. A new connection is created between Rittling Boulevard and Abby Street, providing a new through movement between Tifft Street and South Park Avenue. Larger-scale capital improvements, such as widening freeway segments or building new highway connectors, are not considered in this concept.

The redistribution of existing Buffalo Skyway traffic to various alternate routes was conducted using the overall travel patterns from the GBNRTC regional travel demand model and engineering judgment. Consideration was also given to the reserve capacity of the various surface arterial streets on each diversion route. The assumed redistribution of Buffalo Skyway traffic is shown in Table 7. Route names list corridors from south to north but diversion percentages are consistent for the reverse direction.

Table 6: Buffalo Skyway Diversion Routes for Concept H

To/from Downtown

Diversion Route	Percentage of Buffalo Skyway Traffic
I-90 / I-190	30%
South Park Ave / Bailey Ave / I-190	15%
Ohio St / Louisiana St	30%
Tifft St / Rittling Blvd / Abbey St / South Park Ave	25%

To/from I-190 (north of Downtown)

Diversion Route	Percentage of Buffalo Skyway Traffic
I-90 / I-190	50%
South Park Ave / Bailey Ave / I-190	10%
Ohio St / Louisiana St	40%

As noted previously, Concept H was evaluated in Synchro because it is a software designed to analyze signalized arterials and has an optimization feature that selects appropriate cycle lengths and offsets to optimize signal coordination along a defined corridor. Both the No Build and Concept H conditions were analyzed in Synchro so that the results are both from the same software and can provide a valid comparison. Analysis results were provided for signalized intersections only. Synchro does not appropriately report overall unsignalized intersection delay and LOS, and does not analyze freeway segments or ramp junctions, thus LOS for these locations was not included.

To maximize intersection capacity for Concept H to the extent practicable, intersection improvements were considered at each signalized study location and took the form of signal upgrades (e.g., converting uncoordinated signals to coordinated and/or pretimed signals to actuated), signal timing and phasing optimization, lane configuration changes, and/or the addition of turn lanes. Additionally, it was assumed that new traffic signals would be installed at the intersections of Tifft Street/Route 5, Tifft Street/Rittling Boulevard, and South Park Avenue/Abby Street. Any roadway widenings were limited to intersection approaches rather than along entire arterials to avoid significant right-of-way impacts.

Additional lanes were provided on at least one intersection approach at the following study locations:
1. Tifft Street / Ship Canal Parkway
2. Mile Strip Expressway / I-90 SB Ramps
3. Tifft Street / Rittling Boulevard
4. South Park Avenue / Ridge Road
5. South Park Avenue / McKinley Parkway
6. Hopkins Street / Tifft Street
7. Hopkins Street / South Park Avenue
8. South Park Avenue / Southside Parkway / Como Avenue
9. Bailey Avenue / Elk Street
10. Louisiana Street / I-190 SB Ramps / Scott Street
11. Louisiana Street / Perry Street

The results of the 2025 No Build and 2025 Concept H conditions are compared in Table 8. A list of signalized intersections operating at LOS E or F in the AM and PM peak hours is contained in Appendix A.

The capacity analysis results in Table 8 show that Concept H would result in significant delay and congestion throughout the Study Area network. Many of the major north-south corridors into Downtown Buffalo, such as Ohio Street, Louisiana Street, and South Park Avenue are one lane in each direction and pass through business and residential areas and cannot be widened without significant impacts to commercial and residential properties. Despite improvements to signal timing and intersection geometry, the local roadway network does not have enough reserve capacity to accommodate the additional traffic from the removal of the Buffalo Skyway.

The results for the 2025 horizon year show that Concept H is not acceptable from a traffic operations perspective, with over three times as many signalized intersections operating at LOS E or F during the AM peak hour and almost twice as many signalized intersections operating at LOS E or F during the PM peak hour. Furthermore, there would be approximately 140% and 55% more total hours of network delay during the AM and PM peak hours, respectively, when compared to the No Build Condition. It should also be noted that the Synchro results only report delay at the signalized intersections that are included as study locations, and that delays at unsignalized intersections and/or the roadway segments between intersections are not fully accounted for in the results and would create even greater differences between Concept H and the No Build Condition.

Table 7: 2025 Concept H Capacity Analysis Results Summary

		Number of Signalized Intersections Operating at an Overall LOS E or F			Network Measures		
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**Total Delay (hr)**	**Avg Speed (mph)**	**Unserved Vehicles (# of veh)**
AM Peak	2025 No Build	1	4	5 out of 54	891	36	1,584
	Concept H	4	13	17 out of 54	2,162	28	6,923
PM Peak	2025 No Build	1	7	8 out of 54	1,454	34	3,726
	Concept H	4	11	15 out of 54	2,255	30	6,974

5.2 CONCEPT I: NEW HIGHWAY CONNECTING NYS ROUTE 5 TO I-190

This concept would remove the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street. NYS Route 5 would be realigned from Tifft Street to I-190 as a 2.6-mile-long four-lane highway partially along an abandoned railroad right-of-way. Improvements would be made to I-190 between Exit 3 (Seneca Street) and Exit 6. Improvements would also be made on Tifft Street from Fuhrmann Boulevard to Rittling Boulevard and Rittling Boulevard and Abby Street from Tifft Street to South Park Avenue. A bridge would be constructed to carry the highway over the Buffalo River and the Buckeye Terminals site. The highway would have interchanges at Tifft Street, South Park Avenue near the RiverBend site, and a reconstructed I-190 Exit 3. The VISSIM models for these scenarios also include minor improvements to the network, such as signal timing modifications due to increased traffic, and turn

lanes needed at the new ramps at South Park Boulevard. VISSIM's dynamic traffic assignment was utilized to redistribute traffic across the Concept I network.

5.2.1 Capacity Analysis Results

Table 9 contains a summary of the capacity analysis results which include the number of freeway segments operating at LOS E or F, the number of intersections that operate at an overall LOS E or F, total delay, average speed, latent demand, and number of vehicles processed in the AM and PM peak hours. It should be noted that latent demand, which is a value reported by VISSIM is different from Synchro's unserved vehicles. Latent demand is the (number of vehicles that were not able to make it into the network due to congestion, while unserved vehicles is the number of vehicles that were not served within a single cycle. A list of intersections operating at an overall LOS E or F in the AM and/or PM peak hours is contained in Appendix A. Freeway density results in tabular and diagram formats are contained in Appendix B.

Without I-190 Improvements

This alternative assumes no additional improvements to I-190. The results of the capacity analysis indicate that the removal of the Buffalo Skyway without improvements to I-190 would have a significant impact on the operation of I-190, I-90, and the surrounding roadway network. Congestion and queueing would extend the full length of I-190 between I-90 and Downtown Buffalo in both peak periods. Similarly, diverted traffic to the local roadway network would further congest corridors such as South Park Avenue, Smith Street, Bailey Avenue, Hamburg Street, and Louisiana Street. A significant number of freeway segments (30 in the AM peak hour and 36 in the PM peak hour) would operate at LOS E or F. Significant congestion is also experienced at all interchanges on I-190 from Exit 6 to the new expressway connection, as well as at the new interchanges between the new expressway and South Park Avenue and Tifft Street. This is largely due to overcapacity conditions on the local street network which is a result of overcapacity conditions on I-190.

With I-190 Improvements

This alternative includes the addition of one lane in each direction on I-190 from the new expressway interchange, near the existing Seneca Street and James P. Coppola Sr. Boulevard interchange at Exit 3, to the existing Oak Street / Elm Street interchange at Exit 6. The results of the capacity analysis indicate that improvements to I-190 would result in benefits to the overall transportation network with fewer freeway segments operating at an overall LOS E or F (13 in the AM peak hour and 24 in the PM peak hour), and reduced congestion on I-190 and I-90, when compared to without the improvements on I-190. Congestion would still be experienced periodically on I-190 between the new expressway interchange and Exit 6, but it would be for shorter segments and durations. This congestion would result in some diversions to the local roadway network, primarily on South Park Avenue and the roadways with interchanges connecting to I-190 (Smith Street, Hamburg Street, Louisiana Avenue). However, the extent of this congestion as well as the duration is significantly reduced when compared to the scenario without I-190 improvements.

Table 8: 2025 Concept I Capacity Analysis Results Summary

		Number of Intersections Operating at an Overall LOS E or F			Number of Freeway Segments Operating at LOS E or F					Network Measures			
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**LOS E**	**LOS F <90 vpmpl**	**LOS F 90 – 150 vpmpl**	**LOS F >150 vpmpl**	**Total**	**Total Delay (hr)**	**Avg Speed (mph)**	**Latent Demand (# of veh)**	**Veh Proces -sed (# of veh)**
AM Peak	2025 No Build	8	5	13 out of 131	7	8	1	0	16 out of 126	2,363	29	306	31,293
	Concept I w/o I-190 Improvement	8	8	16 out of 133	3	15	12	0	30 out of 124	3,313	25	328	29,121
	Concept I w/I-190 Improvement	12	7	19 out of 133	3	6	4	0	13 out of 124	2,870	27	349	30,063
PM Peak	2025 No Build	18	30	48 out of 131	0	15	12	3	30 out of 126	6,965	17	2,265	31,253
	Concept I w/o I-190 Improvement	23	49	72 out of 133	6	10	18	2	36 out of 124	9,996	12	3,921	24,452
	Concept I w/I-190 Improvement	19	31	50 out of 133	4	13	6	1	24 out of 124	7,895	14	3,905	25,410

5.3 CONCEPT J

This concept would remove the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street. Tifft Street would be widened to a four-lane arterial on a new at-grade alignment starting near the intersection with Rittling Boulevard and heading north parallel to Abby Street and then northeast on an abandoned railroad right-of-way to connect with I-190 Exit 3 (see Figure 5-7). A bridge would be constructed to carry the highway over the Buffalo River where it would continue through the Buckeye Terminals site. Operational improvements via signal optimization and coordination would be implemented on Ohio Street, South Park Avenue, Seneca Street, Clinton Street, and William Street. All intersections with arterials such as South Park Avenue and Elk Street, would be at grade and signalized. VISSIM's dynamic trip assignment was utilized to estimate how trips would be distributed across the Concept J roadway network.

5.3.1 Capacity Analysis Results

Table 10 contains a summary of the capacity analysis results which include the number of freeway segments operating at LOS E or F, the number of intersections that operate at an overall LOS E or F, total delay, average speed, latent demand, and vehicles processed in the AM and PM peak hours. The results show that the number of freeway segments operating at LOS E or F in the AM and PM peak periods would increase in Concept J when compared to the No Build, and that the severity of LOS F's as a function of density would also increase. This condition is most significant during the PM peak period, when fourteen freeway segments would operate at near gridlock conditions with a density exceeding 150 vehicles per mile per lane. Nine of these links exceed 200 vehicles per mile per lane. Furthermore, 14 freeway segments in Concept J would operate with densities exceeding 150 vehicles per mile per lane,

with nine of those segments operating with a density exceeding 200 vehicles per mile per lane in the PM peak hour, which equates to near gridlock conditions. Congestion is also experienced along the new at-grade alignment from the intersection with South Park Avenue, onto Tifft Street, and back on to NY 5, where queues extend past Ridge Road in the AM peak period, a distance of approximately three miles. The severe congestion along segments of NY 5, Tifft Street, the new at-grade alignment, and I-190 result in the metering of traffic, which improves downstream LOS for some segments of the freeway, but overall network measures show that Concept J is substantially worse than the No Build Condition.

Table 9: 2025 Concept J Capacity Analysis Results Summary

		Number of Intersections Operating at an Overall LOS E or F			Number of Freeway Segments Operating at LOS E or F					Network Measures			
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**LOS E**	**LOS F <90 vpmpl**	**LOS F 90 – 150 vpmpl**	**LOS F >150 vpmpl**	**Total**	**Total Delay (hr)**	**Avg Speed (mph)**	**Latent Demand (# of veh)**	**Veh Proces -sed (# of veh)**
AM Peak	2025 No Build	8	5	13 out of 131	7	8	1	0	16 out of 126	2,363	29	306	31,293
	Concept J	4	11	15 out of 132	3	7	9	0	19 out of 122	2,925	25	892	28,491
PM Peak	2025 No Build	18	30	48 out of 131	0	15	12	3	30 out of 126	6,965	17	2,265	31,253
	Concept J	24	37	61 out of 132	1	1	5	14	21 out of 122	10,477	9	6,708	19,983

5.4 ANALYSIS OF THE EXTENT OF PEAKING

The modelling results for Concept I without improvements to I-190, as well as Concept J, show that traffic congestion did not dissipate by the end of the VISSIM simulation model periods (6:00 AM – 9:00 AM) and (3:00 PM to 6:00 PM). Therefore, a secondary analysis utilizing volume to capacity calculations was conducted to determine the extent of AM and PM peak traffic operations for I-190 just west of where the new expressway connection would tie in, South Park Avenue at the Bailey Street/Abbot Road intersection, and at Ohio Street at Louisiana Street. The analysis utilizes the 2025 traffic volume distribution developed through the VISSIM dynamic trip assignment to estimate the percentage of trips that currently utilize the Buffalo Skyway that would be redistributed to I-190, Ohio Street, and South Park Avenue. The estimated redistributions shown in Tables 11 and 12 result in anticipated demand volume based on lane capacity. The effects of upstream and downstream turbulence generated by interchange ramps, lane drops, etc., which may affect throughput are not included.

Table 101: Estimated Redistribution of NYS Route 5 Volume without I-190 Improvements from VISSIM Model

	I-190 via New Connector Freeway		I-190 via I-90/ Seneca/ Clinton		Ohio St @ Louisiana St		South Park Ave @ Bailey St/Abbot Rd		Other Routes	
	In	Out	In	Out	In	Out	In	Out	In	Out
AM Peak Period	46%	80%	23%	20%	15%	0%	3%	0%	13%	0%
PM Peak Period	75%	67%	6%	9%	5%	10%	5%	10%	9%	4%
Off-Peak	60%	86%	13%	13%	-	-	-	-	-	-

Table 12: Estimated Redistribution of NYS Route 5 Volume with I-190 Improvements from VISSIM Model

	I-190 via New Connector Freeway		I-190 via I-90/ Seneca/ Clinton		Ohio St @ Louisiana St		South Park Ave @ Bailey St/Abbot Rd		Other Routes	
	In	Out	In	Out	In	Out	In	Out	In	Out
AM Peak Period	55%	81%	24%	19%	11%	0%	1%	0%	9%	0%
PM Peak Period	78%	72%	6%	3%	5%	10%	3%	6%	8%	9%
Off-Peak	67%	90%	15%	5%	-	-	-	-	-	-

For I-190, volume projections are provided for each 15-minute period for an entire weekday. Fifteen-minute volumes were developed by utilizing peak hour data that was obtained from recent counts at the NYS Route 5/I-190 interchange. The redistributed volume was added to the anticipated No Build volumes for I-190 for each 15-minute period during the peak to measure the length of time that I-190 would experience LOS D or worse conditions. The analysis also considers periods where demand would exceed capacity. Any demand volume greater than the segment capacity is distributed through the subsequent 15-minute period until all unmet demand is balanced. Results for the AM and PM peak periods are shown in Tables 13 and 14. The colors correspond to the level of service and the numbers represent the demand volume (a LOS key is provided at the bottom of each table). Where demand exceeds capacity, a secondary number is provided that shows the resulting capped volume which is carried through to the subsequent 15-minute periods until the capacity overage is balanced.

It should be noted that this analysis assumes that any capacity overages will be resolved in the subsequent 15-minute periods. However, in reality some drivers may choose to leave earlier, which may increase demand in earlier periods (for example, 6:00 AM – 7:00 AM).

I-190 Inbound (AM Peak Period)

The results shown in Table 13 indicate that, in general, during the Existing and No Build conditions I-190 would experience LOS D or worse conditions between 7:00 AM and 9:00 AM. Under the Concept I without improvements to I-190, peaking would be more significant, extending from 6:00 AM to 10:15 AM

in the 2025 opening year. However, with improvements to I-190, it would operate with a more typical peak period between 7:00 AM and 9:00 AM.

I-190 Outbound (PM Peak Period)

The outbound PM peak period results, shown in Table 14, indicate that in the Existing and No Build conditions that outbound peaking (LOS D or worse) occurs generally between 3:00 PM and 5:30 PM. Under the Concept I without improvements to I-190, peaking would be more significant, extending from 2:00 PM to 6:30 PM in the 2025 opening year. However, with improvements to I-190, it would operate with a more typical peak period between 4:00 PM and 5:30 PM.

Table 13: I-190 Inbound AM Peak Period Estimated Level of Service with 15-min Volumes*

15-Min Period (Starting)			2025 Concept I	
	2019 Existing	2025 No Build	Build w/o I-190 Improvements	Build w/I-190 Improvements
5:45 AM	268	276	409	424
6:00 AM	933	961	1352	1433
6:15 AM	933	961	1352	1433
6:30 AM	933	961	1352	1433
6:45 AM	933	961	1352	1433
7:00 AM	1262	1300	1835/1650	1946
7:15 AM	1442	1486	2097/1650	2224/2200
7:30 AM	1742	1795	2534/1650	2687/2200
7:45 AM	1562	1610	2272/1650	2409/2200
8:00 AM	1105	1139	1633/1650	1735/2200
8:15 AM	1421	1465	2099/1650	2231/2200
8:30 AM	1316	1356	1944/1650	2066/2200
8:45 AM	1421	1465	2099/1650	2231/2200
9:00 AM	696	717	1045/1650	1112/1295
9:15 AM	696	717	1045/1650	1112
9:30 AM	696	717	1045/1650	1112
9:45 AM	696	717	1045/1650	1112
10:00 AM	503	519	761/1650	811
10:15 AM	503	519	761/765	811
10:30 AM	503	519	761	811
10:45 AM	503	519	761	811
11:00 AM	497	512	781	812

*For the Build Alternatives, where volumes exceed capacity the volume is shown as Demand Volume/Capped Volume. The capped volume is the capacity of the roadway.

LOS KEY	LOS A & B	LOS C	LOS D	LOS E	LOS F

Table 11: I-190 Outbound PM Peak Period Estimated Level of Service with 15-min Volumes*

15-Min Period (Starting)			2025 Concept I	
	2019 Existing	2025 No Build	Build w/o I-190 Improvements	Build w/I-190 Improvements
1:45 PM	613	631	1009	955
2:00 PM	823	848	1310	1235
2:15 PM	823	848	1310	1235
2:30 PM	823	848	1310	1235
2:45 PM	823	848	1310	1235
3:00 PM	1013	1044	1432	1441
3:15 PM	1254	1292	1773/1650	1784
3:30 PM	1496	1541	2114/1650	2127
3:45 PM	1013	1044	1432/1650	1441
4:00 PM	1239	1276	1789/1650	1803
4:15 PM	1393	1436	2012/1650	2028
4:30 PM	1290	1329	1863/1650	1878
4:45 PM	1239	1276	1789/1650	1803
5:00 PM	1265	1304	1866/1650	1883
5:15 PM	1134	1169	1673/1650	1688
5:30 PM	1047	1079	1544/1650	1558
5:45 PM	916	944	1351/1650	1363
6:00 PM	624	643	921/1650	930
6:15 PM	624	643	921/1248	930
6:30 PM	624	643	921	930
6:45 PM	624	643	921	930
7:00 PM	466	480	680	685
7:15 PM	466	480	680	685

*For the Build Alternatives, where volumes exceed capacity the volume is shown as Demand Volume/Capped Volume. The capped volume is the capacity of the roadway.

LOS KEY	LOS A & B	LOS C	LOS D	LOS E	LOS F

5.4 CONCEPT K

This concept would remove the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street. One additional through lane in both directions would be added on the following roadways: Milestrip Road from NYS Route 5 to I-90; I-90 from Milestrip Road to I-190; and I-190 from I-90 to I-190 Exit 6. It should be noted that the extent of the interchange improvement to accommodate the significant increase in traffic turning from eastbound Mile Strip Expressway onto the ramp to I-90 was unknown. Thus, the VISSIM model simulates this turn as a free-flow movement via a grade-separated connection. VISSIM's dynamic trip assignment was utilized to estimate how trips would be distributed across the Concept K roadway network.

5.4.1 Capacity Analysis Results

Table 15 contains a summary of the capacity analysis results which include the number of freeway segments operating at LOS E or F, the number of intersections that operate at an overall LOS E or F, total delay, average speed, latent demand, and vehicles processed in the AM and PM peak hours. A list of intersections operating at an overall LOS E or F in the AM and/or PM peak hours is contained in Appendix A. Freeway density results in tabular and diagram formats are contained in Appendix B.

Table 15 shows that the number of freeway segments operating at LOS E or F in the AM and PM peak periods would decrease in Concept K when compared to the No Build. However, when evaluating the densities in Appendix B it is apparent that the magnitude of the LOS F segments are much greater than in the No Build, with 14 segments operating over 150 vehicles per mile per lane, well over the 45 vehicle per mile per lane threshold for LOS F conditions. Much of the high density (LOS F) conditions are experienced around interchanges because of the significant increase in the number of vehicles accessing the local roadway network at these locations. The local roadway and interchanges themselves are not equipped to accommodate the additional traffic diverting as a result of the removal of the Buffalo Skyway, and thus congestion and queuing spills back onto I-90 and I-190 mainlines, particularly in the PM peak period. In the AM peak period, congestion extends Ridge Road and Mile Strip Expressway from the I-90 interchanges past South Park Avenue. The congestion at the interchanges in both peak periods results in the metering of traffic which improves downstream LOS for short segments between interchanges.

The results of this analysis indicate that this alternative would require extensive upgrades to interchanges and the local street network connecting to them in order to accommodate the shift of traffic from the Buffalo Skyway to I-90 and I-190. Significant right-of-way challenges exist in many of these locations, that would make it difficult to provide the additional capacity on the connecting roadways and at the interchanges. Furthermore, many of these roadways pass through residential and business areas, making large-scale improvements difficult due to right-of-way constraints.

Table 15: 2025 Concept K Capacity Analysis Results Summary

		Number of Intersections Operating at an Overall LOS E or F			Number of Freeway Segments Operating at LOS E or F					Network Measures			
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**LOS E**	**LOS F <90 vpmpl**	**LOS F 90 – 150 vpmpl**	**LOS F >150 vpmpl**	**Total**	**Total Delay (hr)**	**Avg Speed (mph)**	**Latent Demand (# of veh)**	**Veh Proces -sed (# of veh)**
AM Peak	2025 No Build	8	5	13 out of 131	7	8	1	0	16 out of 126	2,363	29	306	31,293
	Concept K	8	8	16 out of 131	6	8	2	0	16 out of 122	4,096	22	641	27,034
PM Peak	2025 No Build	18	30	48 out of 131	0	15	12	3	30 out of 126	6,965	17	2,265	31,253
	Concept K	17	44	61 out of 131	0	4	9	14	27 out of 122	11,247	11	2,996	22,361

5.4 ALTERNATIVE 1

Alternative 1 combines the primary elements of Concept I and Concept H. It would include removal of the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street and realign NYS Route 5 from Tifft Street to I-190 via a new controlled access highway. The new highway connector would include interchanges at Tifft Street, South Park Avenue, and I-190. The new interchange with I-190 would replace the current partial interchange at Exit 3 and be dedicated to movements between the new highway connector and I-190. Improvements would be made to I-190 between the new Exit 3 and existing Exit 6 (Elm Street). Existing streets and intersections at key locations would also be improved through the addition of turn lanes, improvement of signal timing and coordination, and/or other enhancements. VISSIM's dynamic traffic assignment was utilized to redistribute traffic across the Alternative 1 network.

5.4.1 Capacity Analysis Results

Table 16 contains a summary of the capacity analysis results which include the number of freeway segments operating at LOS E or F, the number of intersections that operate at an overall LOS E or F, total delay, average speed, and latent demand, and number of vehicles processed in the AM and PM peak hours. A list of intersections operating at an overall LOS E or F in the AM and/or PM peak hours is contained in Appendix A. Freeway density results in tabular and diagram formats are contained in Appendix B.

Table 16 shows that the number of freeway segments operating at LOS E or F in the AM and PM peak periods would decrease in Alternative 1 when compared to the No Build. The magnitudes of the LOS F segments are greater in the No Build than in Alternative 1, with 15 segments operating at over 90 vehicles per mile per lane in the PM peak hour as opposed to only 7 segments in Alternative 1. The threshold for LOS F conditions is 45 vehicles per mile per lane, indicating that conditions on those 15 segments would be extremely congested. The results also show that latent demand decreases in both peak hours with the Alternative 1 design in place.

Table 16: 2025 Alternative 1 Capacity Analysis Results Summary

		Number of Intersections Operating at an Overall LOS E or F			Number of Freeway Segments Operating at LOS E or F					Network Measures			
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**LOS E**	**LOS F <90 vpmpl**	**LOS F 90 – 150 vpmpl**	**LOS F >150 vpmpl**	**Total**	**Total Delay (hr)**	**Avg Speed (mph)**	**Latent Demand (# of veh)**	**Veh Proces -sed (# of veh)**
AM Peak	2025 No Build	8	5	13 out of 131	7	8	1	0	16 out of 126	2,363	29	306	31,293
	Alternative 1	12	7	19 out of 133	3	6	4	0	13 out of 124	2,870	27	349	30,063
PM Peak	2025 No Build	18	30	48 out of 131	0	15	12	3	30 out of 126	6,965	17	2,265	31,253
	Alternative 1	19	31	50 out of 133	4	13	6	1	24 out of 124	7,895	14	3,905	25,410

5.5 ALTERNATIVE 2

This concept would remove the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street. NYS Route 5 would be realigned along Tifft Street as an at-grade, four-lane boulevard between Fuhrmann Boulevard and the Buffalo Creek railyard. Along this section, the new boulevard would intersect with Fuhrmann Boulevard and Ship Canal Parkway at signalized intersections. Turn lanes would be provided at these intersections. The Alternative 2 alignment would then turn to the north, crossing the rail yard on a new bridge. Tifft Street, east of the railyard, would be realigned to intersect with the new Boulevard at a grade-separated interchange. The new boulevard would also include interchanges at South Park Avenue and I-190. The new interchange with I-190 would replace the current partial interchange at Exit 3 and be dedicated to movements between the new boulevard and I-190. Improvements would be made to I-190 between the new Exit 3 and existing Exit 6 (Elm Street). Existing streets and intersections at key locations would also be improved through the addition of turn lanes, improvement of signal timing and coordination, and/or other enhancements. VISSIM's dynamic traffic assignment was utilized to redistribute traffic across the Alternative 2 network.

5.5.1 Capacity Analysis Results

Table 17 contains a summary of the capacity analysis results which include the number of freeway segments operating at LOS E or F, the number of intersections that operate at an overall LOS E or F, total delay, average speed, and latent demand, and number of vehicles processed in the AM and PM peak hours. A list of intersections operating at an overall LOS E or F in the AM and/or PM peak hours is contained in Appendix A. Freeway density results in tabular and diagram formats are contained in Appendix B.

Table 17 shows that the number of freeway segments operating at LOS E or F in the AM and PM peak periods would decrease in Alternative 2 when compared to the No Build. However, when evaluating the densities in Appendix B it is apparent that the magnitude of the LOS F segments are much greater than in the No Build, with 22 segments operating at over 90 vehicles per mile per lane in the PM peak hour, well over the 45 vehicle per mile per lane threshold for LOS F conditions. The results also show that latent demand would be higher in the PM peak period than in the No Build condition. This is primarily due to traffic being kept out of the VISSIM network in the Downtown area due to capacity constraints on the local roadway network due to the travel pattern changes associated with the removal of the Skyway.

Table 17: 2025 Alternative 2 Capacity Analysis Results Summary

		Number of Intersections Operating at an Overall LOS E or F			Number of Freeway Segments Operating at LOS E or F					Network Measures			
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**LOS E**	**LOS F <90 vpmpl**	**LOS F 90 – 150 vpmpl**	**LOS F >150 vpmpl**	**Total**	**Total Delay (hr)**	**Avg Speed (mph)**	**Latent Demand (# of veh)**	**Veh Proces -sed (# of veh)**
AM Peak	2025 No Build	8	5	13 out of 131	7	8	1	0	16 out of 126	2,363	29	306	31,293
	Alternative 2	9	6	15 out of 132	3	8	6	0	17 out of 122	2,776	26	218	28,692
PM Peak	2025 No Build	18	30	48 out of 131	0	15	12	3	30 out of 126	6,965	17	2,265	31,253
	Alternative 2	5	66	71 out of 132	3	8	19	3	33 out of 122	9,288	12	6,433	28,324

6.0 Analysis Summary

Absent improvements to increase capacity on other roadways, the removal of the Buffalo Skyway structure and elevated approaches between Tifft Street and Church Street will result in negative impacts to the network in the Study Area. The Buffalo Skyway currently accommodates approximately 45,000 vehicles per day, and the local roadway network as well as the remaining freeway network would not have the capacity to accommodate its closure. The analysis results presented in this study are appropriate for assessing order of magnitude changes between concepts, which is suitable at this level of the analysis process. Although results may change between the preliminary model used in this analysis and the fully calibrated model that will be used for the EIS analysis, the results presented in this study (summarized in Table 18) are a reasonable representation of the concepts.

Concept H was analyzed in Synchro – some measures are not available for Concept H. Therefore, it is not included in this table.

Table 18: Summary of Concepts

		Number of Intersections Operating at an Overall LOS E or F			Number of Freeway Segments Operating at LOS E or F					Network Measures			
Peak Hour	**Scenario**	**LOS E**	**LOS F**	**Total**	**LOS E**	**LOS F <90 vpmpl**	**LOS F 90 – 150 vpmpl**	**LOS F >150 vpmpl**	**Total**	**Total Delay (min)**	**Avg Speed (mph)**	**Latent Demand (# of veh)**	**Veh Proces -sed (# of veh)**
AM Peak	2025 No Build	8	5	13 out of 131	7	8	1	0	16 out of 126	2,363	29	306	31,293
	Concept I w/o I-190 Improvement	8	8	16 out of 133	3	15	12	0	30 out of 124	3,313	25	328	29,121
	Concept I w/I-190 Improvement	12	7	19 out of 133	3	6	4	0	13 out of 124	2,870	27	349	30,063
	Concept J	4	11	15 out of 132	3	7	9	0	19 out of 122	2,925	25	892	28,491
	Concept K	8	8	16 out of 131	6	8	2	0	16 out of 122	4,096	22	641	27,034
	Alternative 1	12	7	19 out of 133	3	6	4	0	13 out of 124	2,870	27	349	30,063
	Alternative 2	9	6	15 out of 132	3	8	6	0	17 out of 122	2,776	26	218	28,692
PM Peak	2025 No Build	18	30	48 out of 131	0	15	12	3	30 out of 126	6,965	17	2,265	31,253
	Concept I w/o I-190 Improvement	23	49	72 out of 133	6	10	18	2	36 out of 124	9,996	12	3,921	24,452
	Concept I w/I-190 Improvement	19	31	50 out of 133	4	13	6	1	24 out of 124	7,895	14	3,905	25,410
	Concept J	24	37	61 out of 132	1	1	5	14	21 out of 122	10,477	9	6,708	19,983
	Concept K	17	44	61 out of 131	0	4	9	14	27 out of 122	11,247	11	2,996	22,361
	Alternative 1	19	31	50 out of 133	4	13	6	1	24 out of 124	7,895	14	3,905	25,410
	Alternative 2	5	66	71 out of 132	3	8	19	3	33 out of 122	9,288	12	6,433	28,324

Appendix A

Table A-1: 2019 Existing and 2025 No Build Intersections Operating at an Overall LOS E or F in the AM or PM Peak Hours

Intersection	2017 Existing		2025 No Build	
	AM	PM	AM	PM
Church St & Pearl St				E
Swan St & Franklin St		F	F	F
Swan St & Pearl St				F
Swan St & Main St		E		F
Swan St & Ellicott St				E
Seneca St @ Lower Terrace				F
Seneca St @ Franklin St				E
Seneca St & Pearl St				E
Seneca St & Oak St				E
Seneca St & Hamburg St				E
Seneca St & Larkin St		F		F
Erie St & Lakefront Blvd				F
Marine Dr & Pearl St			E	
Marine Dr & Loyd St				E
Hamburg St & I-190 Ramp				E
Perry St & Chicago St				F
Perry St & Louisiana St				E
South Park Ave & Smith St				F
Elk St & Smith St				E
Exchange St & Smith Rd		F		F
Seneca St & Smith St/Fillmore Ave				F
Bailey Ave & Clinton St		F		F
Clinton St & I-190 NB Ramps		F		F
Clinton St & Roberst Ave & Kelburn St				E
Clinton St & Glenn St		E		E
Clinton St & I-190 SB Ramps				E
Griswold St & I-190 Ramps	E	F	F	F
William St & I-90 EB Ramps	E	E	F	F
South Park Ave & Bailey Ave & Abbott Rd		E		E
South Park Ave & Macamley St				F
South Park Ave & Como Ave & Columbus Ave				F
South Park & Columbus				F
Tiff St & South Park Ave			E	F
Tiff St & Folger St		E		F
Tiff St & Hopkins St		F		F
Tifft St & Skyway NB Ramps				E

Intersection	2017 Existing		2025 No Build	
	AM	PM	AM	PM
Tifft St & Skyway SB Ramps / Fuhrmann Blvd				E
South Park & Whitfield			E	F
South Park & Woodside		E	F	F
South Park & Reading				F
South Park & Culver				F
South Park Ave & Marilla St		E		F
South Park Ave & McKinley Pkwy	E	E	E	F
Ridge Rd & Skyway NB Ramps			E	
Ridge Rd & Steelawanna Ave			E	
Ridge Rd & South Park Ave		E	E	F
Ridge Rd & Abbott Rd				E
Mile Strip Expy & Martin Ave				F
Mile Strip Expy & South Park Ave	F		F	F
Mile Strip Expy & I-90 Ramps	E	E	E	E
I-90 & NY 179 (Mile Strip Expy)				F

Table A-2: Signalized Intersections Operating at an Overall LOS E or F in the AM or PM Peak Hours Concept H

Intersection	2025 Build Concept H	
	AM	PM
Abbott Rd & Southside Parkway/McKinley Parkway	E	E
South Park Ave & Ridge Road	E	F
South Park Ave & Tifft St		E
Michigan St & Seneca St		E
Louisiana St & I-190 SB Ramps/Scott St	E	F
Louisiana St & South Park Ave	E	F
Church St & I-190 NB Exit Ramp/Lower Terrace		E
South Park Ave & Germania St/Abby St	F	F
South Park Ave & Mile Strip Expressway	F	F
Mile Strip Expressway & I-90 Ramps	F	F
Tifft St & Rittling Blvd	F	
McKinley Pkwy & Bailey Ave/Heussy Ave	F	
Bailey Ave & Elk St	F	
Church St & Franklin St	F	
Hamburg St & South Park Ave	F	
South Park Ave & Bailey Ave	F	F
Southside Pkwy & McKinley Pkwy	F	
Bailey Ave & Seneca St	F	
Louisiana St & Seneca St/Cedar St	F	F
Ohio St & Louisiana St/St. Clair St	F	F
Ohio St & Ganson St/Silo City Row		F
Seneca St & Smith St/Fillmore Ave	F	F
NY 5 & Lake Ave		F

Table A-3: Intersections Operating at an Overall LOS E or F in the AM or PM Peak Hours Concept I

Intersection	2025 Build w/o I-190 Improvements		2025 Build w/I-190 Improvements	
	AM	PM	AM	PM
Church St & Pearl St		F		E
Church St & Lower Terrace		F		
Charles St & Lower Terrace		F		
Swan St & Franklin St		F		E
Swan St & Pearl St		F		
Swan St & Main St		E		
Swan St & Washington St		F		
Swan St & Ellicott St		F		
Swan St & Oak St		F		
Swan St & Elm St		F		
Swan St & Michigan Ave		F		E
Erie St & Lower Terrace		F		F
Seneca St @ Lower Terrace		E		F
Seneca St @ Franklin St				
Seneca St & Pearl St			E	
Seneca St & Oak St		F		
Seneca St & Nichols Pl/I-190 Ramps/Berrick Alley		F		
Seneca St & Michigan Ave		F		E
Seneca St & Chicago St		E		E
Seneca St & Louisiana St				F
Seneca St & Alabama St				F
Seneca St & Spring St				F
Seneca St & Hamburg St				F
Seneca St & Larkin St		F		F
Seneca St & Swan St				E
Erie St and Marine Dr		F	E	
Erie St & Lakefront Blvd		F		F
Perry St & Pearl St	F	F	F	
Marine Dr & Pearl St	F	F	F	
Marine Dr & Loyd St		F	E	
Marine Dr & Scott St	E	F	E	
Scott St & Marine Dr/Washington St		F		
Scott St and Michigan Ave	F	F	E	F
Scott St and Louisiana St		E		E
Hamburg St & I-190 Ramp		F		F

Intersection	2025 Build w/o I-190 Improvements		2025 Build w/I-190 Improvements	
	AM	PM	AM	PM
Perry St & Michigan Ave	E	F		F
Perry St & Chicago St		F		F
Perry St & Louisiana St	F	F		F
Perry St & Alabama St	E	F	E	F
Perry St & Hamburg St		F		E
South Park Ave & Michigan Ave		E		
South Park Ave & Louisiana St		F		E
South Park Ave & Hamburg St		F		E
South Park Ave & Smith St				
South Park Ave & Michigan St				
Elk St & Smith St		E		
Fulton St & Smith St	E	E	E	F
Perry St & Smith St		E		E
Smith St & Minton St		E		E
Smith St & Clifford St				E
Exchange St & Smith Rd		F		F
Seneca St & Smith St/Fillmore Ave		F		F
Seneca St & Milton St				F
Seneca St & Hayes Pl				E
Seneca St & Bailey Ave				F
Elk St & Babcock St				F
Elk St & James P Coppola Sr. Blvd		E		F
Elk St & Bailey Ave				F
Ohio St & Michigan Ave		F		
Louisiana St & O'Connell St		F		
Ohio St & Louisiana St		E		
Ohio St & Ganson St		F		
Bailey Ave & Clinton St		F		F
Clinton St & I-190 NB Ramps		F		F
Clinton St & Roberst Ave & Kelburn St		E		F
Clinton St & Glenn St		E		F
Clinton St & I-190 SB Ramps		E		E
Griswold St & I-190 Ramps	F	F	F	F
William St & I-90 EB Ramps	F	F	F	F
Bailey Ave & Mckinley Pkwy				F
South Park Ave & Hopkins St	E		E	F
South Park Ave & Bailey Ave & Abbott Rd			E	F

Intersection	2025 Build w/o I-190 Improvements		2025 Build w/I-190 Improvements	
	AM	PM	AM	PM
South Park Ave & Macamley St				E
South Park Ave & Como Ave & Columbus Ave		E		
South Park & Columbus				
Tiff St & South Park Ave		E		
Tiff St & Folger St				
Tiff St & Hopkins St		E		
Tiff St & Ship Canal Parkway		F		
Tifft St & Skyway NB Ramps		F		
Tifft St & Skyway SB Ramps / Fuhrmann Blvd		E		
South Park & Whitfield		F		
South Park & Woodside		F		
South Park & Reading		F		
South Park & Culver		F		
South Park Ave & Marilla St		F		E
South Park Ave & McKinley Pkwy		F	E	E
Ridge Rd & Skyway NB Ramps				
Ridge Rd & Steelawanna Ave				
Ridge Rd & South Park Ave	E	F	E	E
Ridge Rd & Abbott Rd				
Mile Strip Expy & Martin Ave	F	E	F	
Mile Strip Expy & South Park Ave	F	E	F	
Mile Strip Expy & I-90 Ramps	E	E	E	
I-90 & NY 179 (Mile Strip Expy)		E		
Pearl Street & Upper Terrace	E	E	F	

Table A-4: Intersections Operating at an Overall LOS E or F in the AM or PM Peak Hours Concept J

Intersection	2025 Build Concept J	
	AM	PM
Church St & Pearl St		E
Swan St & Franklin St		F
Swan St & Michigan Ave		F
Seneca St @ Lower Terrace		F
Seneca St & Michigan Ave		F
Seneca St & Chicago St		E
Seneca St & Louisiana St & Cedar St		E
Seneca St & Alabama St		E
Seneca St & Spring St		F
Seneca St & Hamburg St		E
Seneca St & Larkin St		F
Seneca St & Swan/Seneca St/Emslie St		E
Seneca St & Lord St		F
Perry St & Pearl St		F
Marine Dr & Pearl St		F
Scott St & Michigan Ave		F
Louisiana St & Scott St		F
Perry St & Chicago St		F
Perry St & Louisiana St		F
Perry St & Alabama St	F	F
Perry St & Hamburg St		F
Fulton St & Hamburg St		F
South Park Ave & Louisiana St		F
South Park Ave & Hamburg St		F
South Park Ave & Elk St		F
South Park Ave & Leddy St/Harvey Pl		E
South Park Ave & Smith St		F
Elk St & Smith St		F
Fulton St & Smith St		E
Perry St & Smith St		F
Smith St & Clifford St		F
Exchange St & Smith Rd		F
Seneca St & Smith St/Fillmore Ave	F	E
Seneca & Orlando	E	E
Seneca St & Elk St & James P. Coppola Sr. Blvd		F

Intersection	2025 Build Concept J	
	AM	PM
Seneca St & Bailey Ave		E
Bailey Ave & Clinton St		F
Clinton St & Roberts Ave & Kelburn St		E
Clinton St & Glenn St		E
Clinton St & I-190 SB Ramps		E
Griswold St & I-190 Ramps		F
Dingens St & I-190 Ramps		F
William St & 1-90 EB Ramps	F	F
South Park Ave & Hopkins St	E	F
South Park Ave & Bailey Ave & Abbott Rd		F
South Park Ave & Good Ave		F
South Park Ave & Whitfield Ave		E
South Park Ave & Woodside Ave		F
South Park Ave & Reading Ave		E
South Park Ave & Culver Ave		E
South Park Ave & Marilla St		F
South Park Ave & McKinley Pkwy		E
Ridge Rd & South Park Ave		F
Ridge Rd & Reed Ave		E
Ridge Rd & Abbott Rd		E
Ridge Rd & Community Dr		E
Ridge Rd & Steelawanna Ave	F	
Ridge Rd & Skyway NB Ramps	F	
Mile Strip Expy & South Park Ave	F	F
Mile Strip Expy & I-90 Ramps	E	E
Tifft St & South Park Ave	E	
Tifft St & Folger St	F	
Tifft St & Hopkins St	F	
Tifft St @ Fuhrmann Blvd	F	E
Tifft St & Rittling Rd	F	
Tifft St & Skyway Ramps	F	
South Park @ Tifft Bypass SB Ramps		F
South Park @ Tifft Bypass NB Ramps		E

Table A-5: Intersections Operating at an Overall LOS E or F in the AM or PM Peak Hours Concept K

Intersection	2025 Build Concept K	
	AM	PM
Church St & Lower Terrance		E
Church St & Franklin St		E
Church St & Pearl St		F
Swan St & Franklin St		F
Swan St & Pearl St		F
Swan St & Ellicott St		E
Swan St & Oak St		F
Swan St & Michigan Ave		F
Seneca St @ Lower Terrace		F
Seneca St @ Franklin St		F
Seneca St & Pearl St		F
Seneca St & Oak St		F
Seneca St & Michigan Ave		F
Seneca St & Chicago St		E
Seneca St & Larkin St		E
Erie St & Lakefront Blvd		F
Scott St & Michigan Ave		F
Louisiana St & Scott St		F
Perry St & Michigan Ave		E
Perry St & Chicago St		F
Perry St & Louisiana St		F
South Park Ave & Hamburg St		E
South Park Ave & Elk St		F
South Park Ave & Leddy St & Harvey Pl		F
South Park Ave & Bolton Pl		E
South Park Ave & Smith St		F
Fulton St & Smith St		F
Perry St & Smith St		F
Smith St & Clifford St		F
Smith St & Minton St & Clifford St		F
Exchange St & Smith Rd		F
Seneca & Orlando		F
Seneca & Milton		E
Seneca St & Hayes Pl		F

Intersection	2025 Build Concept K	
	AM	PM
Seneca St & Elk St & James P. Coppola Sr. Blvd		F
Seneca St & Bailey Ave		F
Elk St & James P. Coppola Sr. Blvd		F
Elk St & Bailey Ave		F
Ohio St & Michigan Ave		E
Bailey Ave & Clinton St		F
Clinton St & I-190 NB Ramps	F	F
Clinton St & Roberst Ave & Kelburn St		E
Clinton St & Glenn St		F
Griswold St & I-190 Ramps	E	F
Dingens St & I-190 Ramps		E
William St & I-90 EB Ramps	F	E
Bailey Ave & Mckinley Pkwy & Heussy Ave		F
South Park Ave & Hopkins St		F
South Park Ave & Bailey Ave & Abbott Rd		F
South Park Ave & Good Ave		F
South Park Ave & Macamley St		F
South Park Ave & Como Ave & Columbus Ave	E	F
Tiff St & South Park Ave	E	
Tiff St & Folger St	F	F
Tiff St & Hopkins St	F	F
South Park & Whitfield	F	
South Park & Woodside	F	
South Park & Culver		E
South Park Ave & Marilla St		F
South Park Ave & McKinley Pkwy	E	F
Ridge Rd & Skyway NB Ramps	E	
Ridge Rd & Center St	F	F
Ridge Rd & Electric Ave	E	E
Ridge Rd & South Park Ave	E	E
Mile Strip Expy & Martin Ave	F	
Mile Strip Expy & South Park Ave	E	
I-90 & NY 179 (Mile Strip Expy)		E

Table A-6: Intersections Operating at an Overall LOS E or F in the AM or PM Peak Hours
Alternative 1

Intersection	2025 Build Alternative 1	
	AM	PM
Church St & Pearl St		E
Church St & Lower Terrace		
Charles St & Lower Terrace		
Swan St & Franklin St		E
Swan St & Pearl St		
Swan St & Main St		
Swan St & Washington St		
Swan St & Ellicott St		
Swan St & Oak St		
Swan St & Elm St		
Swan St & Michigan Ave		E
Erie St & Lower Terrace		F
Seneca St @ Lower Terrace		F
Seneca St @ Franklin St		
Seneca St & Pearl St	E	
Seneca St & Oak St		
Seneca St & Nichols Pl/I-190 Ramps/Berrick Alley		
Seneca St & Michigan Ave		E
Seneca St & Chicago St		E
Seneca St & Louisiana St		F
Seneca St & Alabama St		F
Seneca St & Spring St		F
Seneca St & Hamburg St		F
Seneca St & Larkin St		F
Seneca St & Swan St		E
Erie St and Marine Dr	E	
Erie St & Lakefront Blvd		F
Perry St & Pearl St	F	
Marine Dr & Pearl St	F	
Marine Dr & Loyd St	E	
Marine Dr & Scott St	E	
Scott St & Marine Dr/Washington St		
Scott St and Michigan Ave	E	F
Scott St and Louisiana St		E

Intersection	2025 Build Alternative 1	
	AM	PM
Hamburg St & I-190 Ramp		F
Perry St & Michigan Ave		F
Perry St & Chicago St		F
Perry St & Louisiana St		F
Perry St & Alabama St	E	F
Perry St & Hamburg St		E
South Park Ave & Michigan Ave		
South Park Ave & Louisiana St		E
South Park Ave & Hamburg St		E
South Park Ave & Smith St		
South Park Ave & Michigan St		
Elk St & Smith St		
Fulton St & Smith St	E	F
Perry St & Smith St		E
Smith St & Minton St		E
Smith St & Clifford St		E
Exchange St & Smith Rd		F
Seneca St & Smith St/Fillmore Ave		F
Seneca St & Milton St		F
Seneca St & Hayes Pl		E
Seneca St & Bailey Ave		F
Elk St & Babcock St		F
Elk St & James P Coppola Sr. Blvd		F
Elk St & Bailey Ave		F
Ohio St & Michigan Ave		
Louisiana St & O'Connell St		
Ohio St & Louisiana St		
Ohio St & Ganson St		
Bailey Ave & Clinton St		F
Clinton St & I-190 NB Ramps		F
Clinton St & Roberst Ave & Kelburn St		F
Clinton St & Glenn St		F
Clinton St & I-190 SB Ramps		E
Griswold St & I-190 Ramps	F	F
William St & I-90 EB Ramps	F	F
Bailey Ave & Mckinley Pkwy		F
South Park Ave & Hopkins St	E	F

Intersection	2025 Build Alternative 1	
	AM	PM
South Park Ave & Bailey Ave & Abbott Rd	E	F
South Park Ave & Macamley St		E
South Park Ave & Como Ave & Columbus Ave		
South Park & Columbus		
Tiff St & South Park Ave		
Tiff St & Folger St		
Tiff St & Hopkins St		
Tiff St & Ship Canal Parkway		
Tifft St & Skyway NB Ramps		
Tifft St & Skyway SB Ramps / Fuhrmann Blvd		
South Park & Whitfield		
South Park & Woodside		
South Park & Reading		
South Park & Culver		
South Park Ave & Marilla St		E
South Park Ave & McKinley Pkwy	E	E
Ridge Rd & Skyway NB Ramps		
Ridge Rd & Steelawanna Ave		
Ridge Rd & South Park Ave	E	E
Ridge Rd & Abbott Rd		
Mile Strip Expy & Martin Ave	F	
Mile Strip Expy & South Park Ave	F	
Mile Strip Expy & I-90 Ramps	E	
I-90 & NY 179 (Mile Strip Expy)		
Pearl Street & Upper Terrace	F	

Table A-7: Intersections Operating at an Overall LOS E or F in the AM or PM Peak Hours
Alternative 2

Intersection	2025 Build Alternative 2	
	AM	PM
Church St & Lower Terrace		F
Church St & Pearl St		F
Charles St & Lower Terrace		F
Swan St & Franklin St		F
Swan St & Washigton St		F
Swan St & Ellicott St		F
Swan St & Oak St		F
Swan St & Michigan Ave		F
Erie St & Lower Terrace		F
Seneca St & Lower Terrace		F
Seneca St & Oak St		F
Seneca St & Nichols Pl / I-190 Ramps/ Berrick Alley		F
Seneca St & Michigan Ave		F
Seneca St & Alabama St		F
Seneca St & Spring St		F
Seneca St & Hamburg St		F
Seneca St & Larkin St		F
Seneca St & Swan/Seneca St/Emslie St		F
Seneca St & Lord St		F
Scott St & Michigan Ave		F
Louisiana St & Scott St		F
Hamburg St & I-190 Ramp		F
Perry St & Michigan Ave		F
Perry St & Chicago St		F
Perry St & Louisiana St		F
Perry St & Hamburg St		F
Fulton St & Louisiana St		F
Fulton St & Hamburg St		F
South Park Ave & Michigan Ave		F
South Park Ave & Chicago St		F
South Park Ave & Louisana St	E	F
South Park Ave & Hamburg St		F
South Park Ave & Elk St		F
South Park Ave & Leddy St & Harvey Pl		F
South Park Ave & Bolton Pl		F

Intersection	2025 Build Alternative 2	
	AM	PM
South Park Ave & Smith St	E	F
Elk St & Smith St	E	F
Fulton St & Smith St	E	F
Perry St & Smith St		F
Smith St & Clifford St		F
Smith St & Minton St & Clifford St		F
Exchange St & Smith Rd		F
Seneca St & Smith St/Fillmore Ave		F
Seneca St & Bailey Ave		F
Elk St & Babcock St		F
Elk St & James P. Coppola Sr. Blvd		E
Ohio St & Michigan Ave		F
Louisiana St & O'Connell St		F
Ohio St & Louisiana St &St Clair St		F
Ohio St & Ganson St & Silo City Row		F
Bailey Ave & Clinton St	E	F
Clinton St & I-190 NB Ramps		F
Griswold St & I-190 Ramps		F
William St & I-90 EB Ramps		F
South Park Ave & Hopkins St	F	E
South Park Ave & Bailey Ave & Abbott Rd	F	
South Park Ave & Good Ave	F	
South Park Ave & Macamley St	F	F
South Park Ave & Como Ave & Columbus Ave	E	F
South Park & Columbus		F
Tiff St & South Park Ave		F
Tiff St & Folger St		F
Tiff St & Hopkins St		F
South Park & Whitfield		F
South Park & Woodside		F
South Park & Reading		F
South Park & Culver		F
South Park Ave & Marilla St		F
South Park Ave & McKinley Pkwy	E	F
Ridge Rd & Skyway NB Ramps	E	
Ridge Rd & South Park Ave	E	
Mile Strip Expy & Martin Ave	F	E
Mile Strip Expy & South Park Ave	F	F

Intersection	2025 Build Alternative 2	
	AM	PM
Mile Strip Expy & I-90 Ramps		E
South Park @ Tifft Bypass SB Off-Ramp		E

Appendix B

Legend:

LOS A-B	LOS C	LOS D	LOS E
LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl	

Roadway	From	To	AM Peak															
			2017 Existing		2025 No Build		2025 Concept I without Improvements		2025 Concept I with Improvements		2025 Concept J		2025 Concept K		2025 Alternative 1		2025 Alternative 2	
			Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)
Skyway NB (south end)	South End	Mile Strip On-Ramp	13.2	1592	14.7	1768	13.9	1682	13.8	1674	13.5	1645	8.1	910	13.8	1674	12.1	1460
	Mile Strip On-Ramp	Mile Strip Merge	18.7	2294	22.2	2603	13.4	1898	13.3	1877	12.1	1798	4.9	698	13.3	1877	10.2	1513
Skyway NB (north end)	Odell St	Ridge Rd Off-Ramp	38.6	2541	50.0	2868	26.6	2172	29.5	2146	23.4	2108	6.1	659	29.5	2146	17.8	1820
	Ridge Rd Off-Ramp	Ridge Rd Bridge	29.5	2123	33.7	2387	22.4	1650	21.8	1598	22.3	1622	1.7	134	21.8	1598	17.2	1285
	Ridge Rd Bridge	Ridge Rd On-Ramp	26.3	2111	30.3	2379	20.1	1654	19.5	1603	25.2	1607	1.5	134	19.5	1603	15.2	1274
	Ridge Rd On-Ramp	Ridge Rd Merge	26.8	3138	37.3	3426	16.3	2399	15.7	2318	50.4	2286	2.3	351	15.7	2318	11.9	1833
	Ridge Rd Merge	Tifft St Off-Ramp	30.9	3134	34.4	3421	24.0	2386	22.1	2313	64.2	2210	3.4	351	22.1	2313	16.9	1830
	Tifft St Off-Ramp	Tifft St On-Ramp	27.1	2806	30.1	3092	36.5	1988	24.1	1959					24.1	1959		
	Tifft St On-Ramp	Ohio St Off-Ramp	34.0	3386	37.0	3607												
	Ohio St Off-Ramp	Outer Harbor Dr Off-Ramp	27.1	2873	29.1	3067												
	Outer Harbor Dr Off-Ramp	Outer Harbor Dr On-Ramp	26.2	2775	28.0	2959												
	Outer Harbor Dr On-Ramp	I-190 SB Diverge	32.8	2879	42.7	3046												
	I-190 SB Diverge	I-190 SB Off-Ramp	29.0	2856	34.8	2974												
	I-190 SB Off-Ramp	I-190 NB / Pearl St Diverge	20.8	1735	28.5	1815												
	I-190 NB / Pearl St Diverge	I-190 NB / Pearl St Off-Ramp	14.2	1742	22.7	1818												
	I-190 NB / Pearl St Off-Ramp	Church St	7.1	703	7.7	752												
Skyway SB (north end)	Church St	I-190 SB On-Ramp	5.8	549	5.8	548												
	I-190 SB On-Ramp	I-190 SB Merge	7.9	1090	8.1	1101												
	I-190 SB Merge	Outer Harbor Dr Off-Ramp	10.0	1094	10.1	1104												
	Outer Harbor Dr Off-Ramp	Outer Harbor Dr On-Ramp	9.0	992	9.2	1003												
	Outer Harbor Dr On-Ramp	Tifft St Off-Ramp	9.4	1031	9.6	1045												
	Tifft St Off-Ramp	Tifft St On-Ramp	7.7	839	7.9	860	8.3	903	8.4	915					8.4	915		
	Tifft St On-Ramp	Tifft St Merge	8.3	1343	8.5	1374	8.5	1396	8.6	1406	7.2	1106	3.4	534	8.6	1406	9.2	1095
	Tifft St Merge	Ridge Rd Off-Ramp	14.5	1277	16.9	1309	12.5	1350	12.5	1359	10.7	1077	4.7	519	12.5	1359	16.5	1236
	Ridge Rd Off-Ramp	Ridge Rd Bridge	6.9	760	7.2	786	8.6	947	8.7	956	7.5	785	3.6	399	8.7	956	12.1	959
	Ridge Rd Bridge	Ridge Rd On-Ramp	8.2	759	8.5	783	10.3	945	10.4	954	8.6	785	4.3	398	10.4	954	11.9	955
	Ridge Rd On-Ramp	Ridge Rd Merge	8.4	1037	8.4	1042	9.0	1108	9.2	1125	7.3	912	5.5	685	9.2	1125	8.9	1069
Skyway SB (south end)	Mile Strip Diverge	Mile Strip Off-Ramp	8.9	805	9.2	833	7.1	880	7.2	887	4.9	672	9.5	788	7.2	887	6.3	814
	Mile Strip Off-Ramp	Mile Strip On-Ramp	2.9	365	3.0	384	5.4	681	5.5	687	4.7	586	2.1	266	5.5	687	5.4	667
	Mile Strip On-Ramp	Mile Strip Merge	5.6	915	6.0	980	6.1	1016	6.1	1013	5.3	873	5.3	867	6.1	1013	5.9	965
	Mile Strip Merge	South End	7.2	905	7.7	971	8.0	1000	7.9	997	6.8	857	6.9	857	7.9	997	7.7	960
I-90 WB	North End	William St Diverge	14.4	2182	15.9	2393	15.8	2392	15.8	2392	15.0	2276	15.0	2262	15.8	2392	15.0	2276
	William St Diverge	William St Off-Ramp	10.0	2205	11.0	2417	11.0	2416	11.0	2416	10.5	2301	10.4	2285	11.0	2416	10.5	2301
	William St Off-Ramp	William St On-Ramp	13.4	2202	14.7	2414	14.7	2414	14.7	2414	13.9	2296	13.9	2282	14.7	2414	13.9	2296
	William St On-Ramp	William St Merge	16.2	3481	17.2	3681	17.2	3692	17.2	3685	16.6	3566	16.6	3576	17.2	3685	16.6	3569
	William St Merge	I-190 Diverge	21.7	3473	24.3	3667	23.2	3686	23.2	3679	22.3	3560	22.5	3570	23.2	3679	22.4	3562
	I-190 Diverge	I-190 Off-Ramp	16.1	3460	26.9	3629	18.0	3668	19.9	3665	16.5	3542	16.6	3555	19.9	3665	16.6	3548
	I-190 Off-Ramp	I-190 On-Ramp	11.0	1815	12.0	1966	11.6	1909	11.6	1909	11.4	1880	11.2	1838	11.6	1909	10.8	1779
	I-190 On-Ramp	I-190 Merge	12.6	3446	13.6	3713	13.4	3658	13.4	3648	13.2	3587	14.4	3946	13.4	3648	12.2	3308
	I-190 Merge	NY 400 Off-Ramp	15.7	3431	17.0	3701	16.7	3647	16.7	3637	16.5	3580	17.9	3930	16.7	3637	15.2	3301
	NY 400 Off-Ramp	NY 400 On-Ramp	15.8	2589	17.1	2799	16.7	2729	16.6	2719	16.8	2733	18.6	3071	16.6	2719	15.1	2467
	NY 400 On-Ramp	NY 400 Merge	12.9	2805	14.0	3033	13.4	2916	13.4	2913	13.5	2914	15.1	3296	13.4	2913	12.2	2633
	NY 400 Merge	Ridge Road Off-Ramp	17.3	2799	18.8	3026	18.0	2905	18.0	2902	18.2	2910	20.3	3297	18.0	2902	16.3	2631
	Ridge Road Off-Ramp	Ridge Road On-Ramp	5.3	583	6.2	684	6.1	671	5.9	653	4.9	535	7.0	773	5.9	653	5.4	590
	Ridge Road On-Ramp	Ridge Road Merge	9.1	1492	10.4	1711	9.2	1512	9.1	1490	8.6	1398	10.0	1661	9.1	1490	8.3	1372
	Ridge Road Merge	NY 179 Diverge	12.1	1495	14.0	1721	12.4	1519	12.2	1499	11.5	1409	13.4	1670	12.2	1499	11.2	1382
	NY 179 Diverge	NY 179 Off-Ramp	7.8	1481	9.1	1706	8.0	1508	7.8	1486	7.3	1391	9.3	1663	7.8	1486	7.1	1367
	NY 179 Off-Ramp	NY 179 Merge	4.6	612	5.1	681	5.1	684	5.1	684	4.9	660	4.7	619	5.1	684	4.9	650
	NY 179 Merge	NY 179 On-Ramp	3.5	701	3.9	773	3.9	770	3.9	771	3.7	746	3.5	704	3.9	771	3.7	740
	NY 179 On-Ramp	South End	5.2	690	5.7	761	5.7	758	5.7	759	5.5	735	5.2	693	5.7	759	5.5	729

Legend:

LOS A-B	LOS C	LOS D	LOS E
LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl	

Roadway	From	To	AM Peak															
			2017 Existing		2025 No Build		2025 Concept I without Improvements		2025 Concept I with Improvements		2025 Concept J		2025 Concept K		2025 Alternative 1		2025 Alternative 2	
			Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)
I-90 EB	South End	NY 179 Diverge	11.4	1200	12.5	1317	12.5	1314	12.5	1314	11.8	1245	11.8	1242	12.5	1314	11.8	1245
	NY 179 Diverge	NY 179 Off-Ramp	6.1	1215	6.7	1334	6.7	1332	6.7	1332	6.3	1265	6.3	1258	6.7	1332	6.3	1265
	NY 179 Off-Ramp	NY 179 On-Ramp	8.1	1085	9.0	1201	9.4	1248	9.4	1248	8.9	1191	8.8	1171	9.4	1248	8.9	1186
	NY 179 On-Ramp	NY 179 Merge	10.7	2117	11.2	2209	13.1	2588	13.1	2586	13.1	2587	20.6	3910	13.1	2586	13.1	2570
	NY 179 Merge	Ridge Road Off-Ramp	14.2	2121	14.8	2221	17.3	2590	17.2	2585	17.4	2592	26.6	3914	17.2	2585	17.2	2579
	Ridge Road Off-Ramp	Ridge Road On-Ramp	7.6	833	7.8	859	12.1	1317	11.8	1285	9.7	1058	20.4	2232	11.8	1285	12.7	1376
	Ridge Road On-Ramp	Ridge Road Merge	20.4	4363	21.7	4638	25.4	5372	25.2	5343	23.8	5066	30.0	6364	25.2	5343	24.7	5231
	Ridge Road Merge	NY 400 Diverge	27.0	4353	28.8	4625	33.6	5354	33.4	5325	31.5	5049	39.5	6347	33.4	5325	32.7	5213
	NY 400 Diverge	NY 400 Off-Ramp	20.2	4363	21.5	4629	25.0	5356	24.9	5328	23.5	5053	29.5	6354	24.9	5328	24.4	5222
	NY 400 Off-Ramp	NY 400 On-Ramp	25.0	4044	26.7	4295	31.4	5013	31.2	4980	29.3	4713	37.3	6019	31.2	4980	30.6	4890
	NY 400 On-Ramp	NY 400 Merge	21.7	5812	23.4	6244	30.5	6980	34.0	6917	24.7	6576	29.3	7845	34.0	6917	25.6	6776
	NY 400 Merge	I-190 Off-Ramp	27.5	5802	29.7	6241	50.1	6824	52.5	6761	31.6	6558	42.2	7802	52.5	6761	39.8	6742
	I-190 Off-Ramp	I-190 On-Ramp	19.9	3256	21.8	3551	21.0	3424	20.8	3399	20.8	3402	20.2	3316	20.8	3399	20.5	3368
	I-190 On-Ramp	I-190 Merge #1	15.8	4302	17.1	4623	16.9	4596	16.8	4577	16.6	4457	15.6	4257	16.8	4577	16.2	4359
	I-190 Merge #1	I-190 Merge #2	20.4	4297	22.1	4617	22.0	4593	21.8	4575	21.9	4457	20.1	4256	21.8	4575	21.0	4352
	I-190 Merge #2	William St Diverge	26.9	4299	29.0	4625	29.0	4602	28.7	4585	29.1	4462	26.6	4267	28.7	4585	28.3	4358
	William St Diverge	William St Off-Ramp	19.8	4301	21.4	4627	26.6	4601	21.5	4583	21.2	4465	19.7	4269	21.5	4583	20.9	4365
	William St Off-Ramp	William St On-Ramp	20.2	3278	21.9	3555	21.3	3455	21.2	3436	21.2	3400	20.0	3256	21.2	3436	20.6	3325
	William St On-Ramp	William St Merge	15.2	3282	16.5	3560	16.1	3463	16.0	3443	16.0	3405	15.1	3258	16.0	3443	15.5	3326
	William St Merge	North End	20.1	3248	21.9	3526	21.3	3436	21.1	3416	21.1	3375	20.0	3236	21.1	3416	20.7	3313
I-190 NB	I-90	Dingens St Diverge	26.1	4169	51.4	4284	50.4	4911	42.2	4970	33.8	4789	41.5	6065	42.2	4970	32.0	5063
	Dingens St Diverge	Dingens St Off-Ramp	23.8	4147	75.9	4221	63.1	4853	52.5	4939	43.5	4730	42.3	6012	52.5	4939	39.2	5044
	Dingens St Off-Ramp	Dingens St On-Ramp	21.5	3462	22.9	3501	45.3	4107	27.5	4229	33.7	3966	50.6	5271	27.5	4229	29.2	4338
	Dingens St On-Ramp	Dingens St Merge	21.0	4441	21.8	4575	54.2	5034	26.3	5323	41.3	4946	70.3	6092	26.3	5323	31.0	5367
	Dingens St Merge	Clinton St Diverge	28.1	4425	30.2	4558	62.4	4898	34.6	5303	52.1	4846	90.7	5886	34.6	5303	45.0	5238
	Clinton St Diverge	Clinton St Off-Ramp	20.6	4426	33.6	4525	55.6	4791	24.9	5285	44.3	4746	127.0	5743	24.9	5285	38.4	5164
	Clinton St Off-Ramp	Clinton St On-Ramp	23.4	3786	38.3	3785	82.3	4158	29.4	4712	69.8	4146	31.5	5066	29.4	4712	60.1	4558
	Clinton St On-Ramp	Clinton St Merge	20.5	4385	51.6	4345	87.5	4914	26.1	5587	76.5	4945	25.6	5525	26.1	5587	67.6	5666
	Clinton St Merge	Seneca St / Tifft Bypass Off-Ramp	27.5	4378	65.0	4219	95.0	4860	26.4	5585	110.8	4896	25.7	5538	26.4	5585	94.5	5633
	Tifft Bypass Off-Ramp	Tifft Bypass Off-Ramp					99.2	4812	26.6	5584					26.6	5584		
	Tifft Bypass Off-Ramp	Tifft Bypass On-Ramp					105.9	4069	30.6	4855					30.6	4855		
	Tifft Bypass On-Ramp	Seneca St Merge	24.5	5159	73.5	4869	117.3	5056	28.5	6080	108.6	5034	28.8	6171	28.5	6080	96.9	5434
	Seneca St Merge	Smith St Off-Ramp	35.8	5147	86.0	4716	104.0	4909	29.1	6064	104.6	4932	36.8	6170	29.1	6064	90.5	5340
	Smith St Off-Ramp	Smith St Off-Ramp	57.4	5084	102.3	4568	84.8	4707	28.0	5936	100.7	4768	66.0	6122	28.0	5936	72.7	5163
	Smith St Off-Ramp	Smith St On-Ramp	29.3	4235	25.4	3800	116.1	4243	29.1	5367	113.5	4231	26.2	5376	29.1	5367	101.2	4622
	Smith St On-Ramp	Smith St Merge	26.5	4620	19.9	4235	108.4	4763	42.6	5901	117.2	4989	26.0	5837	42.6	5901	80.1	4882
	Smith St Merge	Hamburg St Diverge	43.0	4572	26.4	4227	111.6	4667	67.1	5805	105.8	4924	48.6	5808	67.1	5805	102.2	4809
	Hamburg St Diverge	Hamburg St Off-Ramp	66.6	4519	25.5	4223	88.2	4592	97.8	5710	83.0	4868	59.6	5772	97.8	5710	77.6	4744
	Hamburg St Off-Ramp	Hamburg St On-Ramp	27.9	3898	38.7	3696	116.3	3999	100.8	4962	109.0	4271	82.5	4991	100.8	4962	103.4	4226
	Hamburg St On-Ramp	Hamburg St Merge	46.9	4416	50.3	4118	110.3	4444	87.0	5378	105.6	4846	71.9	5348	87.0	5378	80.6	4599
	Hamburg St Merge	Elm St Diverge	35.0	4385	39.8	4109	58.5	4391	68.7	5274	52.3	4803	59.7	5291	68.7	5274	52.6	4535
	Elm St Diverge	Elm St Off-Ramp	16.7	4370	29.6	4101	36.4	4348	36.3	5183	21.9	4760	28.2	5251	36.3	5183	31.0	4472
	Elm St Off-Ramp	Oak St On-Ramp	12.0	1973	11.1	1821	11.0	1802	13.3	2178	16.8	2374	13.1	2155	13.3	2178	13.5	2060
	Oak St On-Ramp	Oak St Merge	11.2	2384	10.7	2262	10.1	2152	11.7	2496	14.7	2646	12.4	2615	11.7	2496	11.6	2305
	Oak St Merge	Skyway On-Ramp	14.7	2396	13.9	2279	13.2	2168	15.4	2510	19.8	2662	16.1	2632	15.4	2510	15.4	2315
	Skyway On-Ramp	Church St Off-Ramp	16.9	3216	15.7	3082	9.9	2167	11.5	2510	15.0	2662	12.0	2627	11.5	2510	11.6	2322
	Church St Off-Ramp	Church St On-Ramp	13.0	2130	12.8	2103	9.9	1643	11.3	1863	11.6	1781	11.9	1965	11.3	1863	10.4	1651
	Church St On-Ramp	Virginia St Merge	11.2	2454	11.5	2518	10.1	2222	10.6	2319	10.8	2229	10.5	2308	10.6	2319	10.2	2192
	Virginia St Merge	West End	15.0	2464	15.5	2556	13.9	2285	14.4	2372	14.5	2273	14.2	2347	14.4	2372	13.8	2243

Legend:

LOS A-B	LOS C	LOS D	LOS E
LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl	

Roadway	From	To	AM Peak															
			2017 Existing		2025 No Build		2025 Concept I without Improvements		2025 Concept I with Improvements		2025 Concept J		2025 Concept K		2025 Alternative 1		2025 Alternative 2	
			Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)
I-190 SB	West End	Skyway Diverge	10.4	1626	11.4	1783	11.3	1764	11.3	1764	10.8	1685	10.7	1669	11.3	1764	10.8	1686
	Skyway Diverge	Skyway Off-Ramp	9.9	2034	11.7	2354	10.7	2306	10.7	2299	10.8	2315	10.4	2229	10.7	2299	11.0	2332
	Skyway Off-Ramp	Skyway On-Ramp	10.4	1717	12.4	2031	14.2	2320	14.1	2314	14.3	2327	13.7	2245	14.1	2314	14.4	2342
	Skyway On-Ramp	Seneca St Off-Ramp	14.8	2761	16.8	3104	10.5	2283	10.4	2276	10.5	2290	10.1	2208	10.4	2276	10.5	2299
	Seneca St Off-Ramp	Oak St On-Ramp	10.9	1791	12.7	2067	10.8	1794	10.8	1781	11.0	1824	10.5	1745	10.8	1781	10.4	1720
	Oak St On-Ramp	Oak St Merge	9.1	2481	10.1	2768	9.7	2646	9.5	2604	9.7	2638	9.8	2695	9.5	2604	8.3	2294
	Oak St Merge	Louisiana St Diverge	15.2	2479	17.0	2766	16.2	2640	11.8	2602	16.1	2632	12.2	2688	11.8	2602	13.9	2289
	Louisiana St Diverge	Louisiana St Off-Ramp	11.9	2473	13.2	2763	12.3	2636	9.6	2598	12.3	2634	10.0	2683	9.6	2598	10.5	2289
	Louisiana St Off-Ramp	Louisiana St On-Ramp	12.5	2064	14.3	2360	14.9	2447	11.0	2427	14.7	2423	11.2	2471	11.0	2427	13.4	2204
	Louisiana St On-Ramp	Louisiana St Merge	12.6	2705	14.1	3026	13.3	2861	10.2	2783	12.9	2772	10.7	2900	10.2	2783	11.8	2551
	Louisiana St Merge	Smith St Diverge	16.6	2717	21.6	3032	20.8	2868	14.0	2806	17.0	2782	13.2	2902	14.0	2806	18.2	2556
	Smith St Diverge	Smith St Off-Ramp	13.3	2708	43.6	2960	45.3	2818	32.0	2763	13.3	2763	11.2	2893	32.0	2763	34.0	2486
	Smith St Off-Ramp	Smith St On-Ramp	13.1	2153	14.8	2374	14.9	2396	10.7	2334	14.1	2316	10.8	2376	10.7	2334	12.6	2063
	Smith St On-Ramp	Smith St Merge	11.7	2526	12.5	2685	12.7	2735	9.9	2676	12.8	2723	10.2	2764	9.9	2676	10.8	2326
	Smith St Merge	James P Coppola / Tifft Bypass Diverge	15.4	2522	16.4	2681	16.9	2743	12.2	2683	16.8	2731	12.6	2760	12.2	2683	14.4	2337
	James P Coppola / Tifft Bypass Diverge	James P Coppola / Tifft Bypass Off-Ramp	12.1	2508	13.0	2671	12.6	2734	12.3	2672	12.6	2726	13.1	2744	12.3	2672	10.8	2335
	James P Coppola / Tifft Bypass Off-Ramp	Clinton St Diverge / Tifft Bypass On-Ramp	12.2	2002	12.7	2093	12.0	1979	11.8	1952	11.9	1964	13.5	2244	11.8	1952	9.9	1631
	Tifft Bypass On-Ramp	Tifft Bypass Merge					11.5	2506	11.5	2504	10.9	2265			11.5	2504	9.8	2013
	Tifft Bypass Merge	Clinton St Diverge					15.3	2500	15.3	2497	14.6	2258			15.3	2497	13.0	2005
	Clinton St Diverge	Clinton St Off-Ramp	9.5	1969	9.9	2063	12.3	2459	12.2	2453	11.3	2220	10.3	2207	12.2	2453	9.9	1965
	Clinton St Off-Ramp	Clinton St On-Ramp	10.5	1739	11.1	1834	12.0	1975	11.9	1969	11.8	1902	12.5	2074	11.9	1969	10.5	1693
	Clinton St On-Ramp	Clinton St Merge	10.4	2256	10.9	2372	11.4	2486	11.4	2479	11.3	2389	12.2	2664	11.4	2479	10.0	2135
	Clinton St Merge	Griswold St Diverge	13.8	2257	14.5	2372	15.2	2490	15.2	2483	15.1	2391	16.3	2672	15.2	2483	13.6	2137
	Griswold St Diverge	Griswold St Off-Ramp	10.5	2247	11.1	2361	11.6	2482	11.6	2474	11.4	2371	12.4	2663	11.6	2474	10.4	2125
	Griswold St Off-Ramp	Griswold St On-Ramp	11.1	1827	11.7	1927	12.2	2019	12.2	2013	12.0	1935	13.2	2198	12.2	2013	10.5	1696
	Griswold St On-Ramp	Griswold St Merge	12.7	2703	13.4	2845	13.8	2937	13.8	2930	13.4	2790	14.3	3089	13.8	2930	12.3	2557
	Griswold St Merge	I-90	16.7	2696	17.6	2838	18.2	2930	18.2	2922	17.9	2777	19.8	3081	18.2	2922	16.2	2544
1125	Tifft St On-Ramp	Tifft St Merge					61.2	2554	46.0	2600					46.0	2600		
	Tifft St Merge	South Park Diverge					97.6	2357	90.8	2407					90.8	2407		
	South Park Diverge	South Park Off-Ramp					122.3	1957	117.2	2036					117.2	2036		
	South Park Off-Ramp	South Park On-Ramp					32.9	1207	20.7	1261					20.7	1261		
	South Park On-Ramp	South Park Merge					39.7	1682	19.9	1760					19.9	1760		
	South Park Merge	I-190 Diverge					50.7	1679	17.4	1773					17.4	1773		
Tifft Street Bypass SB	I-190 Merge	South Park Diverge					12.8	1388	13.2	1439					13.2	1439		
	South Park Diverge	South Park Off-Ramp					8.3	1370	8.6	1422					8.6	1422		
	South Park Off-Ramp	South Park On-Ramp					8.7	958	8.9	976					8.9	976		
	South Park On-Ramp	South Park Merge					8.0	1239	8.1	1269					8.1	1269		
	South Park Merge	Tifft St Diverge					11.5	1254	11.8	1284					11.8	1284		
	Tifft St Diverge	Tifft St Off-Ramp					7.6	1242	7.7	1271					7.7	1271		

Legend:

LOS A-B	LOS C	LOS D	LOS E
LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl	

Roadway	From	To	PM Peak															
			2017 Existing		2025 No Build		2025 Concept I without Improvements		2025 Concept I with Improvements		2025 Concept J		2025 Concept K		2025 Alternative 1		2025 Alternative 2	
			Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)
Skyway NB (south end)	South End	Mile Strip On-Ramp	4.5	551	5.0	602	5.4	656	5.6	678	4.3	651	3.6	433	5.6	678	5.2	631
	Mile Strip On-Ramp	Mile Strip Merge	9.1	1112	9.6	1170	7.0	940	7.4	991	5.6	973	4.5	577	7.4	991	5.4	766
Skyway NB (north end)	Odell St	Ridge Rd Off-Ramp	11.5	1252	12.1	1319	9.6	1109	10.8	1170	8.4	1194	4.5	502	10.8	1170	8.4	949
	Ridge Rd Off-Ramp	Ridge Rd Bridge	11.2	874	11.2	863	9.0	712	9.9	777	8.0	953	1.8	147	9.9	777	8.1	634
	Ridge Rd Bridge	Ridge Rd On-Ramp	10.1	873	10.1	864	8.2	713	8.9	775	7.1	950	1.7	147	8.9	775	8.0	636
	Ridge Rd On-Ramp	Ridge Rd Merge	11.1	1672	10.6	1592	9.1	1392	9.6	1466	5.8	1290	1.7	269	9.6	1466	8.3	1009
	Ridge Rd Merge	Tifft St Off-Ramp	15.7	1673	14.7	1594	12.9	1393	13.7	1471	135.7	1287	2.6	269	13.7	1471	12.4	1011
	Tifft St Off-Ramp	Tifft St On-Ramp	12.6	1370	12.2	1337	10.1	1107	10.8	1183					10.8	1183		
	Tifft St On-Ramp	Ohio St Off-Ramp	16.7	1782	15.0	1635												
	Ohio St Off-Ramp	Outer Harbor Dr Off-Ramp	14.0	1523	12.9	1427												
	Outer Harbor Dr Off-Ramp	Outer Harbor Dr On-Ramp	13.7	1478	12.7	1382												
	Outer Harbor Dr On-Ramp	I-190 SB Diverge	16.1	1682	15.5	1547												
	I-190 SB Diverge	I-190 SB Off-Ramp	15.1	1691	14.0	1476												
	I-190 SB Off-Ramp	I-190 NB / Pearl St Diverge	8.4	783	8.0	709												
	I-190 NB / Pearl St Diverge	I-190 NB / Pearl St Off-Ramp	5.9	786	5.6	712												
	I-190 NB / Pearl St Off-Ramp	Church St	3.0	307	3.2	301												
	Church St	I-190 SB On-Ramp	12.9	1214	12.4	1028												
	I-190 SB On-Ramp	I-190 SB Merge	23.6	2557	21.8	2164												
	I-190 SB Merge	Outer Harbor Dr Off-Ramp	24.3	2568	22.9	2185												
	Outer Harbor Dr Off-Ramp	Outer Harbor Dr On-Ramp	21.5	2298	19.9	1916												
	Outer Harbor Dr On-Ramp	Tifft St Off-Ramp	22.6	2401	67.4	2028												
Skyway SB (north end)	Tifft St Off-Ramp	Tifft St On-Ramp	37.1	1771	181.5	1442	100.5	1409	63.4	1504					63.4	1504		
	Tifft St On-Ramp	Tifft St Merge	92.5	2134	205.3	1714	186.6	1795	129.5	1895	3.6	1354	4.7	751	129.5	1895	9.7	1107
	Tifft St Merge	Ridge Rd Off-Ramp	104.4	2066	164.9	1661	155.8	1728	128.7	1766	5.7	1344	6.6	723	128.7	1766	16.5	1240
	Ridge Rd Off-Ramp	Ridge Rd Bridge	15.2	1609	10.8	1206	12.1	1254	12.2	1279	4.0	1090	4.5	500	12.2	1279	11.4	917
	Ridge Rd Bridge	Ridge Rd On-Ramp	18.0	1610	12.3	1206	14.0	1255	14.3	1283	4.3	1097	5.3	496	14.3	1283	11.4	920
	Ridge Rd On-Ramp	Ridge Rd Merge	17.7	2053	13.1	1660	14.4	1673	14.6	1709	4.7	1359	8.4	1039	14.6	1709	10.3	1246
Skyway SB (south end)	Mile Strip Diverge	Mile Strip Off-Ramp	16.3	1673	13.3	1422	13.7	1409	13.6	1426	4.9	1089	13.0	1090	13.6	1426	8.8	1079
	Mile Strip Off-Ramp	Mile Strip On-Ramp	9.1	1111	6.8	886	7.5	923	7.7	945	3.4	843	3.5	438	7.7	945	6.9	852
	Mile Strip On-Ramp	Mile Strip Merge	9.5	1552	8.1	1379	9.0	1460	9.0	1477	4.9	1311	8.0	1301	9.0	1477	8.0	1308
	Mile Strip Merge	South End	12.5	1540	10.6	1361	11.8	1444	11.9	1468	6.5	1304	10.3	1286	11.9	1468	10.5	1298
I-90 WB	North End	William St Diverge	13.9	2105	15.2	2300	15.2	2296	15.2	2296	17.1	2190	14.3	2169	15.2	2296	14.4	2188
	William St Diverge	William St Off-Ramp	9.7	2138	10.6	2335	10.6	2332	10.6	2332	12.0	2222	10.0	2197	10.6	2332	10.1	2224
	William St Off-Ramp	William St On-Ramp	13.0	2141	14.2	2340	14.2	2337	14.2	2337	15.7	2223	13.8	2200	14.2	2337	13.5	2228
	William St On-Ramp	William St Merge	15.9	3426	16.7	3613	16.8	3627	16.8	3624	17.8	3519	52.5	3273	16.8	3624	16.3	3515
	William St Merge	I-190 Diverge	21.2	3430	22.3	3617	22.5	3631	22.5	3629	23.8	3521	114.6	2993	22.5	3629	21.8	3517
	I-190 Diverge	I-190 Off-Ramp	15.8	3431	16.6	3624	16.7	3637	16.7	3636	17.6	3518	167.7	2756	16.7	3636	16.2	3522
	I-190 Off-Ramp	I-190 On-Ramp	15.2	2498	20.2	2719	15.8	2583	16.0	2616	17.0	2362	13.0	2113	16.0	2616	14.6	2404
	I-190 On-Ramp	I-190 Merge	20.4	5430	139.6	5203	18.5	4955	31.9	4975	13.2	3814	15.8	4303	31.9	4975	15.5	4205
	I-190 Merge	NY 400 Off-Ramp	31.2	5411	152.5	5103	29.7	4929	51.3	4916	16.6	3235	128.8	4137	51.3	4916	19.5	4226
	NY 400 Off-Ramp	NY 400 On-Ramp	41.9	4258	67.0	4087	47.5	3951	54.7	3902	17.3	2180	227.6	3089	54.7	3902	21.5	3477
	NY 400 On-Ramp	NY 400 Merge	37.2	4543	58.2	4401	41.4	4314	52.0	4248	15.5	2296	187.6	3252	52.0	4248	17.6	3784
	NY 400 Merge	Ridge Road Off-Ramp	61.1	4470	94.7	4377	58.4	4334	86.0	4236	30.8	2118	244.4	3030	86.0	4236	24.5	3790
	Ridge Road Off-Ramp	Ridge Road On-Ramp	10.5	1108	10.0	1150	11.0	1180	10.6	1111	12.4	568	13.6	1401	10.6	1111	9.0	982
	Ridge Road On-Ramp	Ridge Road Merge	14.3	2330	14.4	2450	14.8	2413	14.3	2327	14.3	1173	11.0	1820	14.3	2327	14.9	2420
	Ridge Road Merge	NY 179 Diverge	19.3	2350	30.4	2471	22.7	2438	19.3	2349	19.5	1218	17.3	1850	19.3	2349	20.5	2447
	NY 179 Diverge	NY 179 Off-Ramp	64.5	2391	152.0	2456	101.9	2547	41.1	2424	13.2	1553	78.7	2251	41.1	2424	54.7	2529
	NY 179 Off-Ramp	NY 179 Merge	8.9	1095	11.3	1157	10.5	1229	9.7	1225	9.6	711	7.4	904	9.7	1225	9.5	1175
	NY 179 Merge	NY 179 On-Ramp	6.0	1187	6.7	1251	6.6	1297	6.5	1299	6.8	798	5.0	984	6.5	1299	6.2	1228
	NY 179 On-Ramp	South End	8.8	1170	9.8	1236	9.7	1277	9.7	1283	10.0	785	7.4	979	9.7	1283	9.1	1211

Legend:

LOS A-B	LOS C	LOS D	LOS E
LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl	

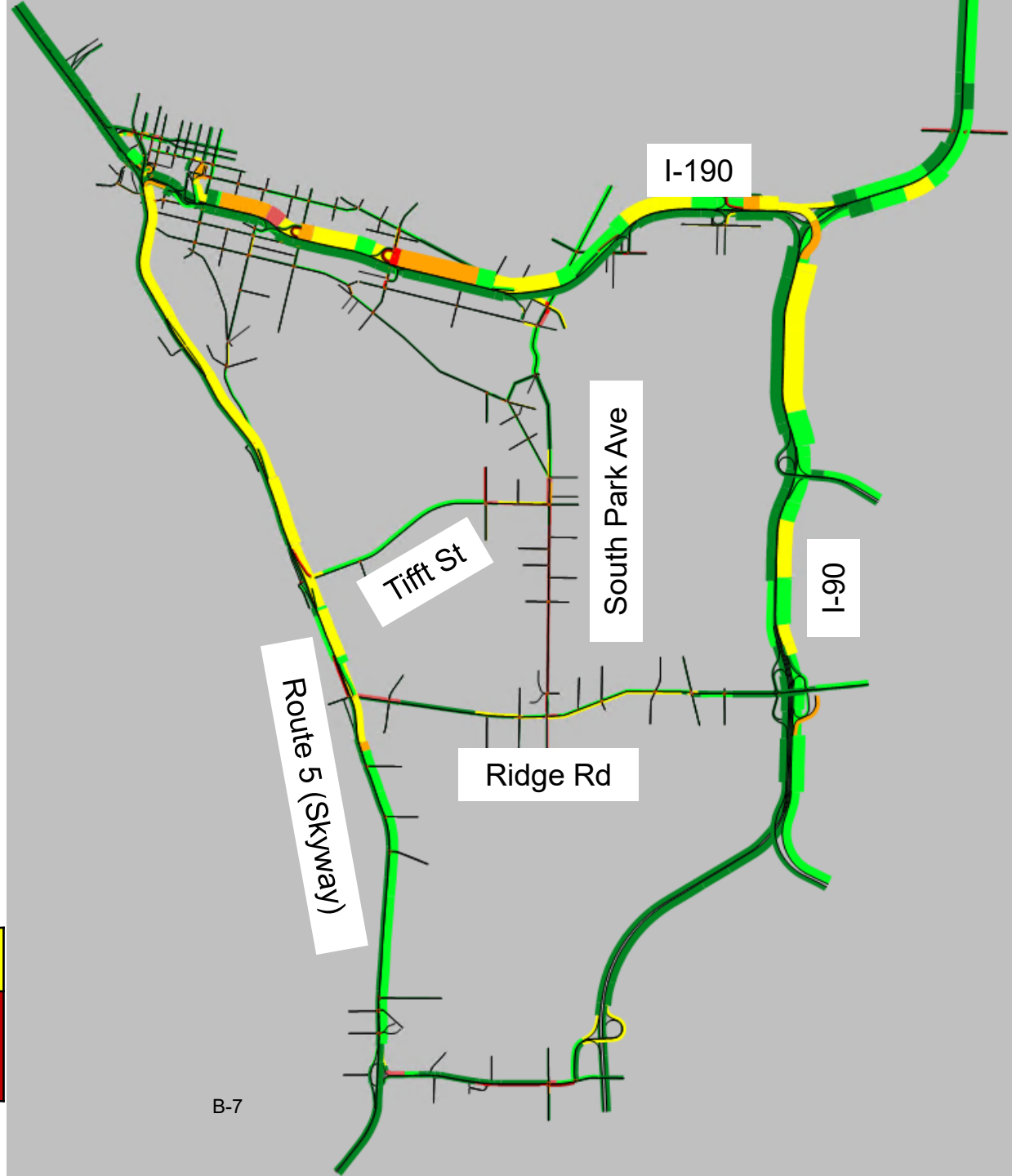
Roadway	From	To	PM Peak															
			2017 Existing		2025 No Build		2025 Concept I without Improvements		2025 Concept I with Improvements		2025 Concept J		2025 Concept K		2025 Alternative 1		2025 Alternative 2	
			Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)
I-90 EB	South End	NY 179 Diverge	13.3	1401	14.6	1537	14.6	1533	14.6	1533	7.4	1459	13.8	1448	14.6	1533	13.8	1458
	NY 179 Diverge	NY 179 Off-Ramp	7.1	1418	7.8	1556	7.8	1552	7.8	1552	4.1	1476	7.4	1464	7.8	1552	7.4	1476
	NY 179 Off-Ramp	NY 179 On-Ramp	10.1	1340	11.0	1467	11.1	1479	11.1	1477	4.6	1403	10.4	1378	11.1	1477	10.5	1399
	NY 179 On-Ramp	NY 179 Merge	12.2	2412	13.0	2585	13.3	2629	13.1	2593	7.6	2480	16.2	3173	13.1	2593	13.5	2658
	NY 179 Merge	Ridge Road Off-Ramp	15.2	2385	17.2	2575	17.7	2618	17.4	2578	9.8	2426	20.8	3163	17.4	2578	17.8	2643
	Ridge Road Off-Ramp	Ridge Road On-Ramp	7.8	855	8.1	915	9.8	1071	8.7	955	9.4	877	21.3	2324	8.7	955	11.7	1270
	Ridge Road On-Ramp	Ridge Road Merge	17.0	3682	18.6	4037	19.3	4143	18.7	4014	10.9	2824	24.1	5186	18.7	4014	20.8	4444
	Ridge Road Merge	NY 400 Diverge	22.7	3672	24.6	4026	25.7	4133	24.8	4003	14.7	2822	32.1	5185	24.8	4003	27.7	4438
	NY 400 Diverge	NY 400 Off-Ramp	16.9	3674	18.3	4028	19.2	4139	18.5	4007	11.0	2832	24.0	5195	18.5	4007	20.6	4445
	NY 400 Off-Ramp	NY 400 On-Ramp	20.6	3351	22.4	3683	23.5	3799	22.6	3656	13.7	2580	30.0	4864	22.6	3656	25.5	4112
	NY 400 On-Ramp	NY 400 Merge	15.6	4235	17.0	4656	17.6	4761	17.0	4614	12.2	3529	21.4	5797	17.0	4614	18.7	5049
	NY 400 Merge	I-190 Off-Ramp	19.6	4243	21.5	4655	22.3	4769	21.5	4616	15.4	3558	28.2	5780	21.5	4616	23.7	5049
	I-190 Off-Ramp	I-190 On-Ramp	14.7	2419	15.7	2625	15.8	2599	15.8	2600	11.5	2098	15.9	2595	15.8	2600	15.3	2506
	I-190 On-Ramp	I-190 Merge #1	15.7	4252	15.0	4044	16.1	4354	15.9	4303	10.1	3465	13.8	3745	15.9	4303	14.0	3788
	I-190 Merge #1	I-190 Merge #2	20.5	4246	19.5	4041	21.2	4349	20.7	4294	12.8	3471	17.8	3751	20.7	4294	18.0	3783
	I-190 Merge #2	William St Diverge	26.6	4250	25.5	4046	28.0	4355	26.9	4296	16.9	3497	23.4	3756	26.9	4296	23.8	3786
	William St Diverge	William St Off-Ramp	19.6	4253	18.8	4047	23.6	4357	19.8	4298	12.6	3510	17.3	3756	19.8	4298	17.7	3789
	William St Off-Ramp	William St On-Ramp	17.7	2894	18.2	2952	18.7	3043	18.6	3045	13.3	2498	17.1	2780	18.6	3045	17.0	2768
	William St On-Ramp	William St Merge	13.3	2895	13.7	2954	14.0	3043	14.0	3047	10.1	2508	12.9	2783	14.0	3047	12.8	2772
	William St Merge	North End	17.6	2866	18.2	2926	18.6	3017	18.6	3022	13.1	2491	17.0	2758	18.6	3022	16.9	2741
I-190 NB	I-90	Dingens St Diverge	17.0	2761	18.0	2928	25.1	3194	29.2	2971	14.9	2493	212.9	3306	29.2	2971	24.2	3640
	Dingens St Diverge	Dingens St Off-Ramp	12.8	2754	13.7	2922	22.3	3176	26.1	2931	11.1	2494	163.6	3237	26.1	2931	19.1	3618
	Dingens St Off-Ramp	Dingens St On-Ramp	12.3	2033	13.1	2170	30.6	2403	42.6	2160	10.7	1881	133.6	2581	42.6	2160	22.8	2912
	Dingens St On-Ramp	Dingens St Merge	12.5	2695	13.4	2884	39.5	2997	69.9	2678	11.0	1944	165.6	2756	69.9	2678	25.2	3619
	Dingens St Merge	Clinton St Diverge	18.1	2692	19.9	2877	69.7	2908	117.5	2473	32.7	1943	205.8	2513	117.5	2473	39.7	3507
	Clinton St Diverge	Clinton St Off-Ramp	53.8	2677	105.6	2850	132.0	2831	148.6	2322	120.6	1968	200.0	2321	148.6	2322	44.9	3404
	Clinton St Off-Ramp	Clinton St On-Ramp	13.1	2152	14.0	2292	16.4	2658	13.3	2150	11.3	1636	11.7	1914	13.3	2150	99.3	2817
	Clinton St On-Ramp	Clinton St Merge	11.2	2455	11.8	2581	14.6	3193	12.3	2692	9.7	2013	9.5	2099	12.3	2692	146.7	3133
	Clinton St Merge	Seneca St / Tifft Bypass Off-Ramp	15.0	2456	15.8	2575	14.7	3196	12.3	2696	12.8	2015	9.6	2121	12.3	2696	198.4	3102
	Tifft Bypass Off-Ramp	Tifft Bypass Off-Ramp					14.9	3196	12.4	2698					12.4	2698		
	Tifft Bypass Off-Ramp	Tifft Bypass On-Ramp					25.3	2636	13.9	2278					13.9	2278		
	Tifft Bypass On-Ramp	Seneca St Merge	14.2	3087	15.0	3245	42.9	3433	14.0	3062	211.5	2168	10.2	2254	14.0	3062	45.1	3032
	Seneca St Merge	Smith St Off-Ramp	31.9	3092	25.1	3195	67.4	3259	16.8	3059	210.4	2165	10.3	2262	16.8	3059	90.0	2909
	Smith St Off-Ramp	Smith St Off-Ramp	86.5	3073	101.0	3093	89.5	3007	47.0	2989	191.9	2122	8.3	2254	47.0	2989	136.6	2723
	Smith St Off-Ramp	Smith St On-Ramp	16.4	2612	17.5	2688	68.6	2628	12.5	2707	16.8	1924	9.3	2056	12.5	2707	48.2	2468
	Smith St On-Ramp	Smith St Merge	14.0	3026	14.8	2967	73.8	2857	10.7	2926	153.1	2063	7.9	2177	10.7	2926	60.4	2509
	Smith St Merge	Hamburg St Diverge	18.5	3024	19.6	2930	91.2	2738	20.3	2921	213.6	2057	9.9	2188	20.3	2921	95.2	2377
	Hamburg St Diverge	Hamburg St Off-Ramp	14.4	3022	15.2	2878	94.2	2662	44.8	2909	218.4	2031	8.2	2198	44.8	2909	132.3	2250
	Hamburg St Off-Ramp	Hamburg St On-Ramp	16.0	2610	17.1	2573	105.0	2323	11.8	2590	11.9	1855	9.1	2010	11.8	2590	38.5	2041
	Hamburg St On-Ramp	Hamburg St Merge	15.8	3310	16.6	2974	120.3	2520	11.5	2846	88.4	1985	8.7	2390	11.5	2846	47.3	2058
	Hamburg St Merge	Elm St Diverge	20.9	3308	22.5	2951	120.3	2379	18.8	2827	168.3	1988	11.1	2401	18.8	2827	82.4	1957
	Elm St Diverge	Elm St Off-Ramp	12.2	3305	19.5	2899	128.0	2251	23.0	2790	190.5	1986	9.0	2409	23.0	2790	115.9	1827
	Elm St Off-Ramp	Oak St On-Ramp	11.5	1894	11.3	1594	7.5	1174	10.7	1760	3.5	1096	6.8	1129	10.7	1760	7.9	1110
	Oak St On-Ramp	Oak St Merge	10.7	2235	10.3	1866	8.2	1258	9.2	1963	2.4	1193	5.5	1209	9.2	1963	12.5	1153
	Oak St Merge	Skyway On-Ramp	13.9	2245	13.4	1879	24.1	1248	12.1	1975	41.2	1195	7.4	1215	12.1	1975	26.9	1139
	Skyway On-Ramp	Church St Off-Ramp	12.9	2649	12.4	2241	39.6	1226	9.0	1976	128.4	1191	5.5	1209	9.0	1976	61.0	1104
	Church St Off-Ramp	Church St On-Ramp	10.0	1640	9.9	1439	5.6	933	7.9	1314	2.4	859	5.0	839	7.9	1314	4.9	770
	Church St On-Ramp	Virginia St Merge	9.5	2072	9.5	1916	6.4	1400	7.9	1731	2.5	1499	6.1	1337	7.9	1731	5.4	1154
	Virginia St Merge	West End	15.7	2578	16.2	2503	12.2	2020	14.1	2322	6.0	2097	11.6	1927	14.1	2322	10.8	1749

Legend:

LOS A-B	LOS C	LOS D	LOS E
LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl	

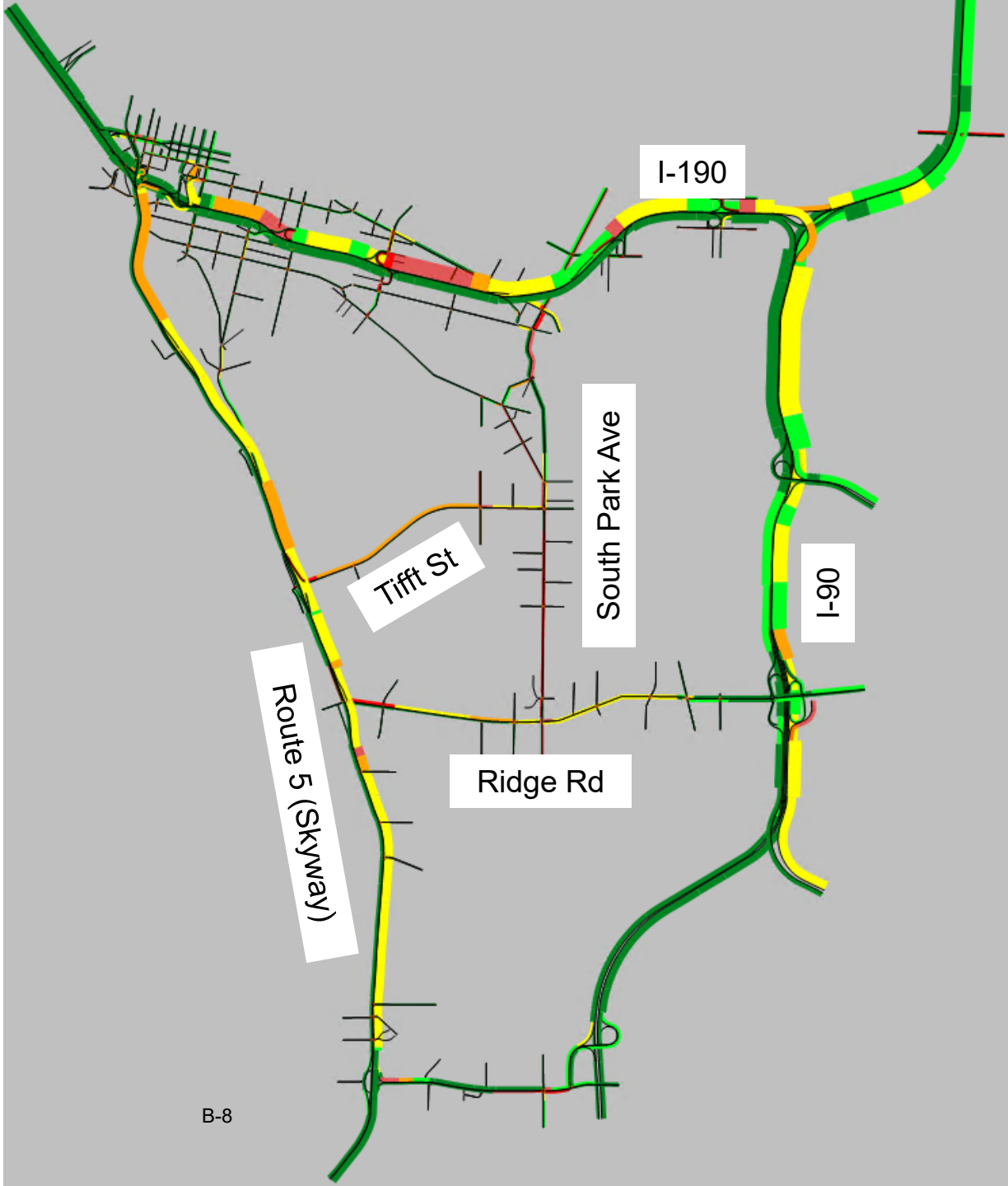
Roadway	From	To	PM Peak															
			2017 Existing		2025 No Build		2025 Concept I without Improvements		2025 Concept I with Improvements		2025 Concept J		2025 Concept K		2025 Alternative 1		2025 Alternative 2	
			Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)	Density (veh/mi/ln)	Volume (veh/hr)
I-190 SB	West End	Skyway Diverge	12.6	1964	13.8	2149	13.4	2091	13.4	2091	109.3	1986	12.7	1984	13.4	2091	12.7	1985
	Skyway Diverge	Skyway Off-Ramp	19.6	3342	23.1	3774	58.6	4305	24.9	4475	234.9	3784	99.2	3461	24.9	4475	63.9	3390
	Skyway Off-Ramp	Skyway On-Ramp	17.1	2788	20.5	3240	97.1	4290	30.8	4495	233.5	3793	108.2	3365	30.8	4495	102.6	3396
	Skyway On-Ramp	Seneca St Off-Ramp	18.4	3640	21.1	3879	84.2	4173	23.7	4434	226.7	3680	87.5	3221	23.7	4434	93.4	3364
	Seneca St Off-Ramp	Oak St On-Ramp	18.6	3004	21.5	3253	127.0	3823	31.1	4141	182.1	3306	124.0	2893	31.1	4141	127.9	3099
	Oak St On-Ramp	Oak St Merge	19.1	5054	45.6	4552	120.8	4488	26.1	5339	185.3	3729	113.2	3634	26.1	5339	123.9	3676
	Oak St Merge	Louisiana St Diverge	35.6	5048	74.8	4473	129.3	4439	42.3	5291	213.9	3597	146.5	3483	42.3	5291	143.2	3674
	Louisiana St Diverge	Louisiana St Off-Ramp	42.9	5033	93.0	4410	122.8	4409	67.4	5234	214.0	3518	124.5	3356	67.4	5234	134.1	3670
	Louisiana St Off-Ramp	Louisiana St On-Ramp	29.0	4405	28.1	3958	118.7	4061	46.0	4746	5.4	3382	162.4	3061	46.0	4746	133.7	3494
	Louisiana St On-Ramp	Louisiana St Merge	32.9	5731	28.4	4907	123.7	5114	68.5	5691	3.8	3923	175.5	3144	68.5	5691	135.3	3883
	Louisiana St Merge	Smith St Diverge	49.2	5733	49.6	4875	108.8	5181	90.0	5642	5.1	3977	186.4	2858	90.0	5642	140.7	3918
	Smith St Diverge	Smith St Off-Ramp	59.6	5693	80.5	4818	130.9	5211	121.3	5528	4.0	4002	186.3	2660	121.3	5528	124.5	3914
	Smith St Off-Ramp	Smith St On-Ramp	37.9	5060	60.0	4316	35.2	4638	25.5	4980	4.5	3649	13.3	2259	25.5	4980	144.4	3422
	Smith St On-Ramp	Smith St Merge	34.7	5992	55.7	5035	25.7	5155	19.9	5305	3.6	3907	9.9	2610	19.9	5305	164.1	3722
	Smith St Merge	James P Coppola / Tifft Bypass Diverge	44.3	5973	64.7	5009	34.0	5184	25.0	5337	4.8	3958	78.5	2665	25.0	5337	139.7	3709
	James P Coppola / Tifft Bypass Diverge	James P Coppola / Tifft Bypass Off-Ramp	36.5	5932	56.2	4966	24.5	5177	28.0	5336	3.5	3995	158.9	2664	28.0	5336	156.9	3686
	James P Coppola / Tifft Bypass Off-Ramp	Clinton St Diverge / Tifft Bypass On-Ramp	31.5	4998	81.7	4025	22.7	3685	24.7	3725	3.2	2976	14.9	2436	24.7	3725	16.7	2532
	Tifft Bypass On-Ramp	Tifft Bypass Merge					20.4	4342	25.5	4405					25.5	4405		
	Tifft Bypass Merge	Clinton St Diverge					27.9	4350	45.6	4331					45.6	4331		
	Clinton St Diverge	Clinton St Off-Ramp	25.1	4935	70.6	3888	32.0	4290	54.9	4185	3.1	3268	11.6	2442	54.9	4185	14.8	2895
	Clinton St Off-Ramp	Clinton St On-Ramp	26.8	4298	94.2	3395	21.8	3486	21.7	3450	2.5	2754	13.9	2280	21.7	3450	14.8	2409
	Clinton St On-Ramp	Clinton St Merge	23.0	4829	89.7	3880	18.8	4013	18.6	3956	4.3	3043	12.9	2793	18.6	3956	13.1	2794
	Clinton St Merge	Griswold St Diverge	30.9	4842	98.5	3860	25.3	4028	25.0	3974	5.9	2907	17.4	2834	25.0	3974	17.6	2807
	Griswold St Diverge	Griswold St Off-Ramp	28.7	4831	95.7	3821	21.9	4016	27.5	3977	4.6	2806	13.4	2853	27.5	3977	13.5	2804
	Griswold St Off-Ramp	Griswold St On-Ramp	24.0	3843	117.9	3030	19.4	3154	19.3	3097	4.6	2310	14.2	2343	19.3	3097	13.0	2124
	Griswold St On-Ramp	Griswold St Merge	24.0	4785	95.2	3981	19.8	4119	19.5	4067	8.1	3101	15.5	3302	19.5	4067	14.5	3072
	Griswold St Merge	I-90	32.5	4774	86.2	3969	26.8	4114	26.6	4064	10.4	3102	24.1	3306	26.6	4064	19.2	3068
Tifft Street Bypass NB	Tifft St On-Ramp	Tifft St Merge					8.8	1440	13.1	1572					13.1	1572		
	Tifft St Merge	South Park Diverge					13.3	1448	45.6	1529					45.6	1529		
	South Park Diverge	South Park Off-Ramp					44.8	1403	159.4	1411					159.4	1411		
	South Park Off-Ramp	South Park On-Ramp					11.6	1018	14.2	977					14.2	977		
	South Park On-Ramp	South Park Merge					14.0	1536	12.0	1460					12.0	1460		
	South Park Merge	I-190 Diverge					18.2	1538	14.3	1473					14.3	1473		
Tifft Street Bypass SB	I-190 Merge	South Park Diverge					18.7	1999	18.7	2032					18.7	2032		
	South Park Diverge	South Park Off-Ramp					22.8	1970	26.3	2014					26.3	2014		
	South Park Off-Ramp	South Park On-Ramp					14.0	1522	14.8	1598					14.8	1598		
	South Park On-Ramp	South Park Merge					12.4	1899	12.8	1952					12.8	1952		
	South Park Merge	Tifft St Diverge					17.9	1933	18.6	1985					18.6	1985		
	Tifft St Diverge	Tifft St Off-Ramp					47.7	1929	23.6	1957					23.6	1957		

Existing (2017) AM



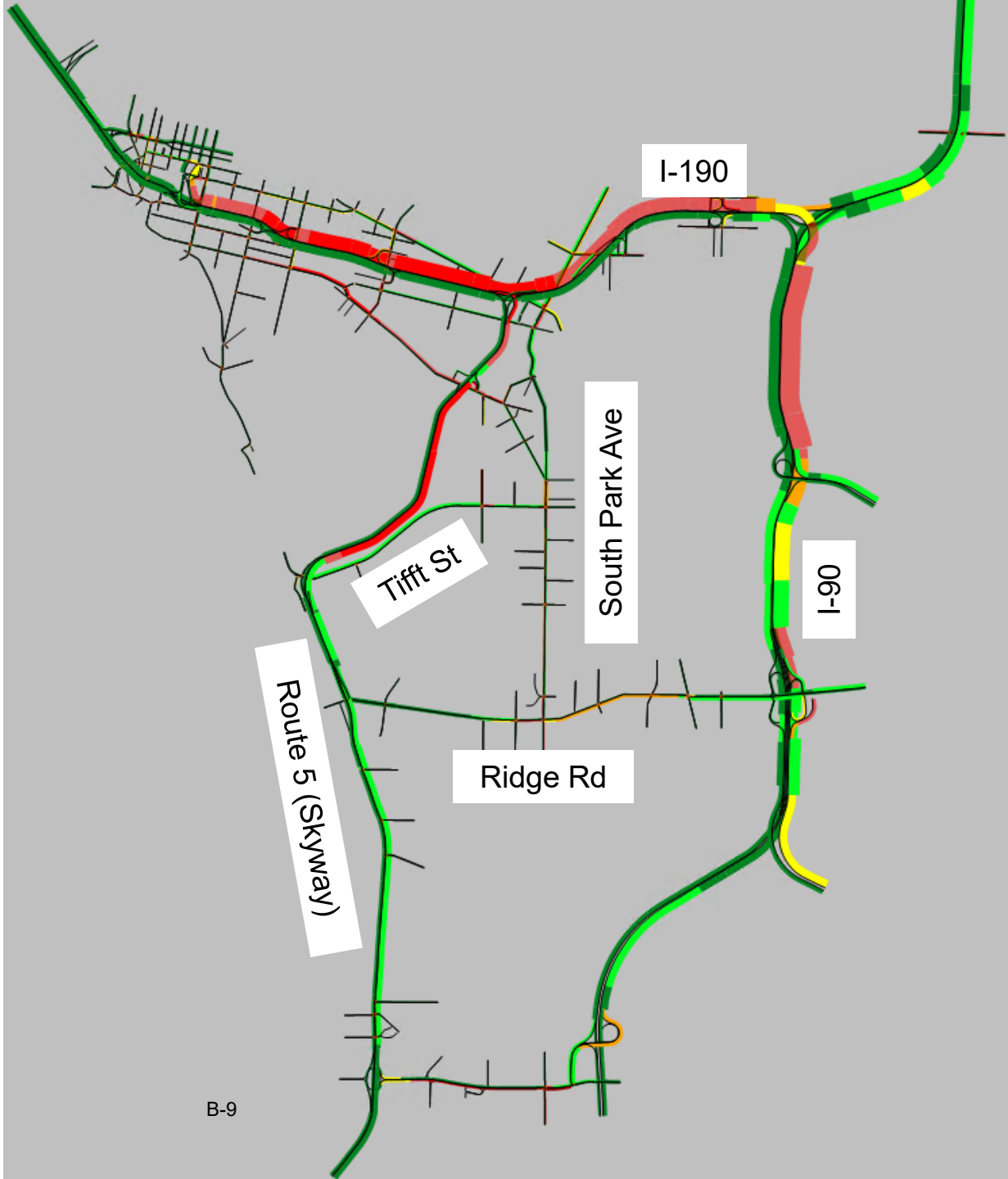
Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

No Build (2025) AM



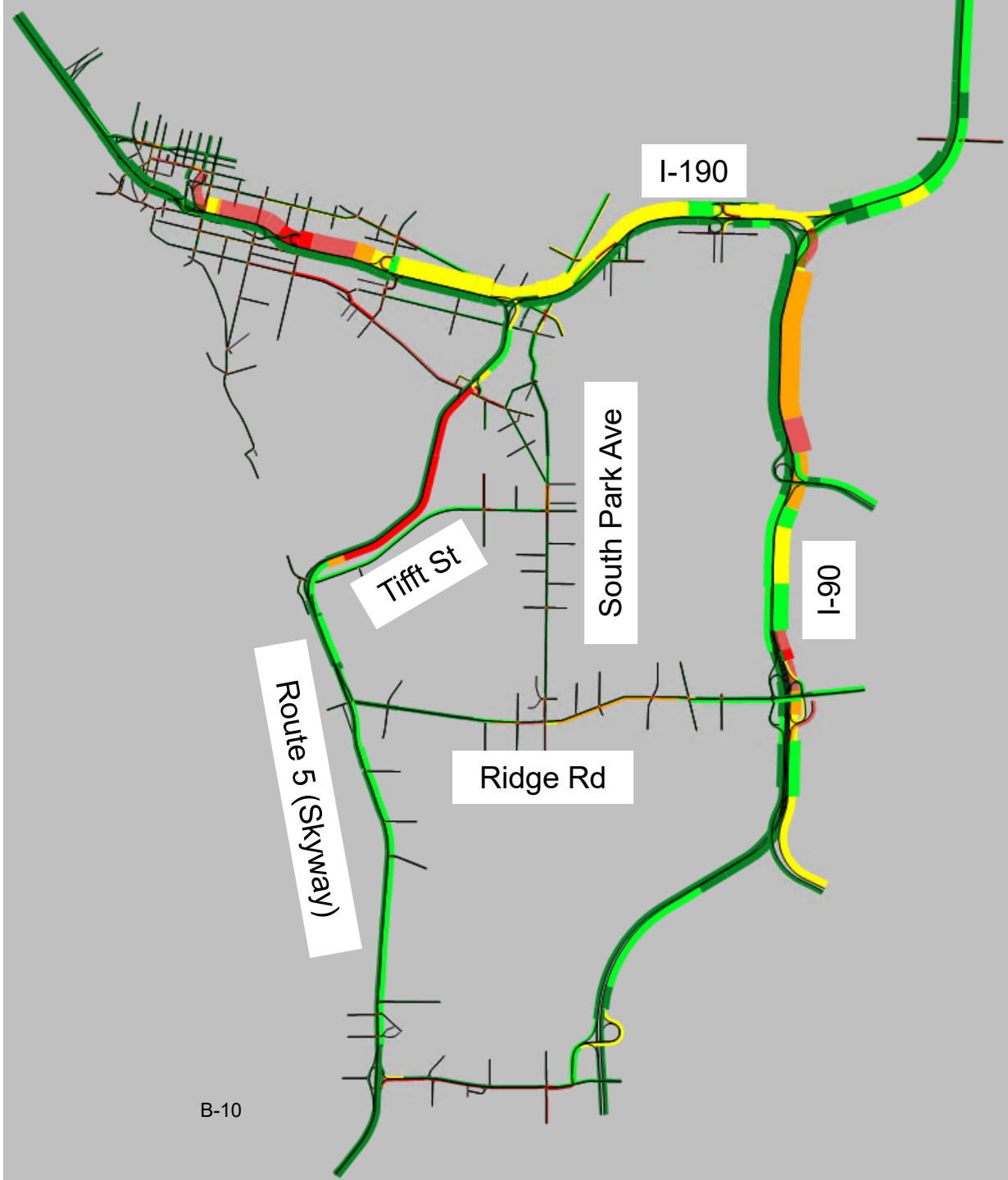
Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

Build (2025) Concept I without I-190 Improvements AM



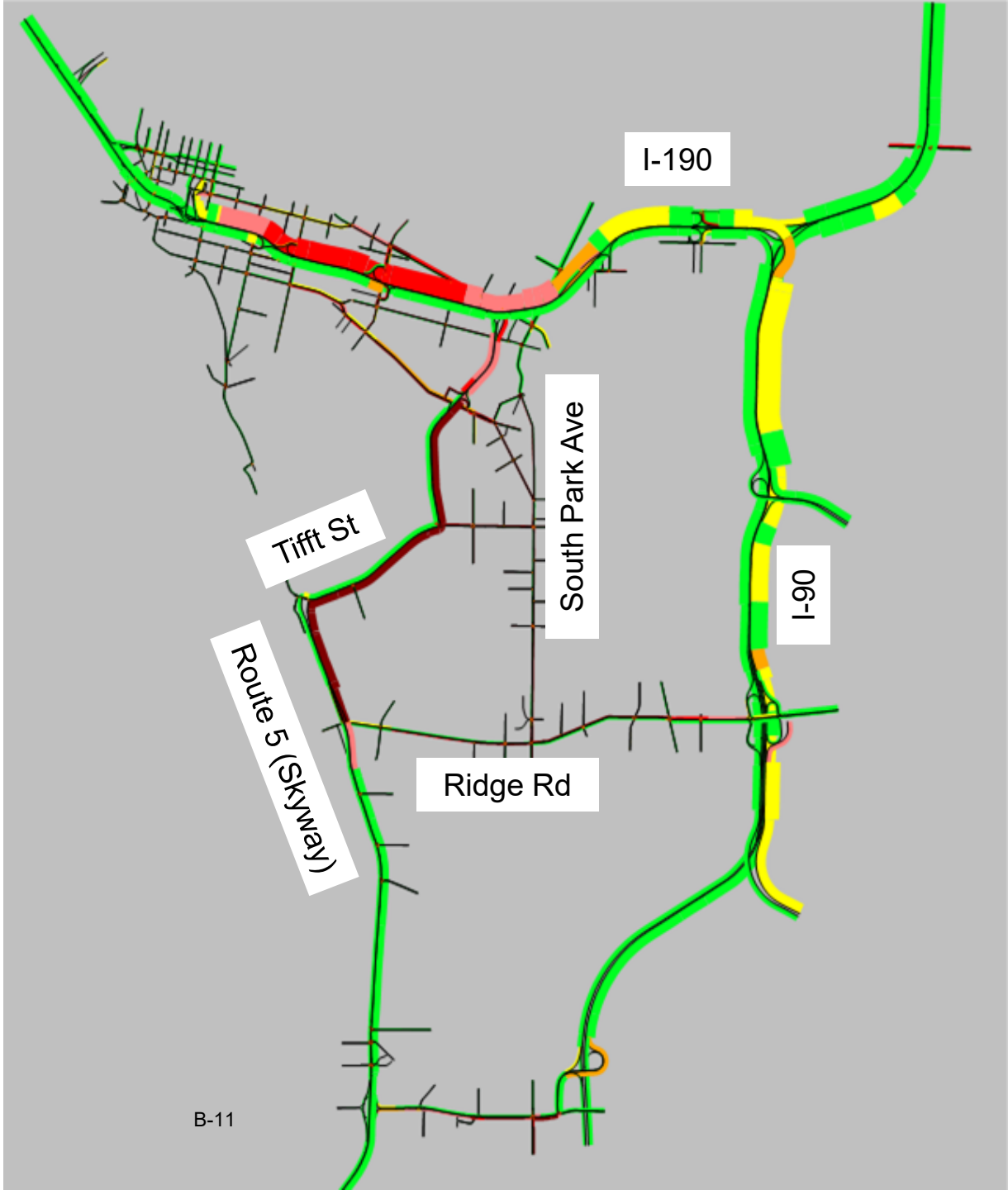
Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

Build (2025) Concept I with I-190 Improvements AM



Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

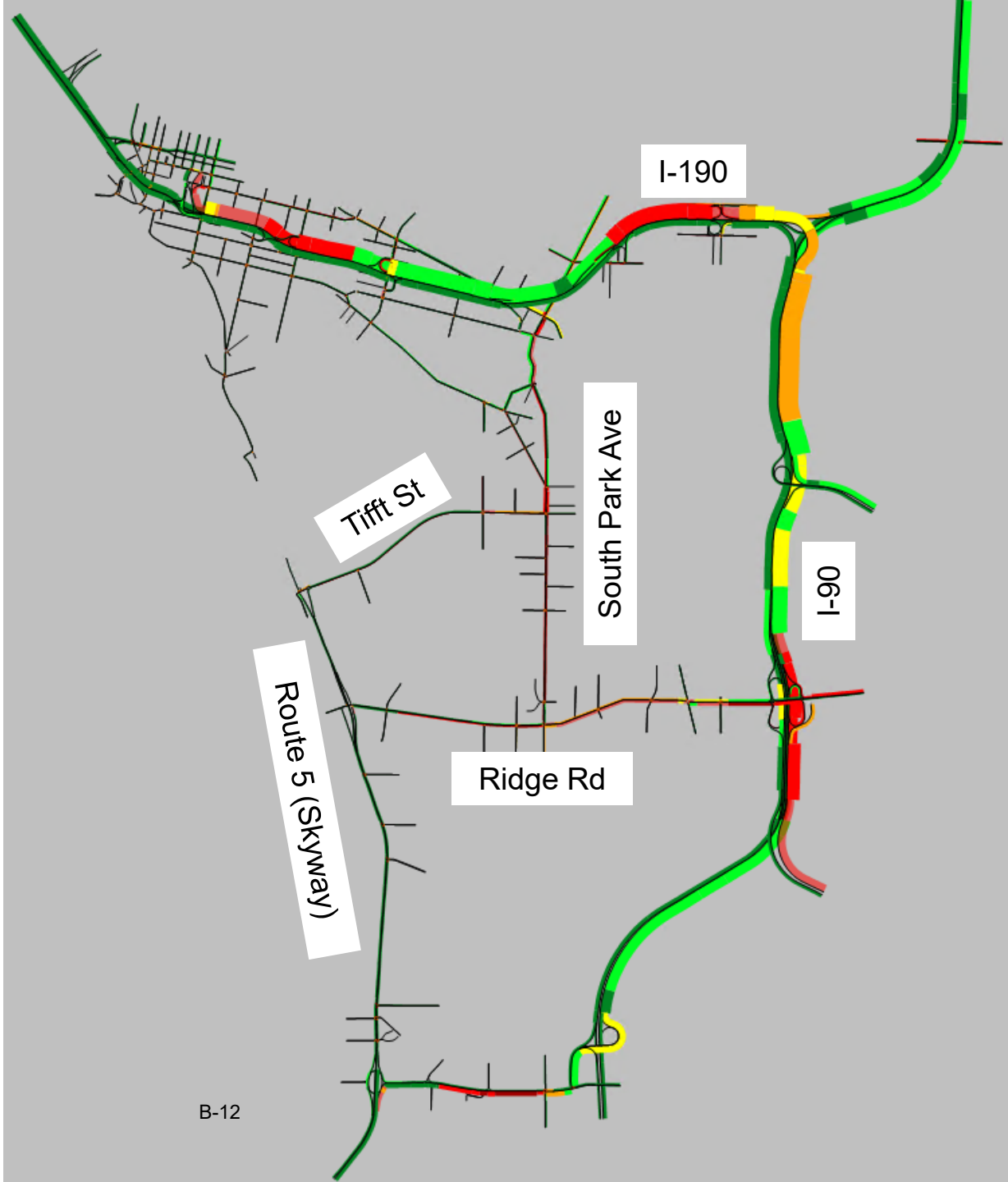
Build (2025) Concept J AM



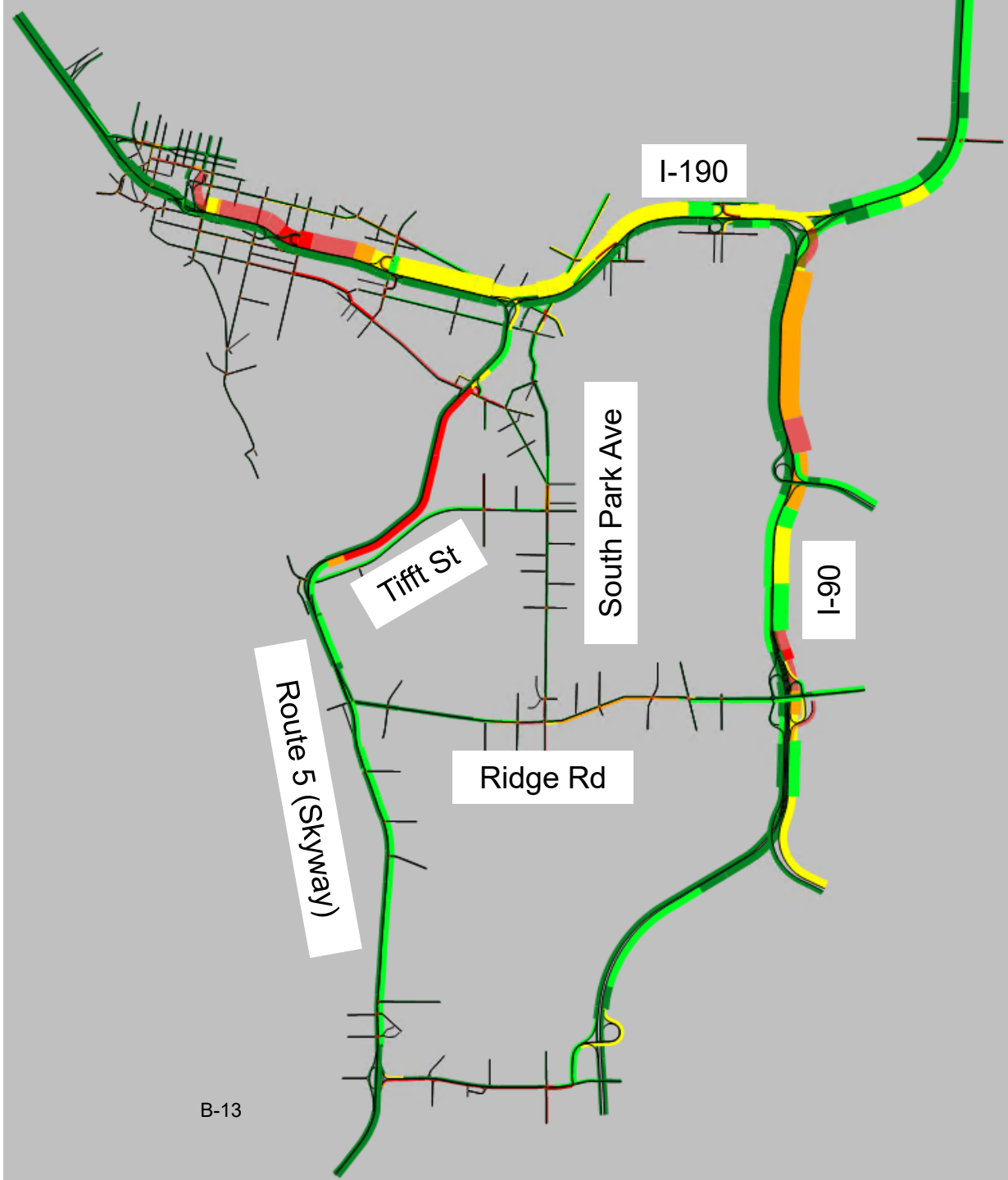
Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

Build (2025) Concept K AM

Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

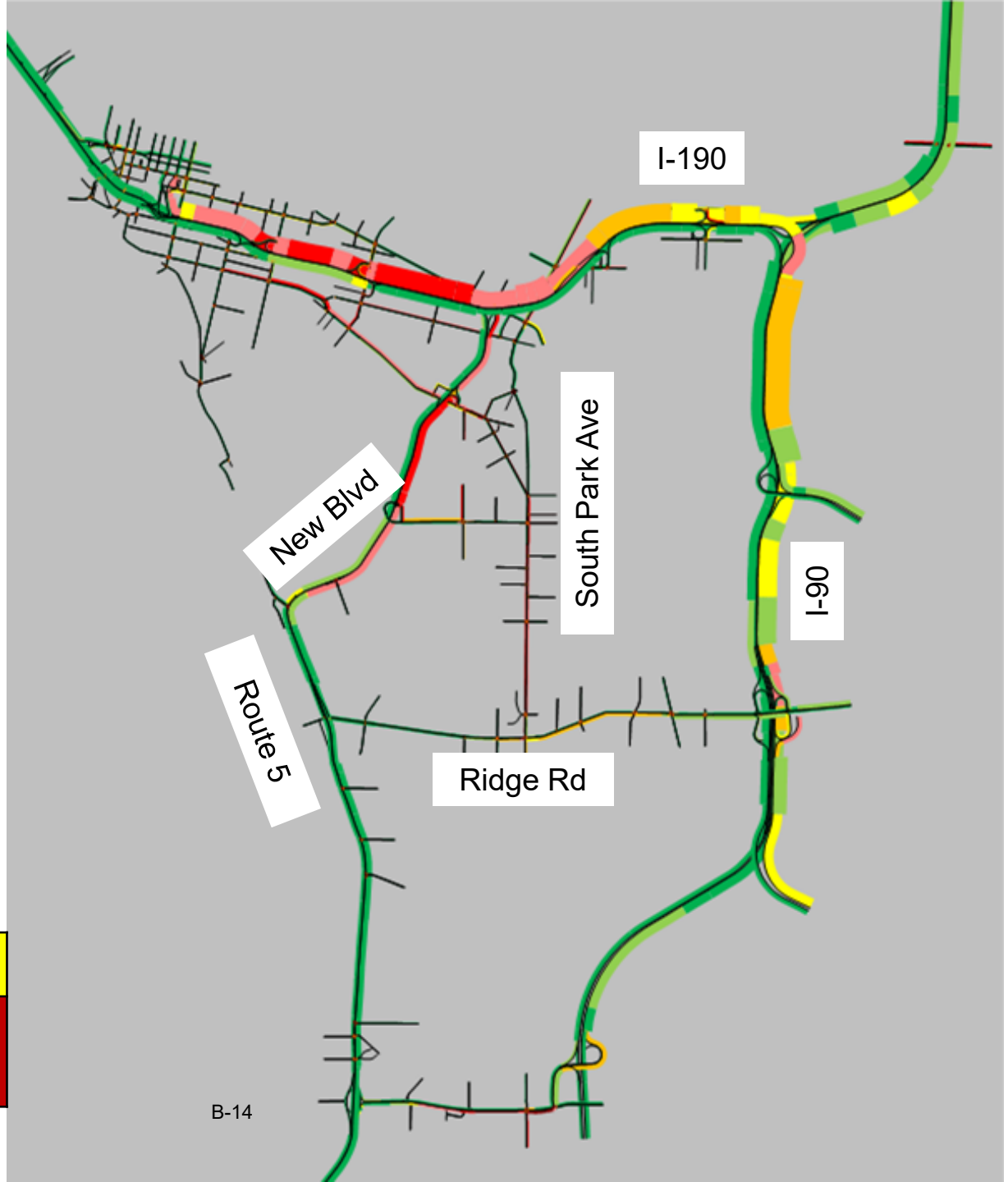


Build (2025) Alternative 1 AM



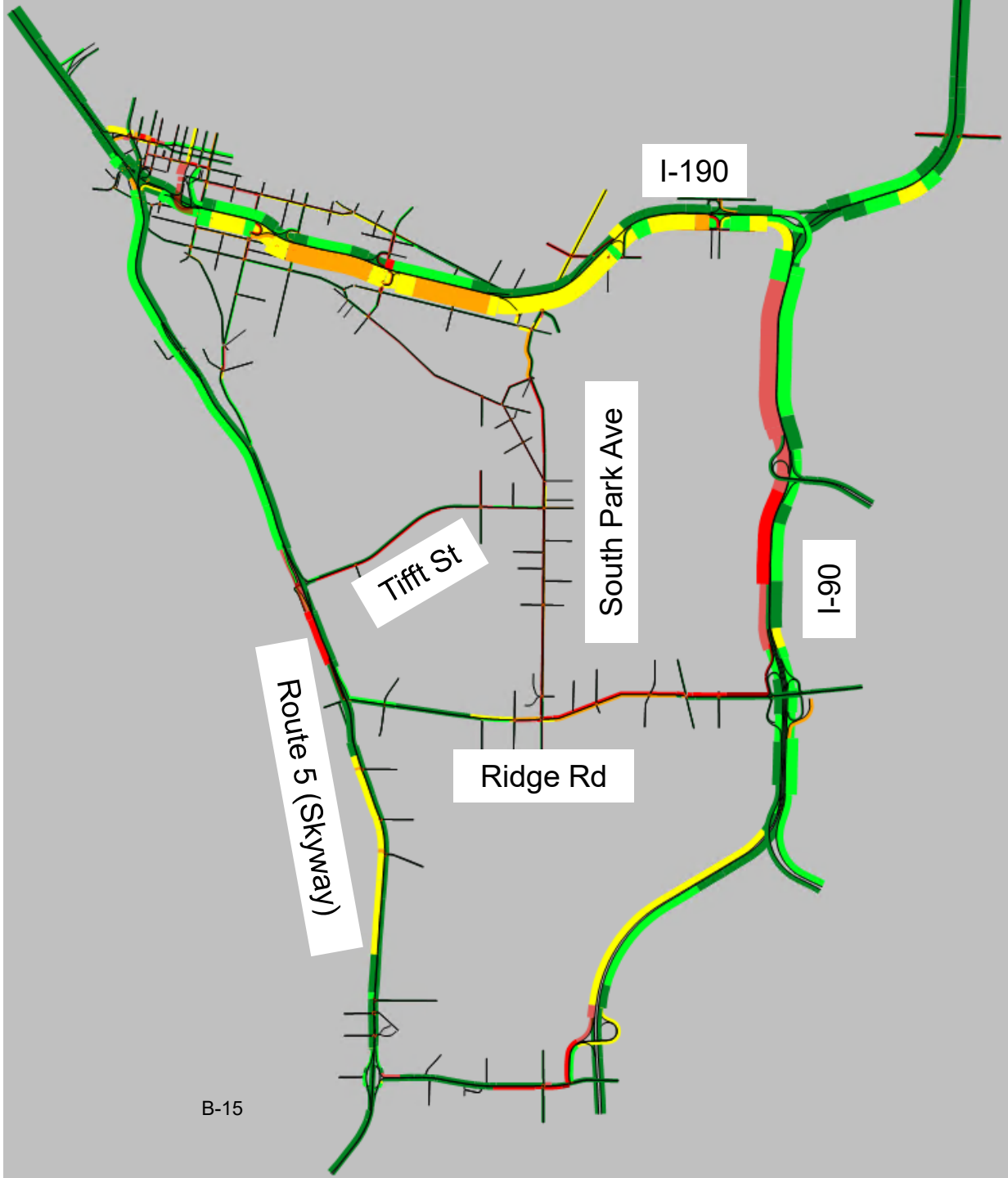
Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

Build (2025) Alternative 2 AM



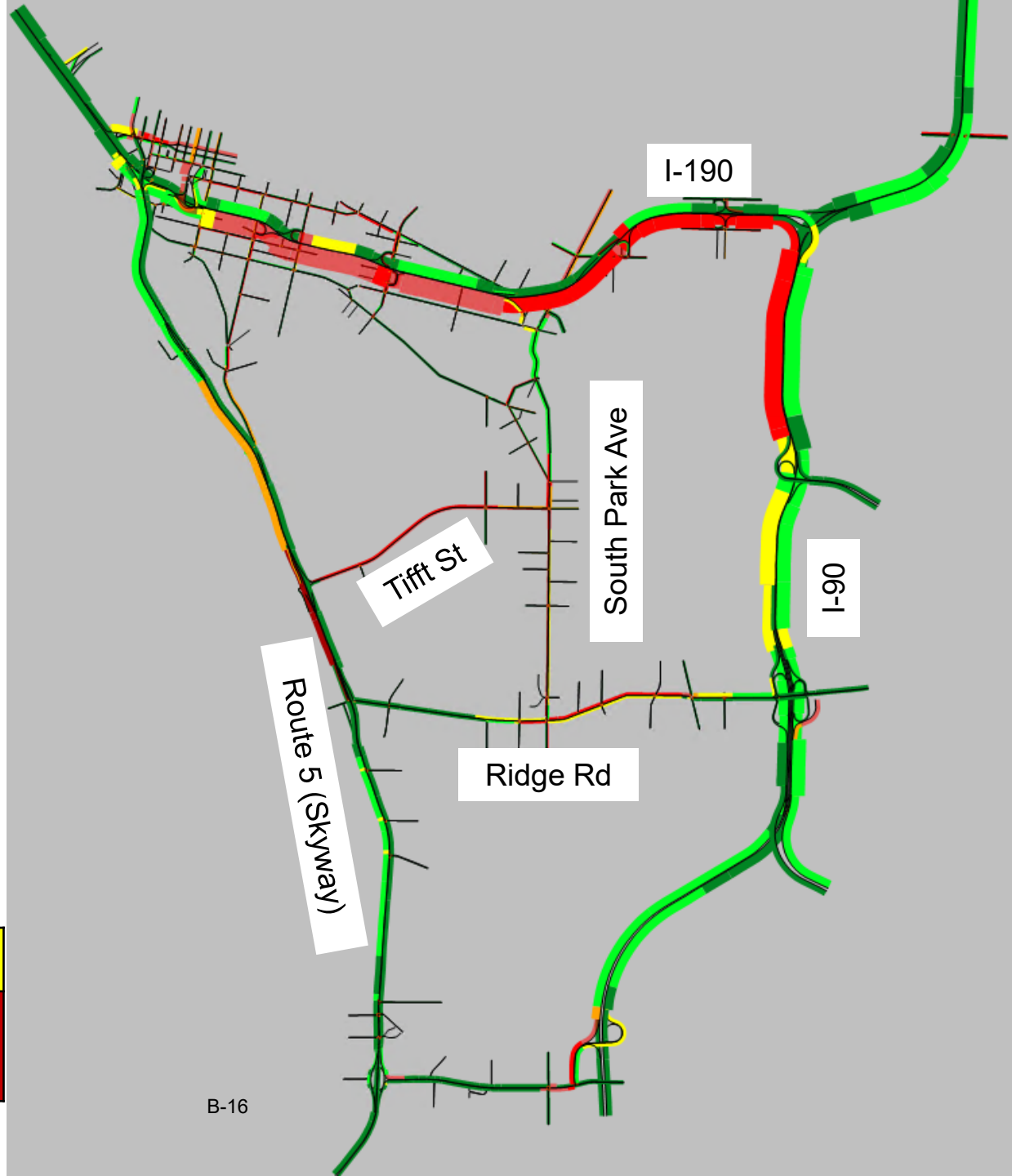
Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

Existing (2017) PM



Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

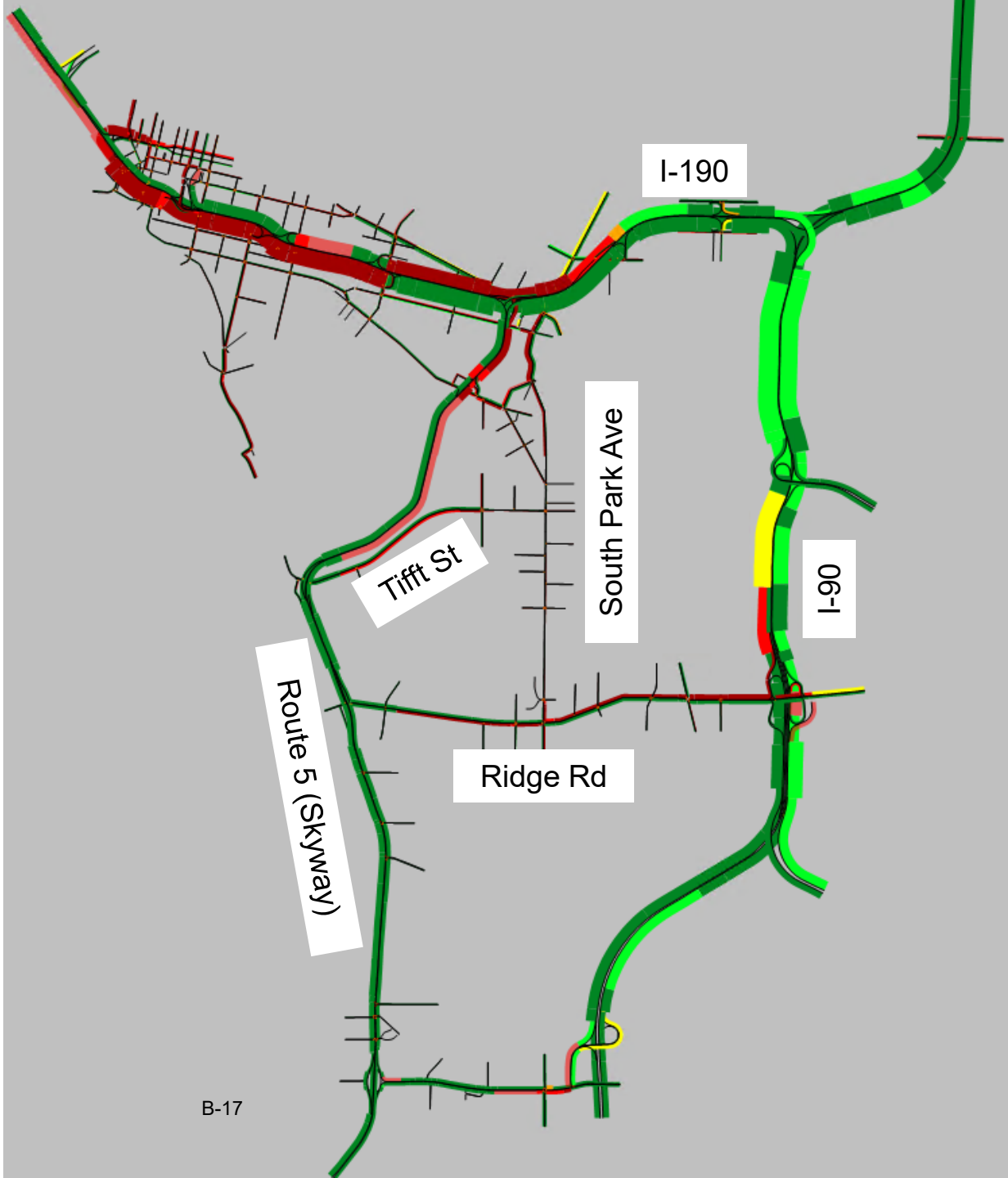
No Build (2025) PM



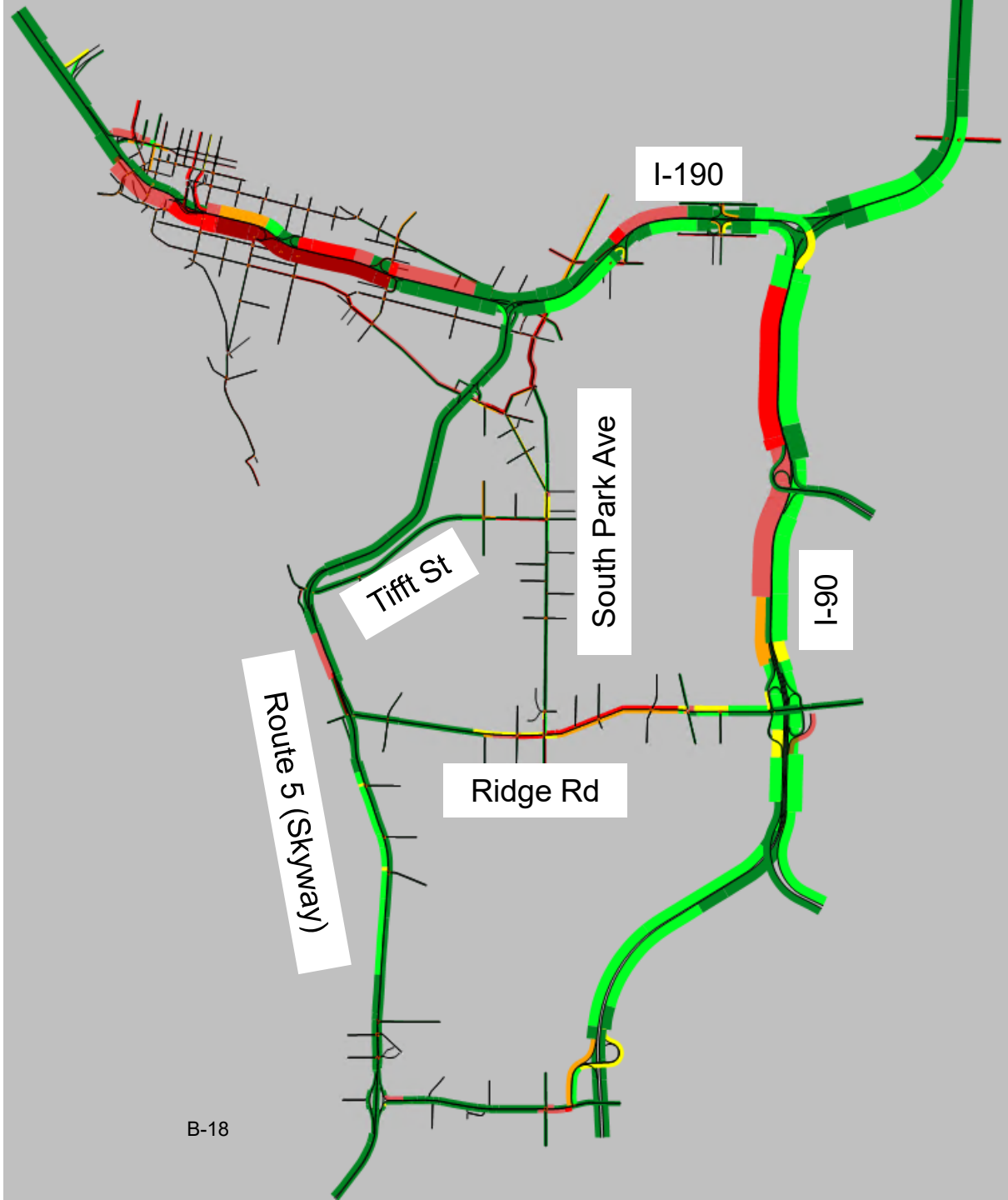
Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

Build (2025) Concept I without I-190 Improvements PM

Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

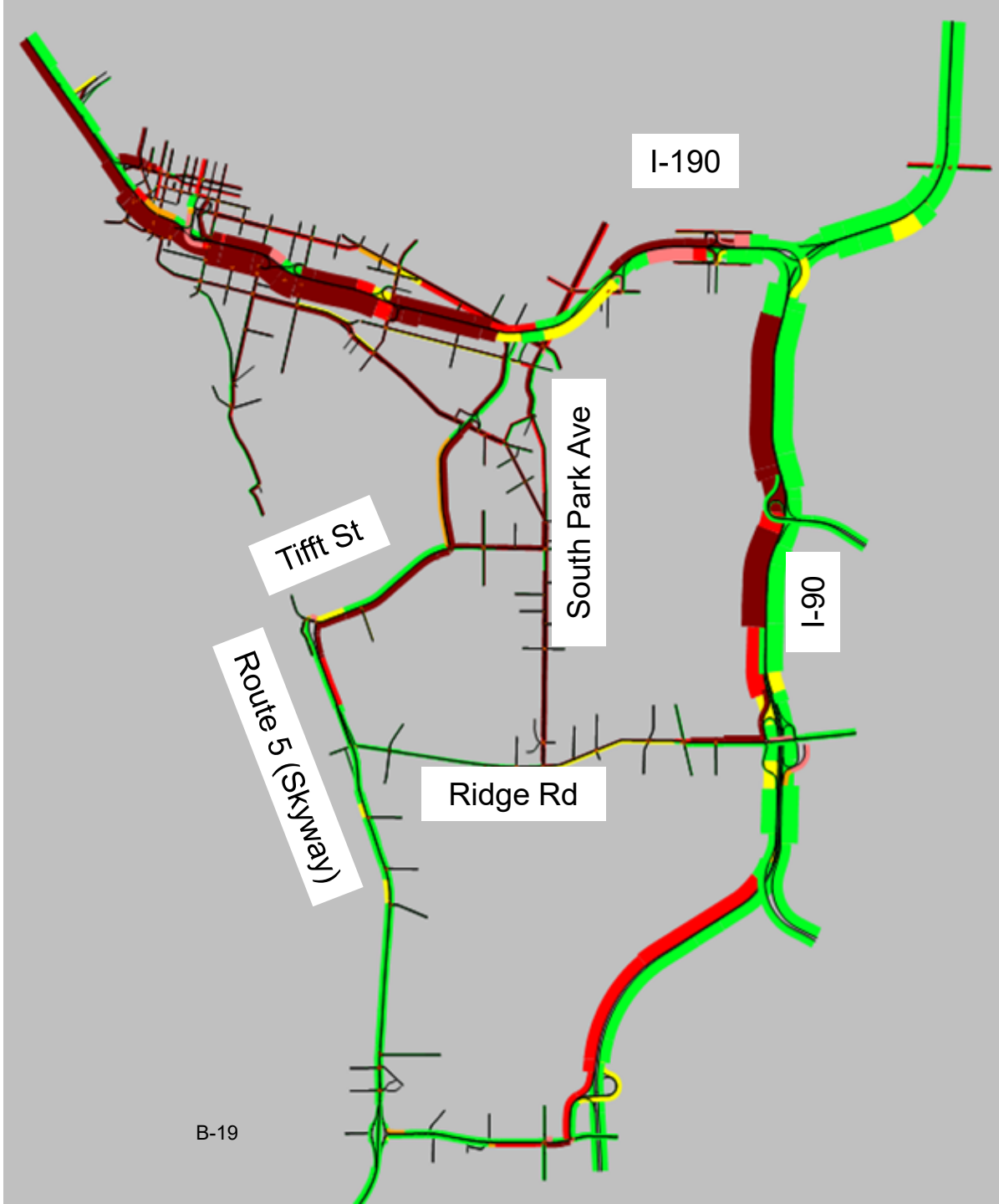


Build (2025) Concept I with I-190 Improvements PM



Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

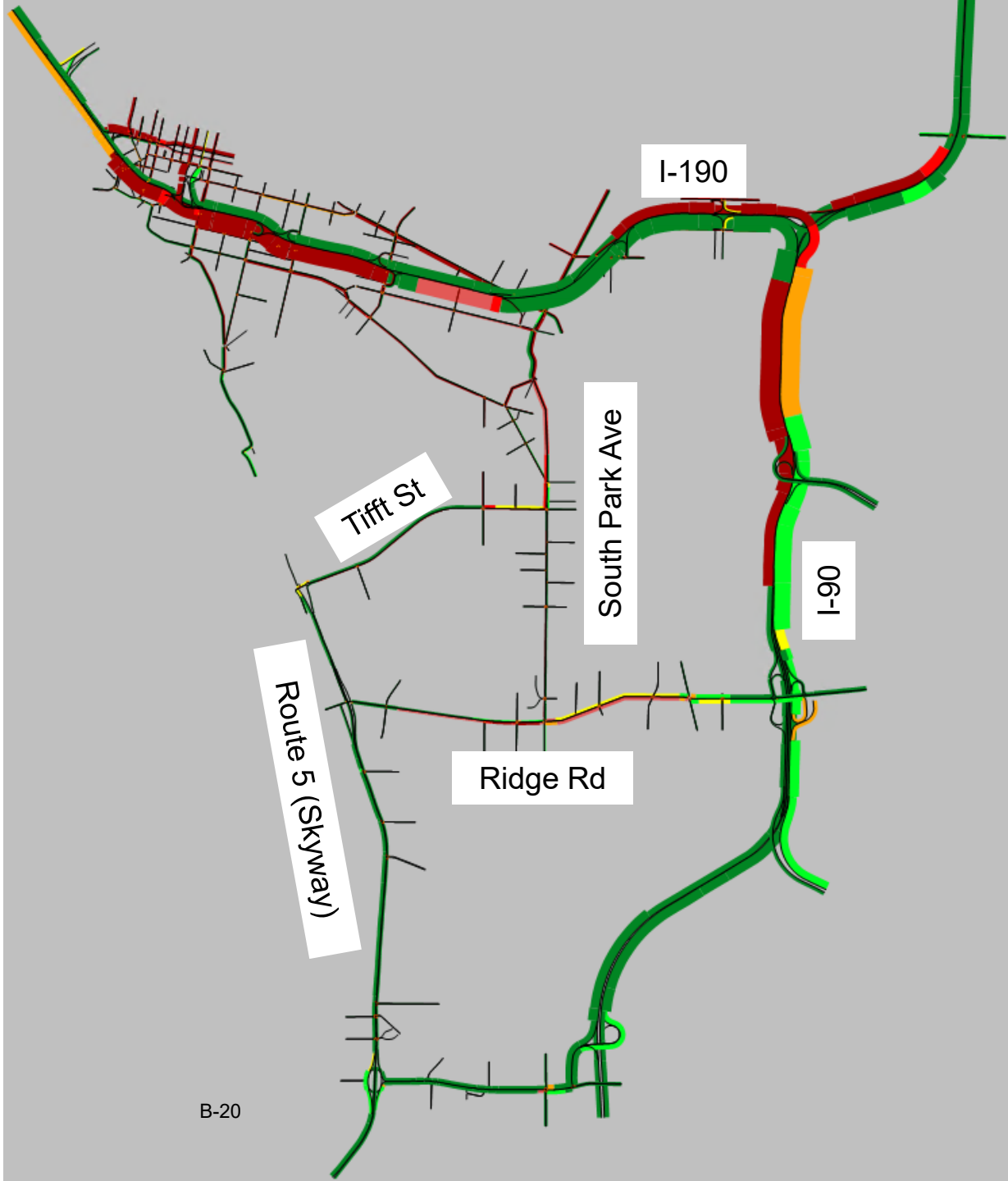
Build (2025) Concept J PM



Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

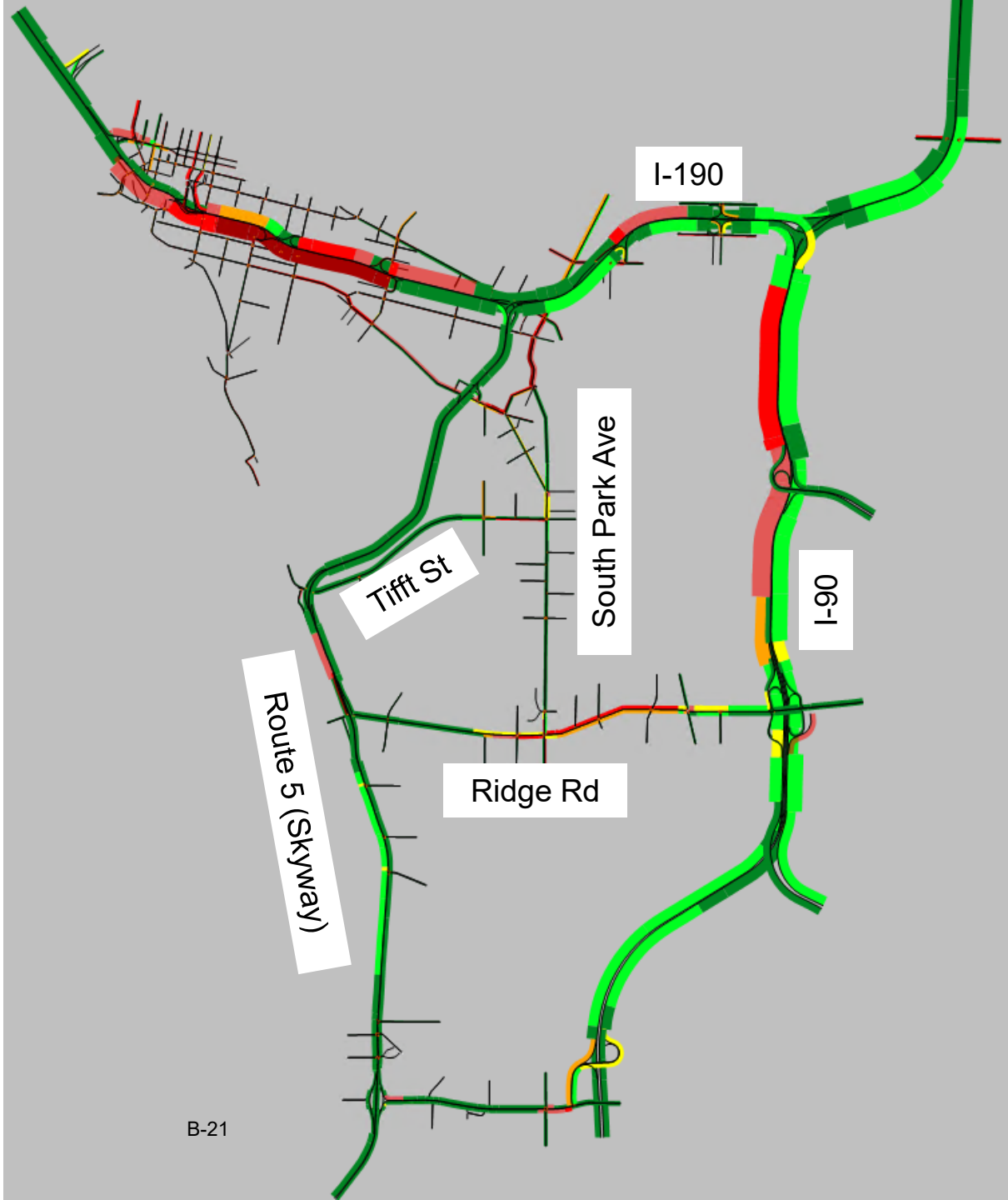
Build (2025) Concept K PM

Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl

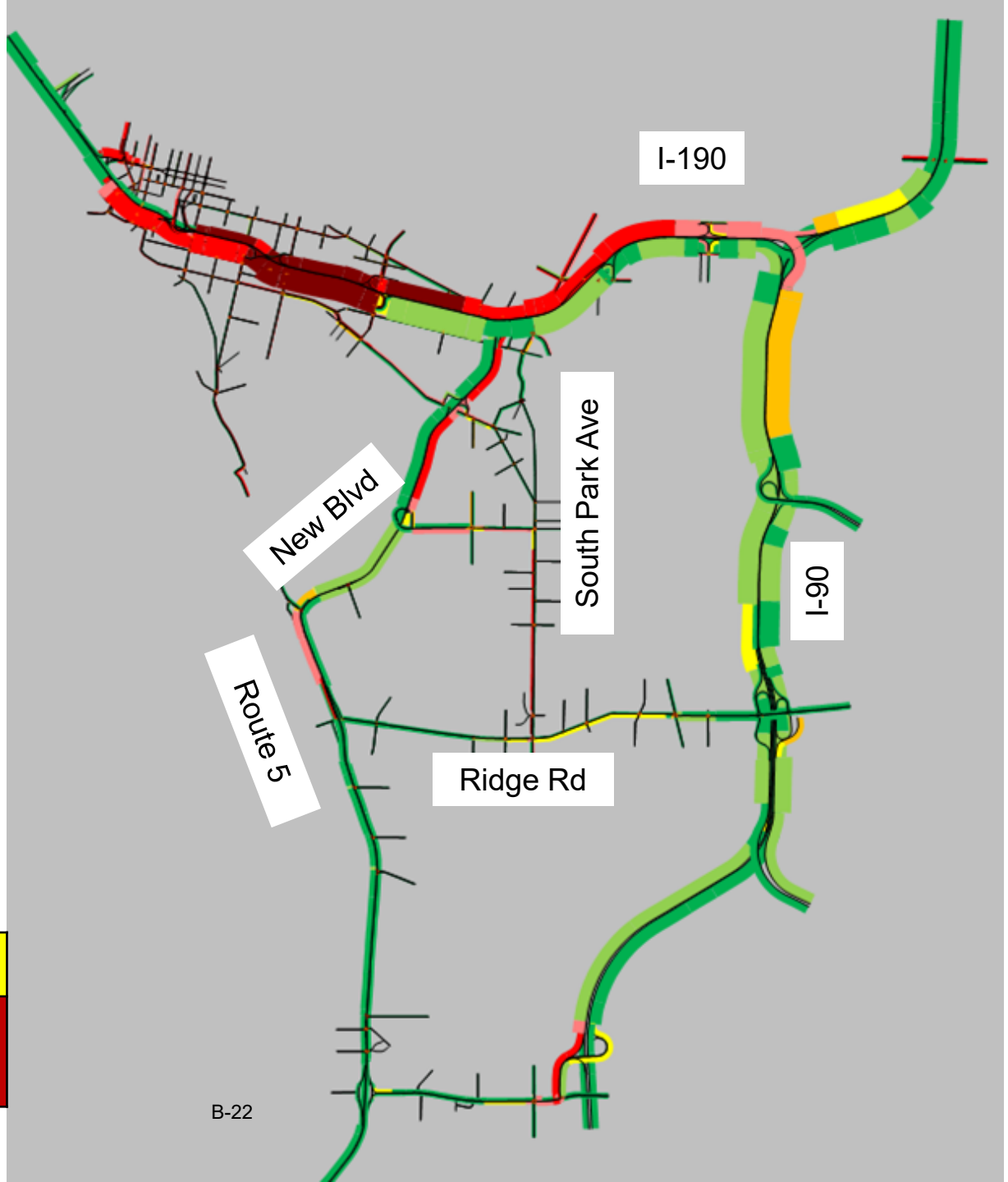


Build (2025) Alternative 1 PM

Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl



Build (2025) Alternative 2 PM



Legend	LOS A-B	LOS C	LOS D
LOS E	LOS F 45-90 vpmpl	LOS F 90-155 vpmpl	LOS F >155 vpmpl