

I-76 & Bridge Street INTERCHANGE



Transportation

Technical Report

Table of contents

	Page
1. Introduction	3
1.1 Project Description	3
1.2 Summary of Results	4
1.3 Applicable Guidance and Analysis Tools	5
2. Existing Conditions	6
2.1 Existing Roadway Facilities	6
2.2 Existing System Connectivity and Access	9
2.3 Existing Transit Service	9
2.4 Existing Pedestrian and Bicycle Facilities	10
2.5 Existing Truck and Rail Freight Facilities	11
2.6 Safety Assessment of Existing Conditions	13
2.7 Data Collection Methodology	16
2.8 2013 Existing Conditions Operational Analysis	18
2.9 Summary	35
3. Description of Alternatives	35
3.1 No-Action Alternative	35
3.2 Action Alternatives	35
4. Impact Analysis	38
4.1 Impacts Assessment Methodology	38
4.2 Analysis Tools	39
4.3 Results of the Traffic Analysis	39
4.4 Impacts to System Connectivity	75
4.5 Impacts to Transit Service	75
4.6 Impacts to Pedestrian and Bicycle Facilities	75
4.7 Impacts to Truck and Rail Freight Facilities	75
4.8 Impacts to Safety	76
5. Mitigation	76
Appendices	77

Appendix A: Traffic Operations Methodology Memorandum
 Appendix B: Methodology for Developing Future Projected Traffic Volumes
 Appendix C: Vehicle Classification Data
 Appendix D: Safety Assessment
 Appendix E: HCS Reports

Exhibits

Exhibit 1-1. Study Area	3
Exhibit 2-1. Aerial View of I-76 and Bromley Lane Interchange	7
Exhibit 2-2. Aerial View of I-76 and Bridge Street Intersection	8
Exhibit 2-3. Aerial View of I-76 and Baseline Road Interchange	9
Exhibit 2-4. RTD Bus Route 120	10

Exhibit 2-5.	Trails in the Study Area	11
Exhibit 2-6.	Truck Routes in the Study Area	12
Exhibit 2-7.	Truck Percentages	13
Exhibit 2-8.	I-76 Urban Crashes	15
Exhibit 2-9.	I-76 Rural Crashes	15
Exhibit 2-10.	Data Collection Locations	17
Exhibit 2-11.	Transportation Network Element LOS Definitions	19
Exhibit 2-12.	Freeway LOS Examples	20
Exhibit 2-13.	Existing Daily and Peak-Hour Traffic Volumes at Baseline Road	21
Exhibit 2-14.	Existing Daily and Peak-Hour Traffic Volumes at Bridge Street	22
Exhibit 2-15.	Existing Daily and Peak-Hour Traffic Volumes at Bromley Lane	23
Exhibit 2-16.	Existing Peak-Hour Turning Movement Counts	24
Exhibit 2-17.	Existing I-76 Level of Service, AM Peak	25
Exhibit 2-18.	Existing I-76 Level of Service, PM Peak	26
Exhibit 2-19.	2013 Existing Freeway Element LOS	27
Exhibit 2-20.	2013 Existing Conditions Baseline Road Intersection LOS	28
Exhibit 2-21.	2013 Existing Conditions Bridge Street Intersection LOS	29
Exhibit 2-22.	2013 Existing Conditions Bromley Lane Intersection LOS	30
Exhibit 2-23.	Interchange Delay Area Boundaries	32
Exhibit 2-24.	2013 Existing Conditions Interchange Area Delay	33
Exhibit 2-25.	Peak Hour Travel Time Routes	34
Exhibit 2-26.	2013 Existing Conditions Travel Times	34
Exhibit 3-1.	Preferred Alternative: Two-Roundabout Interchange Design	36
Exhibit 3-2.	Alternative 2: Four-Roundabout Interchange Design	37
Exhibit 3-3.	Alternative 3: Three-Roundabout Interchange Design	38
Exhibit 4-1.	2035 No-Action Alternative Daily and Peak-Hour Traffic Volumes at Baseline Road	41
Exhibit 4-2.	2035 No-Action Alternative Daily and Peak-Hour Traffic Volumes at Bridge Street	42
Exhibit 4-3.	2035 No-Action Alternative Daily and Peak-Hour Traffic Volumes at Bromley Lane	43
Exhibit 4-4.	2035 No-Action Alternative Peak-Hour Turning Movement Counts	44
Exhibit 4-5.	2035 No-Action Alternative AM LOS	45
Exhibit 4-6.	2035 No-Action Alternative PM LOS	46
Exhibit 4-7.	2035 No-Action Alternative Freeway Element LOS	48
Exhibit 4-8.	2035 No-Action Alternative Baseline Road Intersection LOS	49
Exhibit 4-9.	2035 No-Action Alternative Bridge Street Intersection LOS	50
Exhibit 4-10.	2035 No-Action Alternative Bromley Lane Intersection LOS	52
Exhibit 4-11.	2035 No-Action Alternative Interchange Area Delay	53
Exhibit 4-12.	2035 No-Action Alternative Travel Times*	53
Exhibit 4-13.	2035 Action Alternatives Daily and Peak-Hour Traffic Volumes at Baseline Road	56
Exhibit 4-14.	2035 Action Alternatives Daily and Peak-Hour Traffic Volumes at Bridge Street	57
Exhibit 4-15.	2035 Action Alternatives Daily and Peak-Hour Traffic Volumes at Bromley Lane	58
Exhibit 4-16.	2035 Action Alternatives Peak-Hour Turning Movement Counts	59
Exhibit 4-17.	2035 Action Alternatives Peak-Hour Turning Movement Counts at Bridge Street Interchange	60
Exhibit 4-18.	2035 Action Alternatives AM LOS	61
Exhibit 4-19.	2035 Action Alternatives PM LOS	62
Exhibit 4-20.	2035 Action Alternatives Freeway Element LOS	64
Exhibit 4-21.	2035 Action Alternatives Baseline Road Intersection LOS	65
Exhibit 4-22.	2035 Action Alternatives Bridge Street Intersection LOS	66
Exhibit 4-23.	2035 Action Alternatives, Four-Roundabout Alternative LOS Results	68
Exhibit 4-24.	2035 Action Alternatives, Three-Roundabout Alternative LOS Results	69
Exhibit 4-25.	2035 Action Alternatives, Two-Roundabout Alternative LOS Results	70
Exhibit 4-26.	2035 Action Alternatives Bromley Lane Intersection LOS	71
Exhibit 4-27.	2035 Action Alternatives Interchange Area Delay	72
Exhibit 4-28.	2035 Action Alternative Travel Time Routes	73
Exhibit 4-29.	2035 Action Alternatives Travel Times	73
Exhibit 4-30.	2035 Action Alternatives, Other Improvements	74

List of acronyms and abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average daily traffic
Brighton	City of Brighton
CDOT	Colorado Department of Transportation
DRCOG	Denver Regional Council of Governments
EA	Environmental Assessment
FHWA	Federal Highway Administration
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
I-76	Interstate 76
IAR	Interchange Access Request
LOSS	Level of Service of Safety
MP	Milepost
MVRTP	Metro Vision Regional Transportation Plan
RTD	Regional Transportation District
SH 52	State Highway 52
TMC	Turning movement count
US 36	US Highway 36
US 85	US Highway 85
US 287	US Highway 287

This page intentionally left blank.

TRANSPORTATION SUMMARY

The City of Brighton (Brighton) is transforming from a rural, agricultural town to a suburban community, placing demands on the existing transportation network. Brighton, in collaboration with the Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA), has identified current issues with traffic distribution in eastern Brighton that are expected to worsen as development continues around Interstate 76 (I-76)—a key connection between Brighton and Denver.

The I-76 and Bridge Street Interchange Project was initiated in 2013 to identify and implement an appropriate solution to address these issues. Based on the System-Level Study completed in September 2013, the City of Brighton has demonstrated that an interchange at I-76 and Bridge Street will meet the purpose and need of the project and is the most reasonable and feasible option for addressing current and anticipated issues. An interchange at I-76 and Bridge Street will provide access and regional connectivity that cannot be achieved by other planned, committed, or possible alternate routes. Introducing a new interchange at Bridge Street will provide an additional option to access I-76. This will result in a better distribution of local trips, while also alleviating high traffic volumes currently circulating on frontage roads and other surface streets.

This Technical Memorandum evaluates the existing and anticipated transportation impacts in the vicinity of I-76 and Bridge Street that might occur due to changes to the current transportation system. By analyzing the current and future impacts of various alternatives—from a no-action alternative, under which the system remains the same, to various action alternatives—this Environmental Assessment (EA) identifies a Preferred Alternative that will improve the transportation system.

The Preferred Alternative includes one six-legged roundabout on either side of I-76. The design has minimal right-of-way impacts and will not adversely impact traffic operations on I-76 in the study area. By providing additional points of access to I-76, the proposed interchange should reduce congestion and delays at surrounding intersections and improve safety system-wide.

This page left blank intentionally.

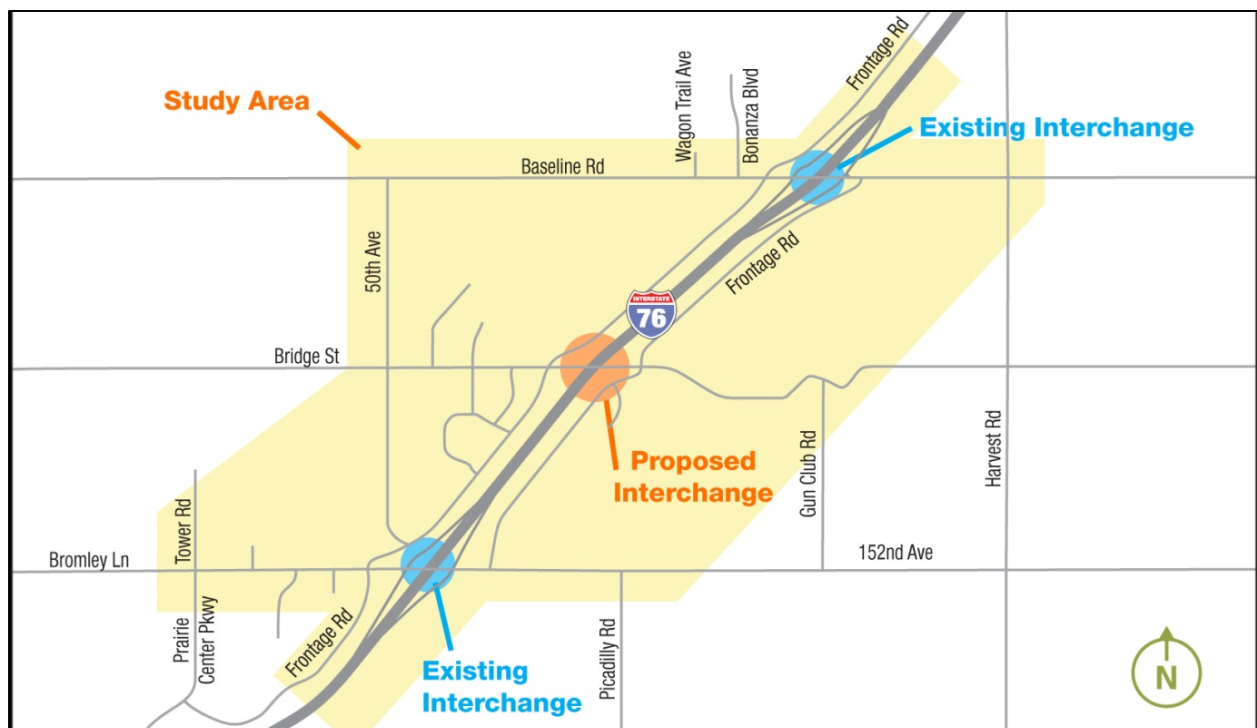
1. Introduction

The I-76 & Bridge Street Interchange Environmental Assessment is a joint effort among the City of Brighton, the FHWA, and CDOT. The intent of this EA is to identify potential impacts of the proposed interchange on the human and natural environment.

1.1 Project Description

The City of Brighton proposes to construct an interchange at Bridge Street and I-76 in eastern Brighton. The project is located in Adams County, Colorado, approximately 25 miles northeast of Denver. The study area is defined as the area surrounding the Bridge Street overpass over I-76, including the frontage roads and interchanges along I-76 from Baseline Road to Bromley Lane (see Exhibit 1-1).

Exhibit 1-1. Study Area



The purpose of the project is to increase local and regional east-west connectivity, reduce the amount of travel delay through the planning horizon year of 2035, and improve traffic flow and access in the study area. The project is needed because of a lack of local and regional connectivity, current and projected congestion and associated travel delay, and poor current and future traffic flow on the frontage roads.

Bridge Street is a regionally significant roadway, according to the Denver Regional Council of Governments' (DRCOG's) 2035 Metro Vision Regional Transportation Plan (MVRTP). Interchange connections from state highways must be made to regionally significant roadways that serve regional travel purposes and provide access to regional destinations. Bridge Street currently connects to US Highway 85 (US 85), US Highway 36 (US 36), and US Highway 287 (US 287). Thus, the proposed interchange connection at I-76 fits the character of the roadway and is supported by the following regional and local planning documents:

- DRCOG's 2035 MVRTP

- 2012 Adams County Transportation Plan
- Adams County's Top-Ten Ranked Urbanized Road Priority Projects
- City of Brighton's capital improvement funding plan for 2014–2018, with \$9.5 million allocated for the project in 2016

1.2 Summary of Results

1.2.1 2013 Existing Conditions

The Brighton area currently has two interchanges along I-76: one at Bromley Lane and one at Baseline Road, as shown in **Error! Reference source not found.** The results of the existing traffic operational analysis indicate that the Bromley Lane interchange is the primary entry/exit point from I-76. This is expected, since it is located farther south, making it closer to Denver and Aurora (large employment centers and principal destinations for many trip purposes). Under existing traffic conditions, the intersections in the areas of the Bromley Lane and Baseline Road interchanges are beginning to show signs of congestion and increased queuing, which impact operations and ultimately will result in impacts to safety. As traffic volumes continue to increase in the future, further degradation of traffic operations and safety in the study area is expected.

1.2.2 2035 Horizon Year Summary (No-Action Conditions)

By 2035, traffic volumes at both Bromley Lane and Baseline Road will increase to the point where traffic operations along the arterials will be unacceptable. The operations and safety of traffic using the mainline lanes of I-76 may be impacted by queuing on the ramps and an increase in weaving maneuvers due to the increase in the number of vehicles using the facility. Under No-Action conditions, significant improvements will be required at the Bromley Lane interchange, including expanding the existing structure to at least four lanes to resolve operational and safety issues that are expected to occur. Without the addition of the Bridge Street interchange, it is likely that the Bromley Lane interchange will need to be reconstructed no later than the year 2025.

1.2.3 Action Alternative Summary

The addition of a new interchange at Bridge Street will provide local travelers with an additional option to access I-76. This will result in a better distribution of local trips and will alleviate high traffic volumes that are currently circulating on frontage roads and other surface streets to gain access to I-76 at the Bromley Lane and Baseline Road interchanges. The new interchange also will improve traffic operations, effectively extending the expected life span of the existing infrastructure at Bromley Lane until at least 2030 and possibly even later, depending on actual traffic volumes that alter their patterns to use the new interchange at Bridge Street. The analysis indicates the projected traffic volumes at the new Bridge Street interchange will remain well below operational capabilities under all 2035 conditions, leaving adequate room for the interchange to attract even larger volumes away from the adjacent interchanges. In addition, congestion and travel delay in the overall study area is expected to be reduced in 2035 if an interchange is constructed at Bridge Street.

Finally, the addition of a new interchange will not have a negative impact on the overall safety of motorists in the study area. By attracting traffic away from the congested Bromley Lane interchange and local roadways, the interchange is expected to alleviate potential safety concerns. The ramp merge and diverge areas introduced by the new interchange create conflicts that did not exist before; however, they will be built to CDOT and AASHTO standards, so safety impacts should be average or expected. The roundabout concept that is recommended in the Preferred Alternative is expected to enhance safety benefits by minimizing crash severity.

1.3 Applicable Guidance and Analysis Tools

Several guidance and analysis tools were used in preparing travel demand forecasts and analyzing existing and expected traffic conditions in the study area. Prior to completing the traffic analysis, a methodology report was prepared for review by CDOT and FHWA that discussed tools to be used and measures of effectiveness to be reported. The models and measures are discussed in detail in a copy of the Traffic Operations Methodology Memorandum in Appendix A.

The facilities within the study area include local roadways and regional corridors, as shown in **Error! Reference source not found.** To satisfy the requirements of CDOT's 1601 policy directive and the Interchange Access Request (IAR), the study area is required to include one interchange in each direction along the interstate from the location of the proposed interchange. Based on the location of the proposed Bridge Street interchange, the adjacent interchanges are at Bromley Lane and Baseline Road. In addition, surface streets should be analyzed to the first signalized or major intersection beyond any interstate ramp junctions.

The Bridge Street overpass is approximately 1.25 miles north of the existing Bromley Lane/I-76 Interchange and approximately 1.5 miles south of the existing Baseline Road/I-76 Interchange. The current interchange spacing (approximately 2.5 miles between Bromley Lane and Baseline Road) is within accepted American Association of State Highway and Transportation Officials (AASHTO) guidelines.

Based on CDOT and FHWA requirements, the study area is bounded by Baseline Road on the north, Bromley Lane on the south, 50th Avenue and Tower Road on the west, and Picadilly Road and Harvest Road on the east. The area is comprised of land uses typically found in suburban areas, including residential and commercial to the west of I-76 and industrial land uses to the east of I-76.

2. Existing Conditions

An understanding of existing conditions experienced by users of I-76, Bridge Street, and adjacent arterials was developed through an existing conditions operational analysis. The following sections describe the current multi-modal transportation system within the study area, the assessment of existing safety conditions, existing traffic volumes and patterns, and the results of the operational analysis.

2.1 Existing Roadway Facilities

The following is a brief description of the roadways that are contained within the boundaries of the study area based on their classifications in the DRCOG Regional Travel Demand Model.

2.1.1 I-76

I-76 is a four-lane interstate highway with a depressed median. The highway connects I-70 to the west with I-80 to the east. I-76 also intersects I-25 just north of downtown Denver and US-85 just south of Brighton. I-76 is defined as an east-west highway even though its orientation through Brighton is north-south.

I-76 is classified as FW: "Interstate System Freeway Facility," according to the CDOT highway access code. The facility is located in flat and rolling terrain from the beginning of the segment on the south end of the study area to the Baseline Road interchange. The section of I-76 northeast of the Baseline Road interchange is considered "Rural Interstate."

Currently, there are full movement interchanges on I-76 in the study area at Bromley Lane and Baseline Road, with Bridge Street being grade separated over I-76. Additional full movement interchanges are located one and two miles to the south of Bromley Lane, at 144th Avenue and 136th Avenue, respectively. State Highway 52 (SH 52), the first interchange north of the study area, is a full movement interchange and is located six miles to the north of Baseline Road.

2.1.2 I-76 Frontage Roads

Two-lane frontage roads exist along both the east and west sides of I-76 between the Bromley Lane and Baseline Road interchanges. The West Frontage Road continues north of Baseline Road and south of Bromley Lane, but the East Frontage Road terminates at these roadways. The frontage roads allow traffic to circulate between the existing interchanges and Bridge Street, which does not have direct access to I-76.

2.1.3 Bromley Lane

Bromley Lane is a major east-west thoroughfare serving residential and commercial trips to Brighton (see Exhibit 2-1). Bromley Lane is classified as a multi-lane “Principal Arterial” west of I-76 and a two-lane “Collector” east of I-76. The existing Bromley Lane overpass at I-76 is two lanes wide. Bromley Lane currently has a high density of access locations in the vicinity of the I-76 interchange and to the west toward Tower Road. There are a total of 13 full- and partial-movement access locations between Tower Road and the East Frontage Road (approximately one mile). Picadilly Road is the first significant access location east of the East Frontage Road.

Bromley Lane provides full movement access to/from I-76 in the form of a standard diamond interchange (see Exhibit 2-1). Bromley Lane passes over I-76 and intersects at a roundabout intersection with the West Frontage Road west of the southbound on ramp. Bromley Lane intersects with the northbound exit on and off-ramps at a stop-controlled intersection. The intersection of Bromley Lane and the East Frontage Road is stop controlled.

Exhibit 2-1. Aerial View of I-76 and Bromley Lane Interchange



2.1.4 Bridge Street

Bridge Street is a two-lane, east-west “Principal Arterial” in the study area (see Exhibit 2-2). Bridge Street provides Brighton with direct access to I-25 and the northern portion of Thornton, as well as Broomfield and Boulder all to the west of I-76. The existing Bridge Street overpass at I-76 is two lanes wide, and there is no access to I-76 (see Exhibit 2-2). Bridge Street intersects with the West Frontage Road and East Frontage Road at stop-controlled intersections.

There are a total of seven significant access locations on Bridge Street within the study area between 50th Avenue and Gun Club Road, which is a distance of about one mile.

Exhibit 2-2. Aerial View of I-76 and Bridge Street Intersection

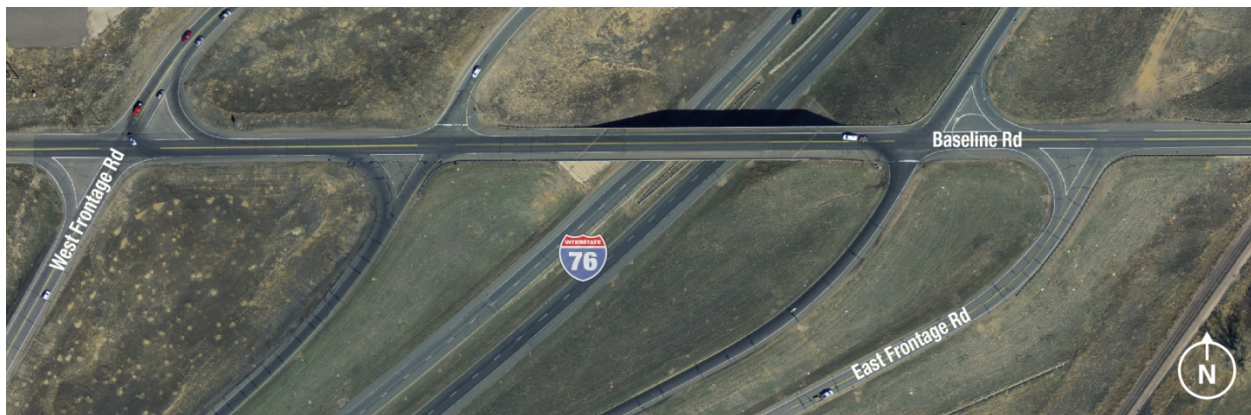


2.1.5 Baseline Road

Baseline Road is an east-west roadway that is classified as a two-lane “Minor Arterial” west of I-76, and a two-lane “Collector” east of I-76. The existing Baseline Road overpass at I-76 is two lanes wide. Baseline Road provides full movement access to/from I-76 in the form of a standard diamond interchange (see Exhibit 2-3). Baseline Road intersects with the West Frontage Road and East Frontage Road at stop-controlled intersections.

Baseline Road has a total of 10 access locations between 50th Avenue (to the west of I-76) and the East Frontage Road (approximately one mile). Harvest Road is the first significant access location east of the East Frontage Road.

Exhibit 2-3. Aerial View of I-76 and Baseline Road Interchange



2.1.6 50th Avenue

50th Avenue is a north-south roadway that is classified as a two-lane “Minor Arterial” between Baseline Road and the West Frontage Road near the Bromley Lane interchange. 50th Avenue provides direct access to large residential areas located just west of I-76 between Bromley Lane and Baseline Road. This arterial provides the shortest route for residents north of Bridge Street to access I-76 at the Bromley Lane interchange.

2.2 Existing System Connectivity and Access

North-south regional connectivity in the study area is limited to two access points to I-76, one at Bromley Lane and one at Baseline Road. This limited connectivity affects the mobility of regional trips, local trips, and emergency vehicles. Trips with origins or destinations along Bridge Street are forced to use the Bromley Lane and Baseline Road interchanges and other surface streets in the study area. This increases travel times (creating longer trip lengths due to out-of-direction travel) and traffic volumes at these interchanges and on the surface streets between the interchanges.

2.3 Existing Transit Service

No transit routes currently travel over the Bridge Street overpass; however, Regional Transportation District (RTD) Bus Route 120 and Bus Route R/RC/RX operate along Bridge Street, 50th Avenue, and Bromley Lane west of the proposed interchange (see Exhibit 2-4).

Exhibit 2-4. RTD Bus Route 120



Source: RTD, 2014

2.4 Existing Pedestrian and Bicycle Facilities

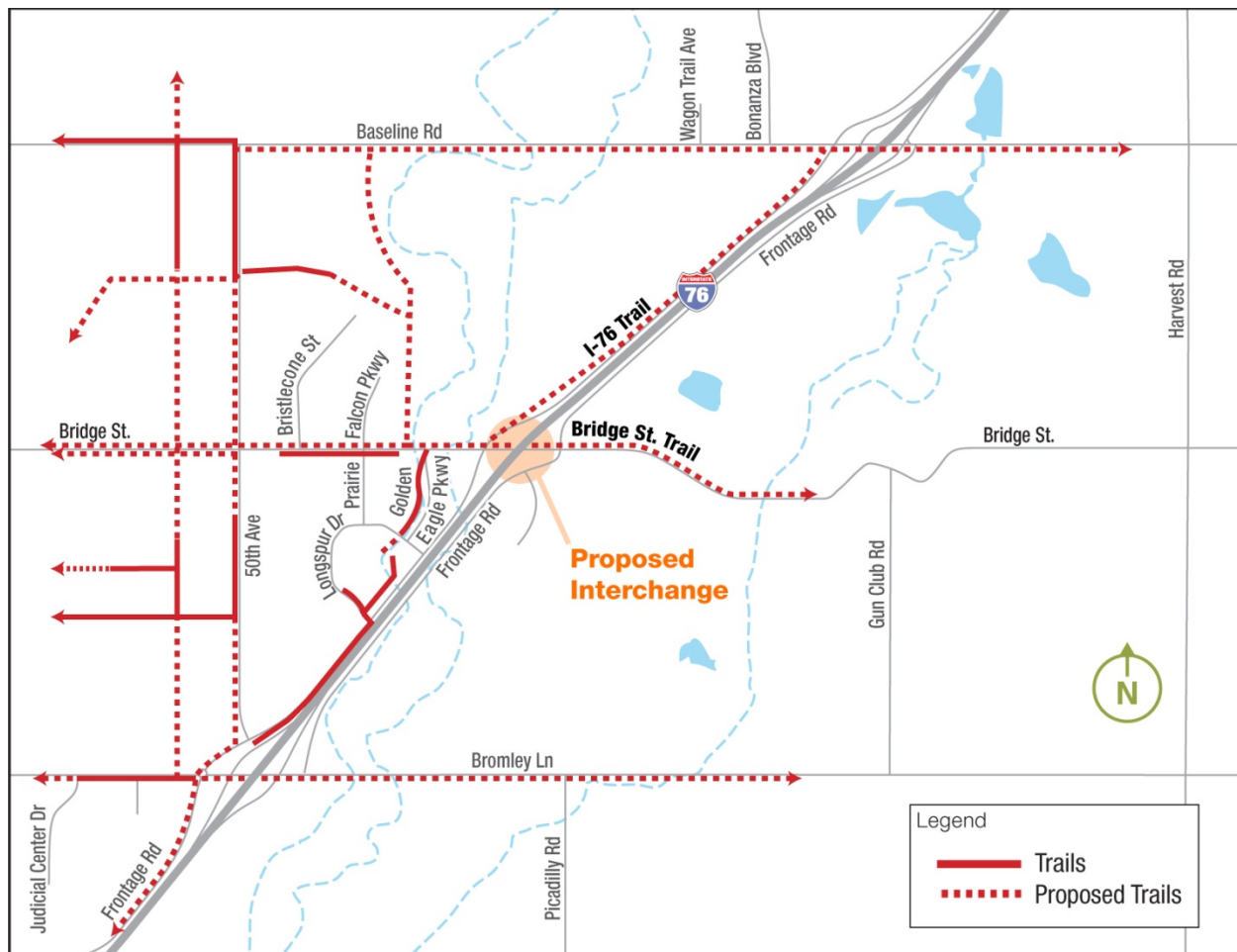
The City of Brighton requires new developments to construct sidewalks on lots located adjacent to major or minor arterials or collectors, or adjacent to primary transportation routes to a public or private school within the city limits. Thus, sidewalk connections within the study area are driven by development. This concurrent process has resulted in gaps within the existing sidewalk system where development has not occurred. Where they do exist, sidewalks generally are separated from roadways and range from five to 10 feet in width. A 10-foot-wide paved path extends from 50th Avenue to Larkspur Road and is located approximately 50 feet away from the West Frontage Road.

As indicated by Brighton’s sidewalk policy, sidewalks are a valuable asset to the community. Solutions for the project should not preclude pedestrian access. Sidewalk connectivity is expected to increase as new development occurs within the study area.

The City of Brighton Parks and Recreation Department developed the Greenways and Trails Plan with the mission, “to create an integrated system of high-quality multi-use trails, greenways, and bicycle and pedestrian routes serving the people of Brighton and the surrounding communities. The system should link to enhance the larger regional and statewide trail system.” There are no existing bike lanes through

the proposed interchange on Bridge Street or on the frontage roads. There are two planned, multi-use trails through the proposed interchange: one on I-76 and one on Bridge Street (see Exhibit 2-5).

Exhibit 2-5. Trails in the Study Area



Source: City of Brighton Greenways and Trails Plan

2.4.1 Bridge Street Trail

The planned Bridge Street Trail extends to I-76. It will have a concrete surface, and is expected to be funded by developers as properties are developed. Portions of the trail have been constructed as a 10-foot-wide paved path separated from the roadway.

2.4.2 I-76 Trail

The nine-mile I-76 Trail follows I-76 along its length from Baseline Road to 112th Avenue using the highway right of way, except for a one-mile portion shared with the proposed Prairie Center Parkway on-street trail. The proposed trail is planned to have a concrete surface.

2.5 Existing Truck and Rail Freight Facilities

The City of Brighton has designated the following truck routes within the study area: I-76, Bridge Street, Baseline Road, Bromley Lane, and 50th Avenue (see Exhibit 2-6).

Exhibit 2-6. Truck Routes in the Study Area

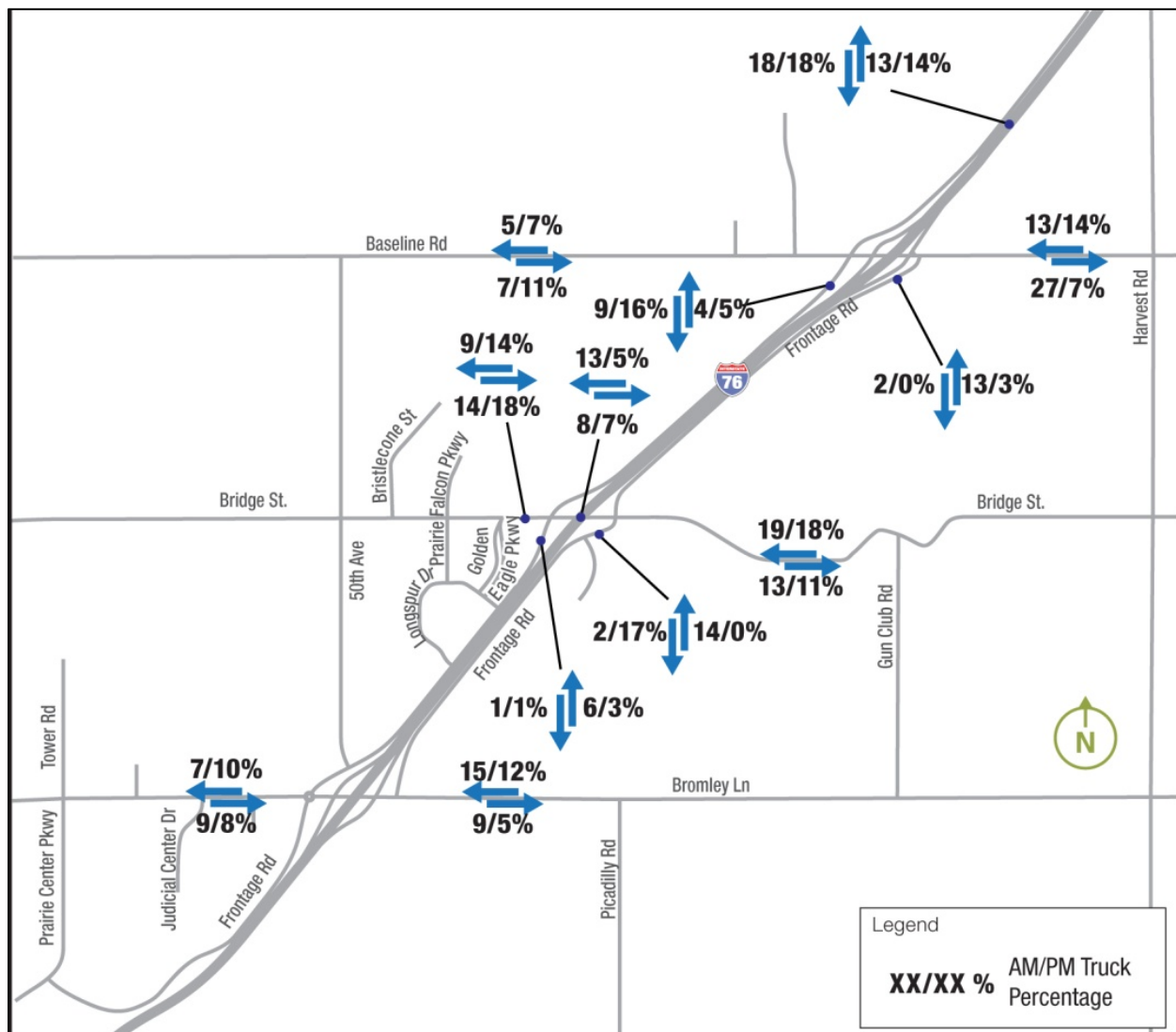


Source: City of Brighton, 2013

Vehicle classification data were collected for a 24-hour weekday period (see Appendix C). The truck traffic percentages in the study area range between 4 percent and 27 percent on all roadways. I-76 is a major shipping route for destinations to the north along I-80, which is consistent with the high percentage (27 percent) of truck traffic on I-76. I-76 east to Nebraska and north of Brighton has less residential development compared to the rest of Brighton and south to Denver. This causes the truck percentages to be relatively high. The observed percentages are likely to decrease due to the future influx of residential and commercial land uses and the associated increase in passenger car traffic volumes.

Truck percentages on all roads east of I-76 and on Bridge Street west of I-76 are consistently higher than 10 percent because these roads have lower overall volumes compared to other facilities in the area (see Exhibit 2-7). The data indicate trucks are using the frontage roads between Bridge Street and Baseline Road to gain access to/from I-76.

Exhibit 2-7. Truck Percentages



2.6 Safety Assessment of Existing Conditions

CDOT performed a safety assessment for I-76 between milepost (MP) 21.50 and MP 26.50 (just south of Bromley Lane to about one mile north of Baseline Road). The safety assessment can be found in Appendix D. The following sections summarize the findings of that report.

The concept of Level of Service of Safety (LOSS) uses qualitative measures that characterize safety of a roadway segment in reference to its expected performance and severity. If the LOSS predicted represents a normal or expected number of crashes at a specific level of average daily traffic (ADT), then the degree of deviation from the norm can be used to represent specific levels of safety. LOSS can be obtained for both total number of crashes and severity of crashes.

- LOSS I: Indicates a low potential for crash reduction
- LOSS II: Indicates a better-than-expected safety performance
- LOSS III: Indicates a less-than-expected safety performance
- LOSS IV: Indicates a high potential for crash reduction

2.6.1 Crash Summary

Five years of CDOT crash data (January 1, 2008, through December 31, 2012) was examined to locate crash clusters and identify crash types. In the study period, 198 crashes were reported along I-76 between MP 21.50 and MP 26.50. This includes the crashes that occurred within the interchange areas and also along the frontage roads. There were 24 crashes that caused injuries and two that resulted in fatalities on I-76.

2.6.2 I-76 Safety Performance

CDOT has developed a method to analyze safety performance that estimates normal or expected crash frequency for a range of ADTs among similar facilities. The safety performance is based on 10 years of historical data. Compared to similar four-lane urban freeways, I-76 within the analyzed area has an expected crash frequency. In some cases, it also has a less-than-expected crash frequency when a more granular segment is analyzed, such as between MP 25.15 and MP 26.50 (Baseline Road to Lochbuie).

CDOT analyzed the crash data for the I-76 mainline between January 1, 2008, and December 31, 2012 (a total of five years). The I-76 segment between MP 21.50 (south of the study area) and Bromley Lane (MP 22.41) had an accident frequency that was near expected safety performance (LOSS II/LOSS III) when compared to other four-lane urban freeways within Colorado.

The segment between Bromley Lane (MP 22.41) and Baseline Road (MP 25.15) had an accident frequency that was better than expected (LOSS II). The segment between Baseline Road (MP 25.15) and MP 26.50 (north of the study area) had a better-than-expected safety performance and a low potential for accident reduction (LOSS I/LOSS II) when compared to other four-lane rural interstates within Colorado.

2.6.3 I-76 Recent Improvements

Cable rail was installed between Bromley Lane and Baseline Road in early 2013 as a safety improvement project. This area covers where a fatal head-on crossover collision occurred in 2010. The entire stretch of I-76 within the study segment now has median cable rail. Rumble strips were installed between Bromley Lane and Baseline Road in early 2013. The cable rail and rumble strips may serve to prevent or mitigate overturning vehicle crashes. Shoulder strips (inside/outside) are present along I-76 north of Bromley Lane. This should help reduce crashes caused by drivers who fall asleep at the wheel or inadvertently drift off the road.

Exhibit 2-8. I-76 Urban Crashes

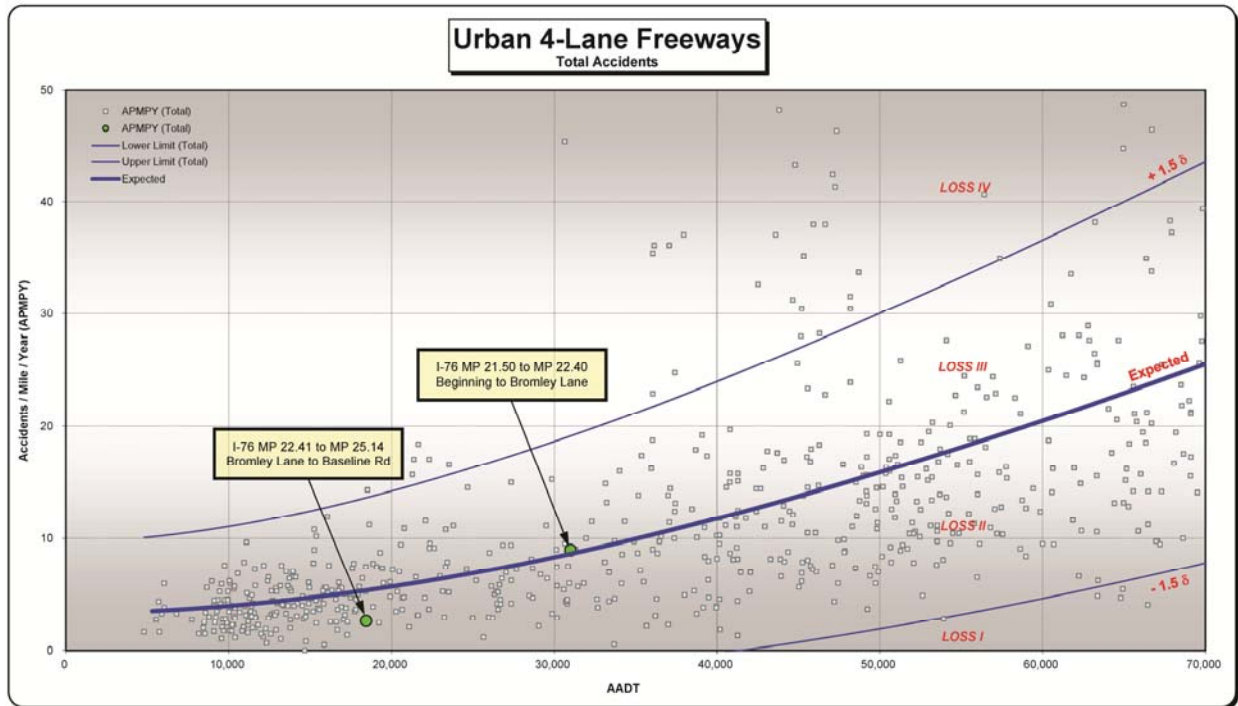
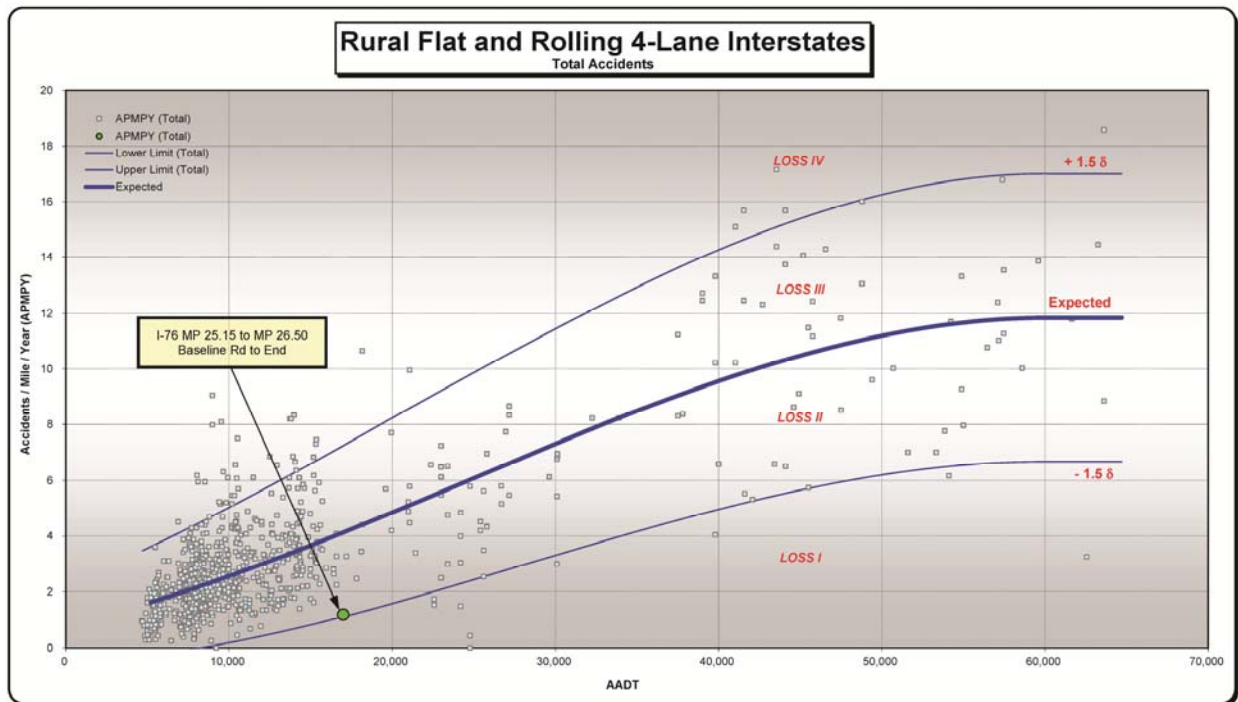


Exhibit 2-9. I-76 Rural Crashes



2.6.4 Safety of Non-Freeway Facilities

I-76 and Bromley Lane/Baseline Road Ramps

CDOT analyzed the crash type for I-76 and Bromley Lane/Baseline Road ramps and the frontage roads and arterials. The results regarding the crash types are reported in the safety assessment; however, no significant patterns susceptible to correction were identified. There were no fatal crashes at these locations.

I-76 and Bromley Lane Interchange

The I-76 westbound ramp terminus with Bromley Lane had 18 crashes over the five-year study period, which is higher than expected for this type of intersection (LOSS IV). The I-76 eastbound ramp terminus with Bromley Lane had 22 crashes over the five-year study period, which is also higher than expected (LOSS IV). Recommended mitigation measures are addressed later in the report and could be considered as part of a separate safety improvement project.

I-76 and Baseline Road Interchange

No crash patterns were detected.

I-76 West Frontage Road

Accident frequency at Bromley Lane is higher than expected (LOSS III). The addition of the new roundabout in 2009 may have improved the situation, but more years of crash data are needed to make that determination.

Accident frequency at 50th Avenue is higher than expected (LOSS IV). Most of the crashes are related to vehicles turning from 50th Avenue onto the frontage road.

Accident frequency at Baseline Road is higher than expected (LOSS III/LOSS IV). Changes to this intersection will be outside the scope of the proposed interchange at Bridge Street. A separate safety project should be considered at this location.

I-76 East Frontage Road

No crash patterns were detected.

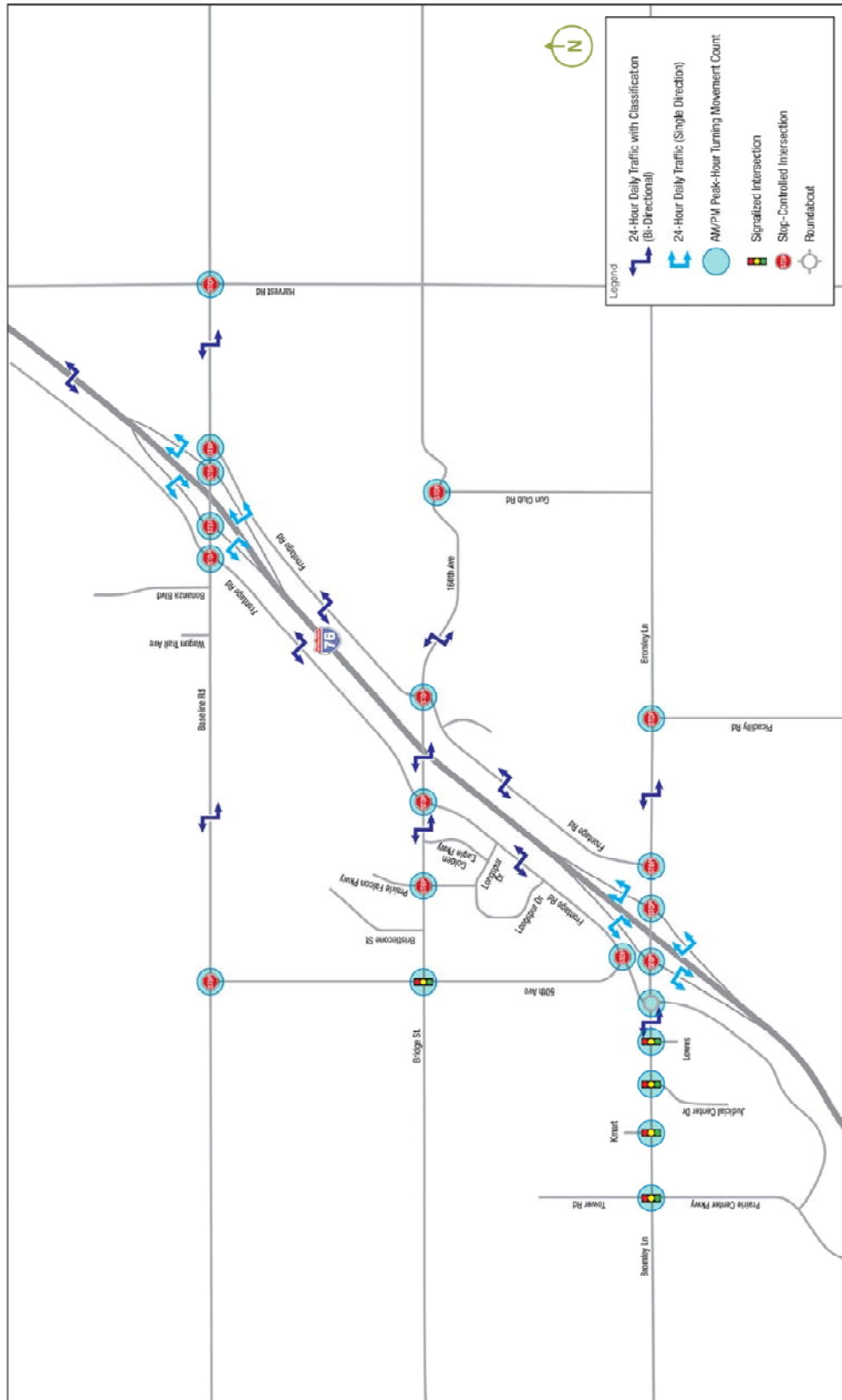
2.7 Data Collection Methodology

To complete the traffic analysis, an extensive traffic data collection effort was undertaken in April 2013. Data collected included:

- 24-hour ADT volumes
- Peak-hour (AM/PM) intersection turning movement counts (TMC)
- 24-hour classification data

All traffic data can be found in Appendix C. The locations and types of data collection efforts are shown in Exhibit 2-10.

Exhibit 2-10. Data Collection Locations



2.7.1 Average Daily Traffic Volumes

The ADT data were collected over a 24-hour weekday period to represent typical traffic volumes and avoid possible atypical traffic patterns that may occur on the weekends.

The ADT counts provide a baseline for evaluating existing 2013 conditions and are used to help calibrate the travel demand models for future years. Based on the ADT counts, the peak hour for traffic volumes was determined to be from 7:00 a.m. to 8:00 a.m. for the morning peak and from 5:00 p.m. to 6:00 p.m. for the evening peak. Daily and peak-hour volumes for the study area are shown in Exhibit 2-13, Exhibit 2-14, and Exhibit 2-15.

Baseline Road

The estimated capacity of a two-lane structure such as Baseline Road over I-76 is 34,000 vehicles (two-way volume) per day, or about 1,400 vehicles in a peak hour. The traffic volume data indicated that Baseline Road currently carries about 20 percent of the structure's daily capacity (Exhibit 2-13).

Bridge Street

The current traffic volumes on the Bridge Street overpass represent about 10 percent of the daily estimated capacity for the structure, and the peak-hour volumes are well below capacity (Exhibit 2-14).

Bromley Lane

Similar to Baseline Road, the two-lane structure over I-76 is currently carrying about 20 percent of the estimated daily capacity, but peak-hour volumes are about 70 percent of the hourly capacity levels (Exhibit 2-15).

I-76

Existing volumes on all segments of I-76 are well below the daily (192,000 vehicles per day for two-way traffic) and hourly capacity levels of a four-lane freeway.

Frontage Roads

The volumes indicate vehicles are using the frontage roads to circulate between Bridge Street and the adjacent interchanges to gain access to/from I-76. The section of the West Frontage Road between Bromley Lane and 50th Avenue carries 8,500 vehicles per day, but the volume north of 50th Avenue is only 2,300 vehicles per day. This indicates a high volume of traffic using 50th Avenue to travel north-south between the Bromley Lane interchange and the residential areas west of I-76 and south of Bridge Street.

50th Avenue

Traffic patterns on 50th Avenue are consistent with vehicles traveling to/from the I-76 interchange at Bromley Lane and to/from Bridge Street.

2.7.2 Peak-Hour Turning Movement Counts

Peak-hour TMCs are shown in Exhibit 2-16. The TMCs are used to help evaluate the operations of intersections under 2013 conditions. The existing TMCs also are used to develop future-year turning movement volumes. The TMC data were collected between the hours of 7:00 a.m. and 8:00 a.m. and from 5:00 p.m. to 6:00 p.m. on a Wednesday to represent typical weekday traffic volumes. The peak hours when TMC's would be affected were identified by Brighton staff based on their familiarity with traffic conditions in the area.

2.8 2013 Existing Conditions Operational Analysis

An operational analysis was completed for the 2013 existing conditions based on the collected data and using Highway Capacity Software (HCS). A detailed discussion on the methodologies and analysis tools

used to complete the evaluation of existing and all future conditions can be found in the Traffic Operations Methodology Memorandum in Appendix A. In general, the latest version of HCS was used to evaluate all elements of the transportation network. The overall results of the operational analysis are described in more detail in the following sections. Detailed HCS reports are provided in Appendix E.

Traffic engineers define the quality of traffic flow on a roadway, or intersection congestion, as a level of service (LOS). LOS considers factors such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. The LOS is described by a letter designation from "A" to "F," with LOS A representing essentially uninterrupted flow with minimal delays and LOS F representing a breakdown of traffic flow with excessive congestion and delay. See Exhibit 2-11 for LOS definitions, and Exhibit 2-12 for examples of freeway LOS.

Exhibit 2-11. Transportation Network Element LOS Definitions

LOS	Intersections (sec/veh)			Freeway Elements (pc/mi/ln)	
Level	Signal Control	Stop Control (two-way and all-way)	Roundabout	Segments	Ramp Areas (merge/diverge)
A	0-10	0-10	0-10	0-11	0-10
B	10-20	10-15	10-15	11-18	10-20
C	20-35	15-25	15-25	18-26	20-28
D	35-55	25-35	25-35	26-35	28-35
E	55-80	35-50	35-50	35-45	>35
F	>80	>50	>50	>45	Demand Exceeds Capacity

Source: Highway Capacity Manual 2010

Exhibit 2-12. Freeway LOS Examples



LOS A



LOS B



LOS C



LOS D



LOS E



LOS F

Source: *Highway Capacity Manual 2010*

Exhibit 2-13. Existing Daily and Peak-Hour Traffic Volumes at Baseline Road

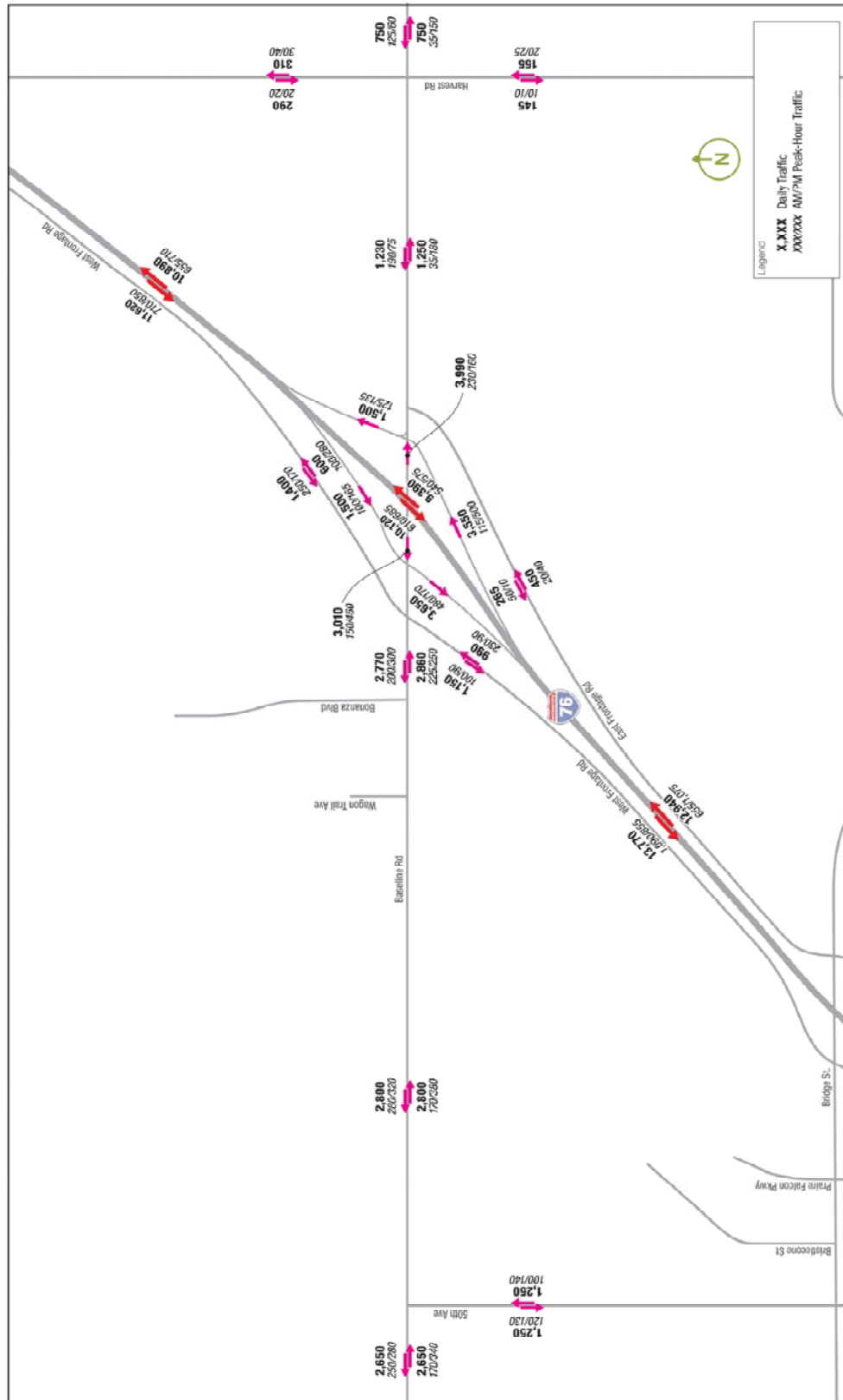


Exhibit 2-14. Existing Daily and Peak-Hour Traffic Volumes at Bridge Street

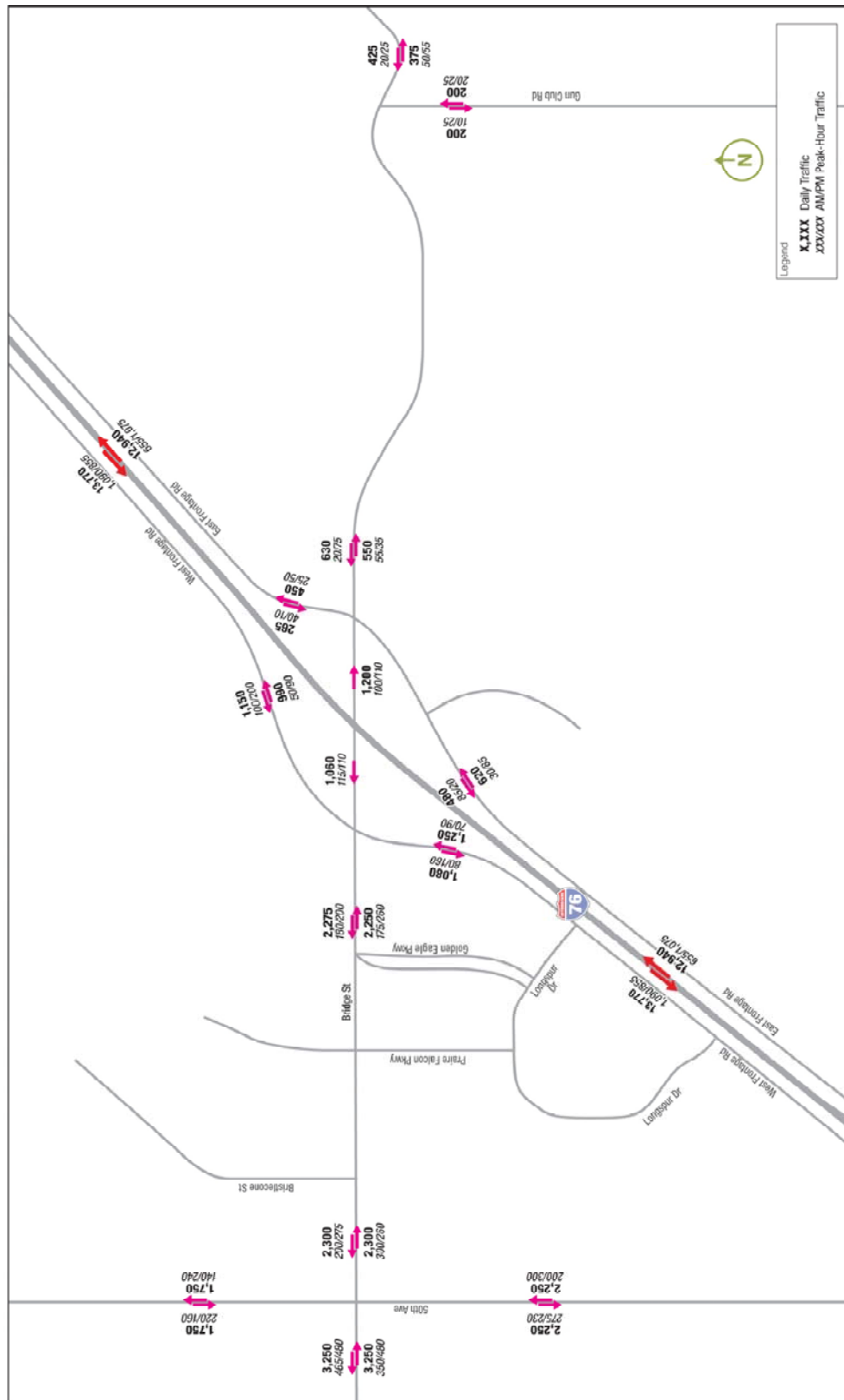


Exhibit 2-15. Existing Daily and Peak-Hour Traffic Volumes at Bromley Lane

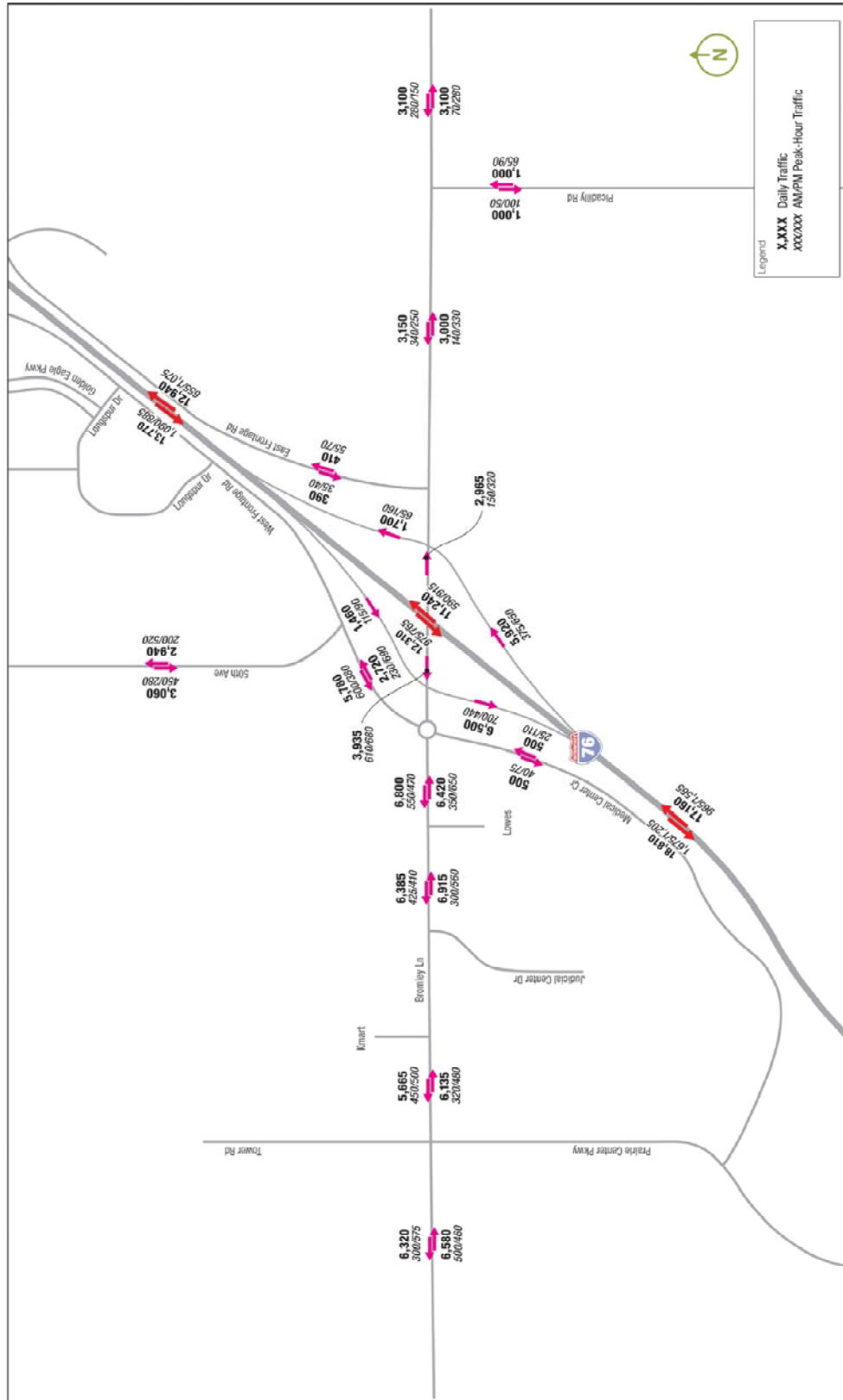
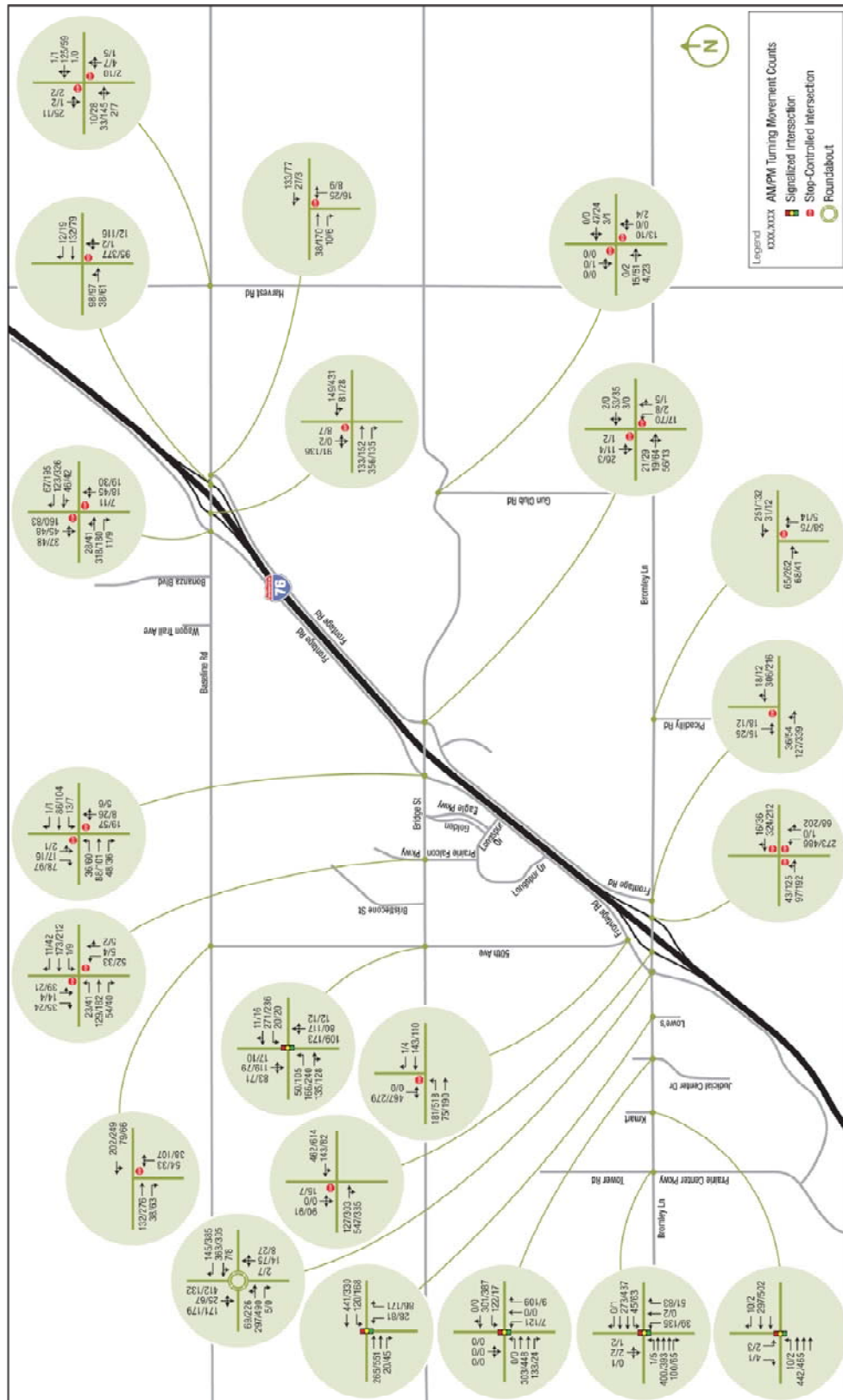


Exhibit 2-16. Existing Peak-Hour Turning Movement Counts



Source: Atkins 2013

Exhibit 2-18. Existing I-76 Level of Service, PM Peak



2.8.1 I-76 Freeway Elements

The results for the existing freeway elements operational analysis are shown in Exhibit 2-19.

- For existing conditions, all of the basic freeway mainline segments and ramp merge/diverge areas operate at LOS B or better during both peak hours.

Exhibit 2-19. 2013 Existing Freeway Element LOS

Freeway Element	Description	LOS (AM/PM)*	Density (pc/mi/ln) (AM/PM)
Mainline Segment			
North of Baseline Road	Eastbound	A/A	5.4/5.6
	Westbound	A/A	5.9/7.4
Under Baseline Road	Eastbound	A/A	4.4/4.6
	Westbound	A/A	5.1/6.0
Baseline Road to Bridge Street	Eastbound	A/A	5.3/8.6
	Westbound	A/A	9.1/7.5
Under Bridge Street	Eastbound	A/A	5.3/8.6
	Westbound	A/A	9.1/7.5
Bridge Street to Bromley Lane	Eastbound	A/A	5.3/8.6
	Westbound	A/A	9.1/7.5
Under Bromley Lane	Eastbound	A/A	4.8/7.3
	Westbound	A/A	8.2/6.7
South of Bromley Lane	Eastbound	A/B	7.8/12.4
	Westbound	B/A	14.0/10.5
Merge/Diverge Areas			
Baseline Road	Eastbound Diverge	A/B	6.1/10.4
	Eastbound Merge	A/A	4.1/4.3
	Westbound Diverge	A/A	6.0/7.8
	Westbound Merge	A/A	7.2/5.5
Bromley Lane	Eastbound Diverge	A/B	6.4/12.0
	Eastbound Merge	A/A	3.8/7.4
	Westbound Diverge	A/A	8.9/6.9
	Westbound Merge	B/A	13.0/10.0

*The LOS font color matches the colors used in the LOS figures for existing conditions.

2.8.2 Baseline Road Intersections

A summary of the operational analysis results for intersections along Baseline Road is shown in Exhibit 2-20.

- The majority of the intersection approaches along Baseline Road currently operate at LOS B or better.

The high volume of side-street traffic combined with single-lane approaches results in longer delays, queuing, and LOS E at the following locations:

- The southbound approach of the West Frontage Road during the AM and PM peak hours
- The northbound approach of the eastbound ramp intersection during the PM peak hour

Exhibit 2-20. 2013 Existing Conditions Baseline Road Intersection LOS

Intersection	Approach	LOS (AM/PM)*	Delay (sec/veh) (AM/PM)	95% Queue Length (feet) (AM/PM)
50th Avenue	Eastbound	A/A	**	**
	Westbound	A/A	7.8/8.3	25/25
	Northbound1	B/B	12.4/12.9	25/25
West Frontage Road	Eastbound	A/A	7.7/8.8	25/25
	Westbound	A/A	8.1/7.7	25/25
	Northbound1	B/C	14.6/19.9	25/50
	Southbound1	E/E	35.5/35.3	150/100
Westbound I-76 Ramps	Eastbound	A/A	**	**
	Westbound	A/A	8.9/8.0	25/25
	Southbound1	B/B	10.4/14.1	25/50
Eastbound I-76 Ramps	Eastbound	A/A	7.8/7.7	25/25
	Westbound	A/A	**	**
	Northbound1	B/E	10.9/38.5	25/275
East Frontage Road	Eastbound	A/A	**	**
	Westbound	A/A	7.4/7.7	25/25
	Northbound1	A/B	9.7/10.2	25/25
Harvest Road	Eastbound	A/A	7.9/7.4	25/25
	Westbound	A/A	7.4/7.7	0/0
	Northbound1	B/B	10.3/10.2	25/25
	Southbound1	A/A	9.4/9.3	25/25

*The LOS font color matches the colors used in the LOS figures for existing conditions

**HCM is limited in calculating delays and queue lengths for these locations

¹ Stop-controlled approach

2.8.3 Bridge Street Intersections

A summary of the results for intersections along Bridge Street is shown in Exhibit 2-21. Analysis indicates that Bridge Street is currently operating with volume levels well below the roadway capacity.

- Almost all of the intersections and approaches along Bridge Street operate at LOS B or better during both the AM and PM peak hours.
- Only the northbound approach of the West Frontage Road operates at LOS C during the PM peak hour.

Exhibit 2-21. 2013 Existing Conditions Bridge Street Intersection LOS

Intersection	Approach	LOS (AM/PM)*	Delay (sec/veh) (AM/PMP)	95% Queue Length (feet) (AM/PM)
50th Avenue ²	Eastbound	B/B	11.4/17.6	50/75
	Westbound	B/B	11.9/16.8	50/50
	Northbound	B/B	15.8/19.4	50/100
	Southbound	B/B	15.4/13.4	50/50
	Overall	B/B	13.2/17.3	n/a
Prairie Falcon Parkway	Eastbound	A/A	7.7/7.9	25/25
	Westbound	A/A	7.6/7.7	0/25
	Northbound ¹	B/B	13.4/14.4	25/25
	Southbound ¹	B/B	11.8/11.8	25/25
West Frontage Road	Eastbound	A/A	7.6/7.8	25/25
	Westbound	A/A	7.5/7.6	25/25
	Northbound ¹	B/C	12.3/15.2	25/25
	Southbound ¹	B/B	10.1/10.2	25/25
East Frontage Road	Eastbound	A/A	7.5/7.4	25/25
	Westbound	A/A	7.6/7.6	25/0
	Northbound ¹	B/B	10.0/10.5	25/25
	Southbound ¹	A/A	9.3/9.7	25/25
Gun Club Road	Eastbound	A/A	7.5/7.4	0/0
	Westbound	A/A	7.4/7.5	25/0
	Northbound ¹	A/A	9.1/9.1	25/25
	Southbound ¹	A/A	9.6/9.2	0/0

* The LOS font color matches the colors used in the LOS figures for existing conditions.

¹ Stop-controlled approach

² Signalized intersection

2.8.4 Bromley Lane Intersections

The traffic volumes along Bromley Lane are higher than the other surface streets in the area. A summary of the operational analysis results for the intersections along Bromley Lane is shown in Exhibit 2-22.

- A majority of the intersections and their approaches operate at LOS C or better during both peak hours.
- A few approaches and intersections operate at LOS E/F, which indicates that users of the interchange are experiencing delay at peak hours.

The following locations operate at LOS E/F:

- The West Frontage Road roundabout is a single-lane roundabout with the highest peak-hour traffic volume on the southbound leg left turns and eastbound/westbound through-movements.
- The eastbound approach during the PM peak, and the southbound approach during the AM peak operate at LOS E. This indicates increased delays and queuing for these movements.

- The eastbound ramp junction with Bromley Lane is an all-way stop-controlled intersection, which operates at LOS F during the PM peak. The volume of northbound vehicles attempting to turn left onto Bromley Lane experience long delays, significant queuing, and poor operations.

Exhibit 2-22. 2013 Existing Conditions Bromley Lane Intersection LOS

Intersection	Approach	LOS (AM/PM)*	Delay (sec/veh) (AM/PM)	95% Queue Length (feet) (AM/PM)
50th Avenue and West Frontage Road	Eastbound	A/A	8.1/9.0	25/50
	Westbound	A/A	**	**
	Southbound ¹	C/B	18.2/10.8	150/50
Tower Road ²	Eastbound	A/A	7.9/8.5	25/25
	Westbound	A/A	7.3/8.4	25/25
	Northbound	B/B	16.7/17.3	25/50
	Southbound	B/B	15.5/15.2	0/0
	Overall	A/A	8.6/10.1	n/a
Kmart Access ²	Eastbound	B/B	13.5/12.1	50/75
	Westbound	C/C	32.9/32.0	75/125
	Southbound	B/B	14.0/17.5	0/0
	Overall	C/C	21.3/22.4	n/a
Judicial Center Drive ²	Eastbound	A/B	6.7/17.1	25/50
	Westbound	A/B	8.5/15.5	25/75
	Northbound	B/A	15.6/8.3	25/25
	Overall	A/B	7.7/14.7	n/a
Lowe's Access ²	Eastbound	B/C	10.1/23.2	25/100
	Westbound	B/B	10.2/10.4	50/75
	Northbound	B/B	13.7/18.8	25/50
	Overall	B/B	10.6/17.7	n/a
West Frontage Road ³	Eastbound	C/E	18.3/40.9	125/375
	Westbound	A/A	6.2/5.3	75/75
	Northbound	A/B	9.1/14.3	25/50
	Southbound	E/B	46.0/13.8	350/100
	Overall	D/C	25.1/21.0	n/a
Westbound I-76 Ramps	Eastbound	A/A	**	**
	Westbound	B/A	10.4/9.6	25/25
	Southbound ¹	C/C	16.4/16.7	25/25
Eastbound I-76 Ramps	Eastbound ¹	B/C	11.4/19.2	**
	Westbound ¹	C/C	18.0/15.8	**
	Northbound ¹	C/F**	18.8/>100	**
	Overall	C/F	17.2/66.4	n/a
East Frontage Road	Eastbound	A/A	8.2/7.9	25/25
	Westbound	A/A	**	**
	Southbound ¹	B/B	11.8/12.0	25/25
Picadilly Road	Eastbound	A/A	**	**
	Westbound	A/A	7.8/8.1	25/25
	Northbound ¹	B/B	13.4/12.7	25/25

* The LOS font color matches the colors used in the LOS figures for existing conditions

***HCM is limited in calculating delays and queue lengths for these locations.*

¹ *Stop-controlled approach*

² *Signalized intersection*

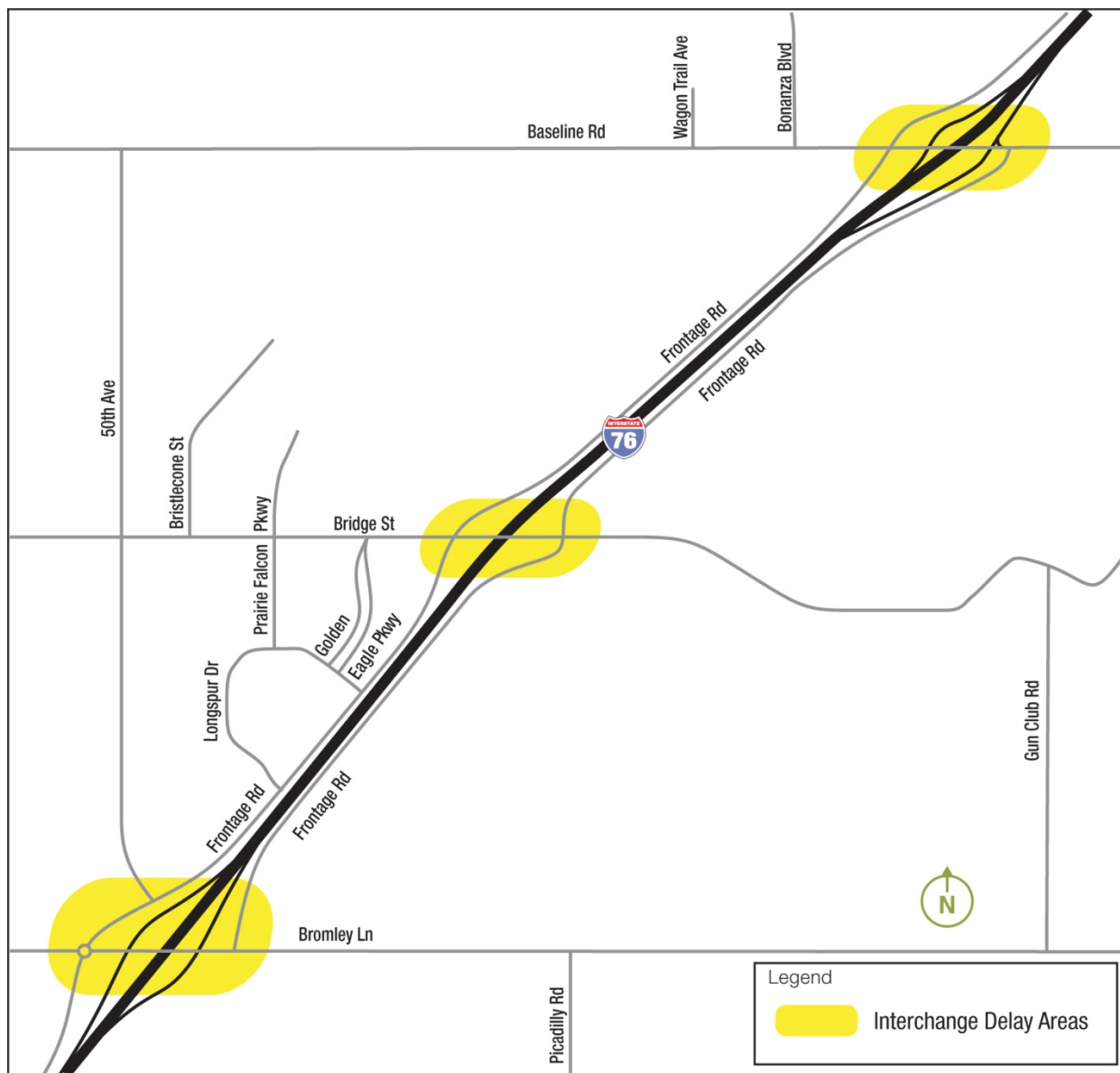
³ *Roundabout*

2.8.5 Interchange Delay Area

The amount of delay experienced by users of the transportation network as they travel through the intersections in the vicinity of I-76 or within the greater interchange areas indicates which areas may be experiencing congestion, operational issues, and increased potential for safety issues. Delay was calculated for the vehicles that use the existing Bromley Lane and Baseline Road interchange intersections and those that pass through the Bridge Street intersections near the location of the proposed interchange. The following is a list of the intersections included in the interchange area delay calculation, which are highlighted in Exhibit 2-23.

- Bromley Lane at West Frontage Road, I-76 westbound ramps, I-76 eastbound ramps, and East Frontage Road; West Frontage Road at 50th Avenue
- Bridge Street at West Frontage Road and East Frontage Road
- Baseline Road at East Frontage Road, I-76 westbound ramps, I-76 eastbound ramps, and West Frontage Road

Exhibit 2-23. Interchange Delay Area Boundaries



Interchange area delay was computed by first determining the amount of delay at each of the intersections in the identified areas. This was accomplished by multiplying the number of vehicles entering each intersection by the amount of delay per vehicle (from the HCS analysis) at the corresponding intersection.

For this analysis, the actual delay values from HCS—even those in excess of 100 seconds—were used to compute the delay by each approach to the intersections. The maximum value for several approaches exceeds the maximum threshold for HCS, indicating significant delay/congestion. The total delay for each interchange then was calculated by summing the individual intersection delays together within each interchange area. This process was completed for each of the interchanges individually and then as a system by summing the interchanges together to reach a single study area value. The results of the intersection delay analysis are shown in Exhibit 2-24.

The majority of the delay occurs at the Bromley Lane interchange, which is consistent with the higher volumes being served by this interchange and roadway.

Exhibit 2-24. 2013 Existing Conditions Interchange Area Delay

Interchange	Total Delay (vehicle-hours/day)	
	AM	PM
Baseline Road	6.4	11.5
Bridge Street	1.4	1.9
Bromley Lane	20.2	39.8
Total	28.0	53.2

2.8.6 Travel Times

Travel time, which can be impacted by traffic congestion, is a measure of effectiveness that can help identify benefits of adding the proposed interchange to the system. In existing conditions, the motorists are traveling from Bridge Street south to Bromley Lane or vice versa, to gain access to/from I-76. A new interchange will allow motorists to directly access I-76 from Bridge Street, effectively reducing overall travel times.

Existing travel patterns indicate that motorists are currently using 50th Avenue to travel between Bridge Street and Bromley Lane. This trip is shown as Route 1 and Route 2 in Exhibit 2-25.

Travel times were computed by assuming vehicles are free flowing (traveling at the speed limits) between intersections. Then, the delay at each intersection along the route was added to the free-flow time to get a total trip time. For this analysis, the delay at the intersections was limited to no more than 100 seconds per vehicle, which is near the upper limits of the HCM methodologies. Exhibit 2-26 shows the results of the existing travel time analysis for Routes 1 and 2. Under existing conditions, all trips between I-76 south of Bromley Lane and the 50th Avenue/Bridge Street intersection take more than 3.7 minutes (187 seconds) during the peak hours.

Exhibit 2-25. Peak Hour Travel Time Routes



Exhibit 2-26. 2013 Existing Conditions Travel Times

Alternative	Travel Time (seconds per vehicle)			
	Route 1		Route 2	
	AM	PM	AM	PM
2013 Existing	224	190	214	207

2.9 Summary

The 2013 existing conditions indicate several issues in the current transportation system within the study area. A solution is needed to address travel delay, distribute traffic efficiently, and support increased travel demands. The results of the analysis show:

- The majority of the transportation system operates at LOS D or better.
- Some of the transportation network elements, particularly at the Bromley Lane Interchange, are beginning to show signs of congestion and are operating at LOS E/F during the peak hours.
- Existing volumes on all segments of I-76 are well below the daily and hourly capacity levels of a four-lane freeway (192,000 vehicles per day for two-way traffic).
- The existing spacing between Bromley Lane and Baseline Road is approximately 2.75 miles. With the new interchange at Bridge Street, the spacing between Bromley Lane and Bridge Street would be 1.29 miles and between Bridge Street and Baseline Road would be 1.45 miles.

3. Description of Alternatives

This I-76 and Bridge Street EA examines potential effects to social, environmental, and economic resources resulting from proposed improvements to I-76 and Bridge Street. Consistent with federal regulations, the EA evaluates the potential for significant impacts that might result from the No-Action Alternative and the Action Alternatives. The Alternatives are discussed below. Each alternative was evaluated and compared to identify the Preferred Alternative for the project.

3.1 No-Action Alternative

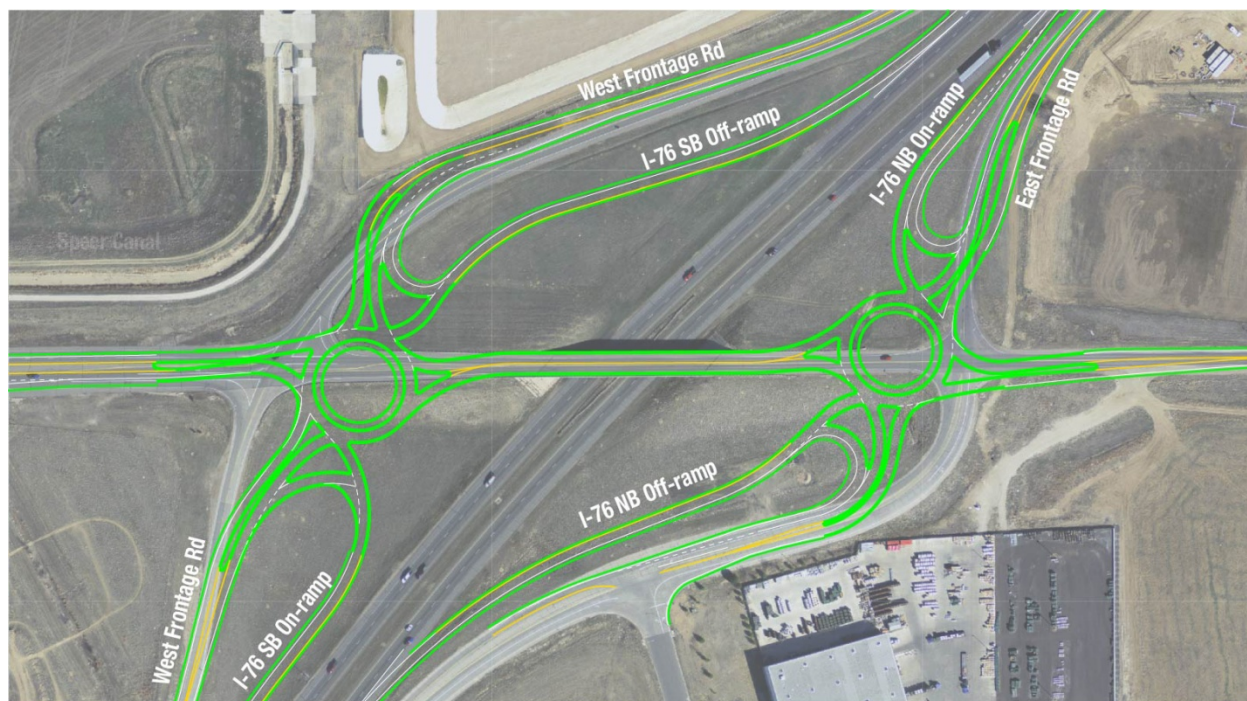
The No-Action Alternative serves as the baseline against which action alternatives are evaluated. For the purposes of this study, the No-Action Alternative is defined as the existing facilities within the study area. Under the No-Action Alternative, no further improvements, aside from ongoing operations and maintenance, will be made to the Bridge Street overpass at I-76.

3.2 Action Alternatives

Three Action Alternatives were advanced through the evaluation process. They are each discussed below, along with the one of these three alternatives that was chosen as the Preferred Alternative for this project.

3.2.1 Preferred Alternative: Two-Roundabout Interchange Design

The Preferred Alternative for this EA is the two-roundabout interchange design. This alternative combines the frontage roads and ramp terminals to make one six-legged roundabout on both the east and west sides of I-76 (see Exhibit 3-1). This alternative meets the project's purpose and need with relatively minor impacts. It preserves the existing bridge and can be designed with minimal ROW acquisition needed and no impacts to the Speer Canal to the northwest of the interchange. This alternative is expected to operate at LOS B in the year 2035. In addition, this alternative provides the driver with fewer distractions since there will be fewer signs to direct motorists, fewer conflict points, a simple single-lane roundabout, and a more cost-effective construction project versus either of the other two roundabout options.

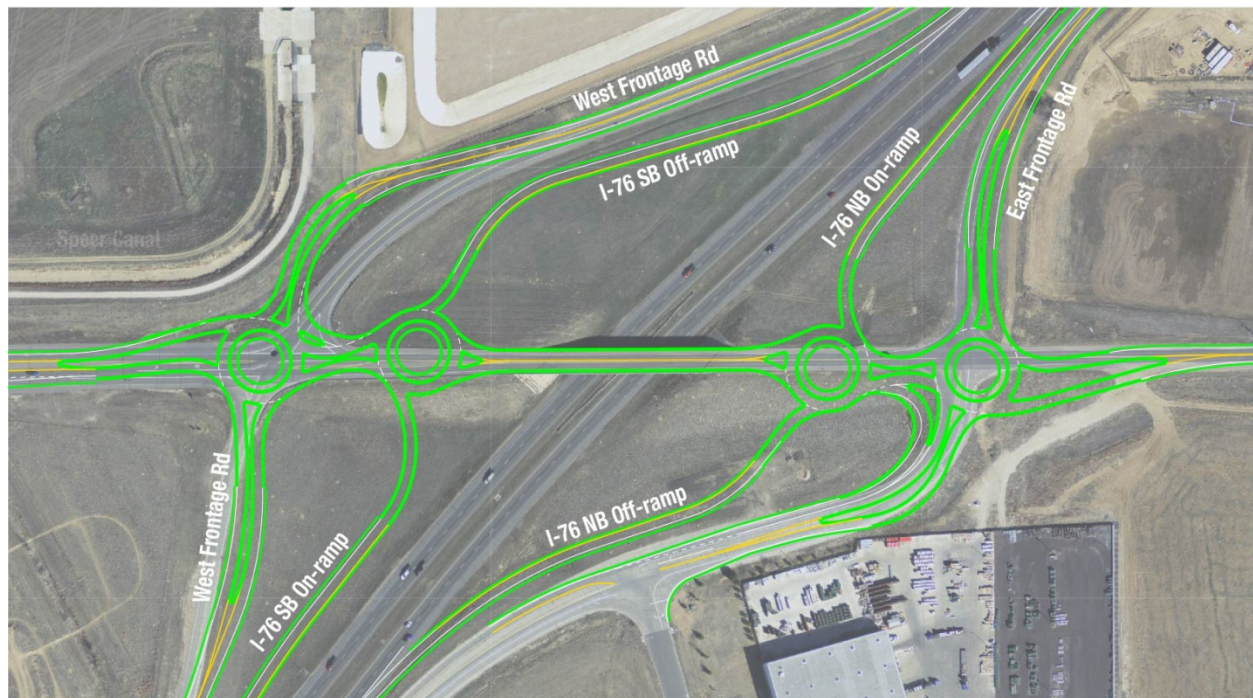
Exhibit 3-1. Preferred Alternative: Two-Roundabout Interchange Design

Each roundabout has an outside diameter of 200 feet, including a 12-foot truck apron for truck traffic. As a traffic-calming technique and to lessen ROW impacts, both roundabouts have been placed off center of the existing Bridge Street center line to develop approach angles. Splitter islands are included to slow traffic coming into the roundabouts and provide refuge for pedestrians trying to cross Bridge Street. The roundabouts are designed with an 18-foot single lane for circulation and exclusive right turn bypasses for the ramp-to-frontage-road and frontage-road-to-ramp movements. This alternative has the least amount of conflict points among the Action Alternatives.

3.2.2 Alternative 2: Four-Roundabout Interchange Design

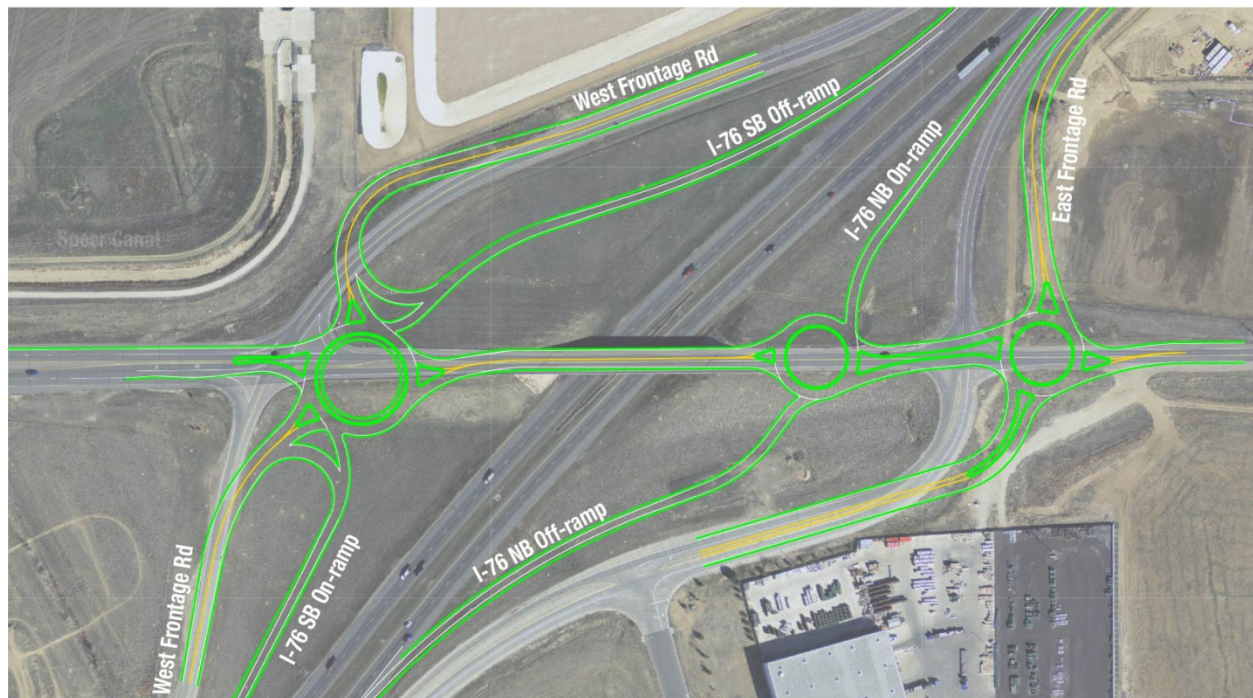
Alternative 2 for this EA is the four-roundabout interchange. Exhibit 3-2 shows this alternative, which creates two four-legged roundabouts on each side (east and west) of I-76. This alternative meets the project's purpose and need with relatively minor impacts. It preserves the existing bridge and has minor ROW impacts. This alternative is expected to operate at LOS B in the year 2035.

The two four-legged roundabouts on the east and west side of I-76 allow truck traffic to be separated from residential traffic. Each roundabout has an outside diameter of 150 feet, including a 12-foot truck apron for truck traffic. As a traffic-calming technique and to lessen ROW impacts with each pairing on the west and east sides, the roundabouts have been placed slightly off center of the existing Bridge Street center line to develop approach angles. Splitter islands are included to slow traffic coming into the roundabouts and provide refuge for pedestrians trying to cross Bridge Street. The roundabouts are designed with an 18-foot single lane for circulation and exclusive right turn bypasses for the ramp-to-frontage-road and frontage-road-to-ramp movements.

Exhibit 3-2. Alternative 2: Four-Roundabout Interchange Design**3.2.3 Alternative 3: Three-Roundabout Interchange Design**

This alternative consists of one large roundabout on the west side of I-76 and two smaller roundabouts on the east side of I-76 (see Exhibit 3-3). The west frontage road and I-76 westbound ramps are combined into one six-legged roundabout with an outside diameter of 200 feet, including a 12-foot truck apron. The east side combines the eastbound ramp terminal into one four-legged roundabout and the frontage roads into a second four-legged roundabout. Each of the smaller roundabouts has an outside diameter of 150 feet, including a 12-foot truck apron. This alternative meets the project's purpose and need with relatively minor impacts. It preserves the existing bridge and has minor ROW impacts, primarily to the east. The two four-legged roundabouts on the east side of I-76 allow truck traffic to be separated from residential traffic. This alternative is expected to operate at LOS B in the year 2035.

For the pairing on the east side and the single roundabout on the west side, the roundabouts have been placed off center of the existing Bridge Street center line as a traffic-calming technique and to develop approach angles. Splitter islands are included to slow traffic coming into the roundabouts and provide refuge for pedestrians trying to cross Bridge Street. The roundabouts are designed with an 18-foot single lane for circulation and exclusive right turn bypasses for the ramp-to-frontage-road and frontage-road-to-ramp movements. Two roundabouts were placed on the east side since that is the side with commercial businesses and the two roundabouts would enable the truck traffic to bypass the roundabout and separate from the vehicles that want to head west on Bridge Street. Having two roundabouts on the west would require more right of way and potential impact to the channel (as seen in Alternative 2).

Exhibit 3-3. Alternative 3: Three-Roundabout Interchange Design

4. Impact Analysis

4.1 Impacts Assessment Methodology

To evaluate the impacts of adding an interchange to I-76 at Bridge Street, a series of traffic operations analyses were completed. Horizon year projected traffic volumes were developed using the DRCOG 2035 regional travel demand model that was calibrated based on 2013 existing conditions traffic data and expected development based on input from Brighton staff. The 2035 model volumes were adjusted using National Cooperative Highway Research Program (NCHRP) Report 255 techniques and then further adjusted by hand to account for local traffic movements, intersection balancing, flows through interchanges, driveways/local road access, and other factors. A complete discussion on the methods for developing the future projected traffic volumes can be found in Appendix B.

The analysis evaluated the traffic operations for the following scenarios:

- 2035 No-Action Alternative (horizon year)
- 2035 Action Alternatives (horizon year)

The analysis of existing conditions was presented in Section 2 of this Technical Memorandum, so it is not repeated here. The analysis presented in the next sections included the following steps:

Step 1: Evaluate the performance of the existing transportation network to identify baseline conditions against which future analyses can be compared.

Step 2: Obtain and refine the 2010 and 2035 DRCOG regional travel demand models, including review of socioeconomic and network assumptions.

Step 3: Run the base year 2010 DRCOG regional travel demand model.

Step 4: Prepare and run 2035 models with Action and No-Action Alternative geometrics.

Step 5: Adjust 2035 daily/hourly traffic volume forecasts from the model using observed 2013 traffic counts and techniques described in NCHRP Report 255.

Step 6: Utilize the traffic forecasts and existing Turning Movement Counts (TMC) data to estimate 2035 peak-hour TMC at key intersections.

4.2 Analysis Tools

All analyses were completed using the latest methodologies described in the Highway Capacity Manual 2010 (HCM). A detailed discussion on the methodologies and analysis tools used to complete the evaluation of existing and all future conditions can be found in the Traffic Operations Methodology Memorandum in Appendix A.

The latest version of HCS was used to evaluate all elements of the transportation network. The Junctions 8 roundabout design and capacity analysis software, which incorporates the ARCADY roundabout evaluation model that is based upon HCM methodologies, was used to evaluate operations for all roundabouts at the proposed interchange and any location with more than four entering legs.

Existing four-leg roundabouts and mitigation measures of existing intersections were evaluated with HCS. Typically, traffic signals are optimized every three to five years based on traffic volume growth. The analysis of future conditions used the signal optimization tool within HCS to optimize traffic signals that operated at LOS E/F before additional mitigation measures were evaluated. The cycle lengths that were optimized were reviewed to ensure that they were reasonable and consistent with the existing corridor cycle lengths.

4.3 Results of the Traffic Analysis

An operational analysis was completed for the 2035 No-Action Alternative and the Action Alternatives using the projected traffic volume data and the methodologies previously discussed. The following subsections discuss the result of the analysis for Action and No- Action Alternatives.

4.3.1 No-Action Alternative

The No-Action Alternative serves as the baseline against which Action Alternatives are evaluated. For the purposes of this study, the No-Action Alternative is defined as the existing facilities within the study area. Under the No-Action Alternative, no further improvements, aside from ongoing operations and maintenance, will be made to the Bridge Street overpass at I-76.

Average Daily Traffic Volumes

The following is a summary of the projected 2035 No-Action Alternative daily and peak-hour ADT volumes, which are summarized in Exhibit 4-1, Exhibit 4-2, and Exhibit 4-3.

Baseline Road

In 2035, volumes on Baseline Road will be nearly 30 percent of the daily capacity (34,000 vpd for a two-lane bridge) and peak-hour volumes will reach about 60 percent of the hourly capacity levels (1,400 vph). (See Exhibit 4-1.)

Bridge Street

Traffic volumes on Bridge Street are not expected to increase significantly by 2035. Daily and hourly peak volumes are well below capacity levels. (See Exhibit 4-2.)

Bromley Lane

In 2035, traffic volumes over I-76 will represent about 50 percent of the daily estimated capacity of the structure. The volumes will exceed the structure's capacity during the peak hours. (See Exhibit 4-3.)

I-76

In 2035, all sections of I-76 north of Bromley Lane will continue to operate well below the daily and hourly capacity of the freeway. The segment of I-76 that is south of Bromley Lane is well below the daily capacity, but will operate at between 60 percent and 75 percent of its hourly capacity during the peak hours.

Frontage Roads

The frontage roads are expected to experience minimal growth between 2013 and 2035. The section of the West Frontage Road between Bromley Lane and 50th Avenue will continue to have higher volumes than the rest of the frontage road segments, due to the heavy movement of vehicles going to/from I-76 and the developments along 50th Avenue between Bromley Lane and Bridge Street.

50th Avenue

50th Avenue will experience 75 percent growth in traffic south of Bridge Street as vehicles continue to use this route to get to/from the Bromley Lane interchange and their ultimate destinations to the south of Brighton. This growth also is consistent with planned residential development in the northwest corner of Bridge Street and I-76.

Vehicle Classification

For the purposes of this analysis, the future truck percentages were assumed to remain the same as those measured in 2013.

Peak-Hour Turning Movement Counts

After the peak-hour link volumes were projected, the peak-hour TMCs were determined using the NCHRP Report 255 methodology and the existing 2013 turning movement percentages. The projected 2035 Action Alternatives TMC data used for the analysis are shown in Exhibit 4-4.

Operation Analysis

The overall results of the LOS analysis for 2035 No-Action Alternative conditions are shown in Exhibit 4-5 and Exhibit 4-6, and described in more detail in the following sections.

Exhibit 4-1. 2035 No-Action Alternative Daily and Peak-Hour Traffic Volumes at Baseline Road

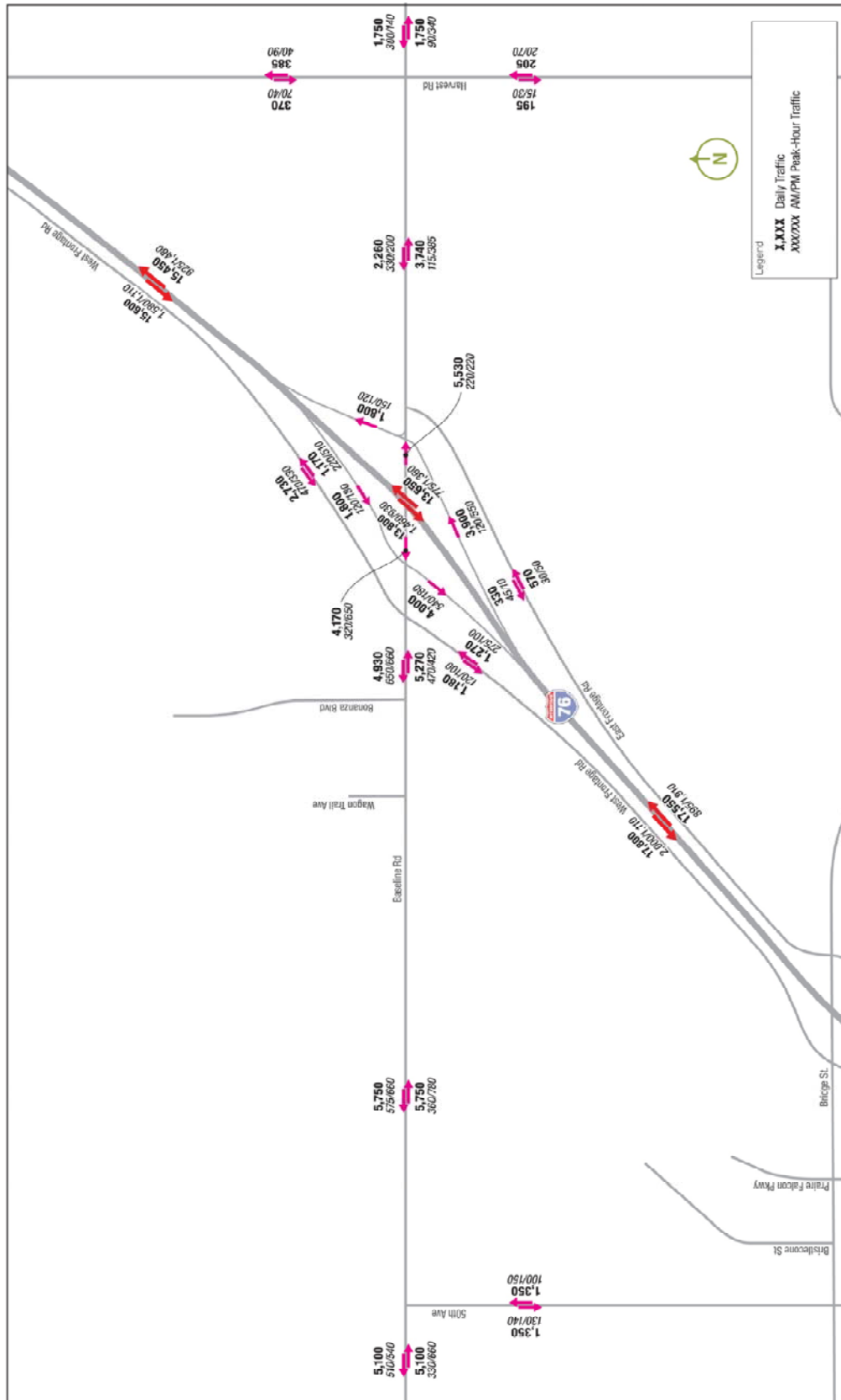


Exhibit 4-2. 2035 No-Action Alternative Daily and Peak-Hour Traffic Volumes at Bridge Street

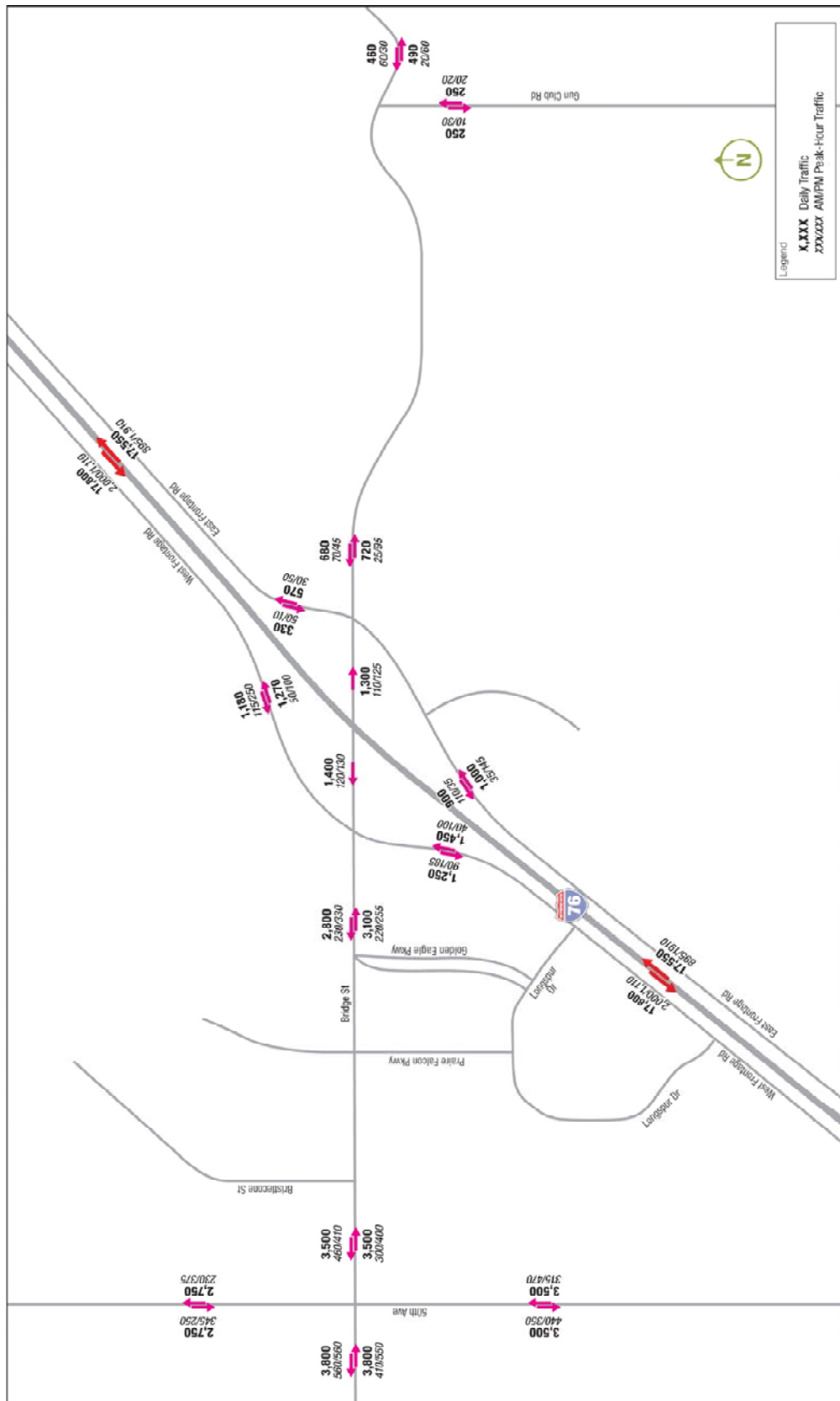


Exhibit 4-3. 2035 No-Action Alternative Daily and Peak-Hour Traffic Volumes at Bromley Lane

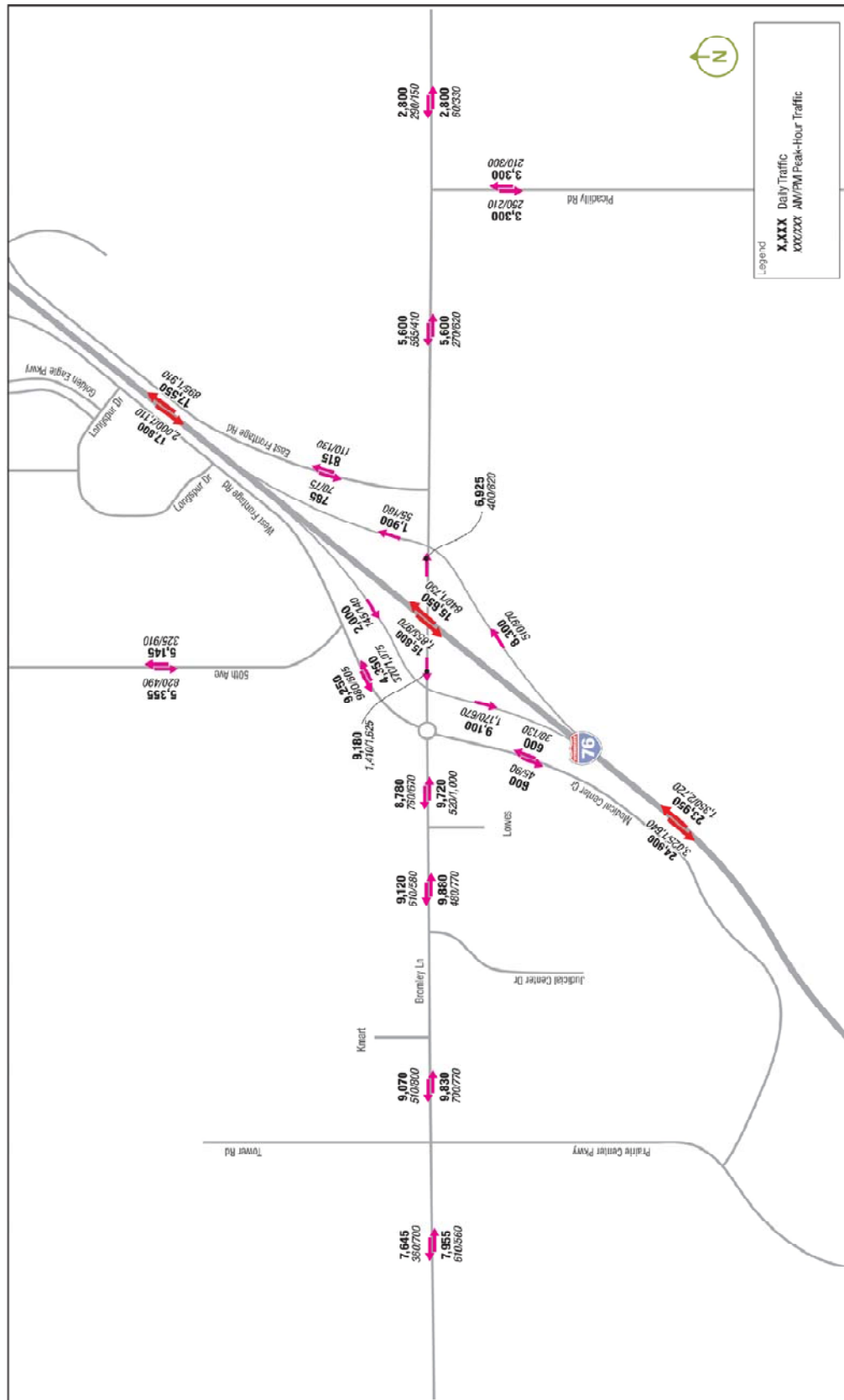


Exhibit 4-4. 2035 No-Action Alternative Peak-Hour Turning Movement Counts

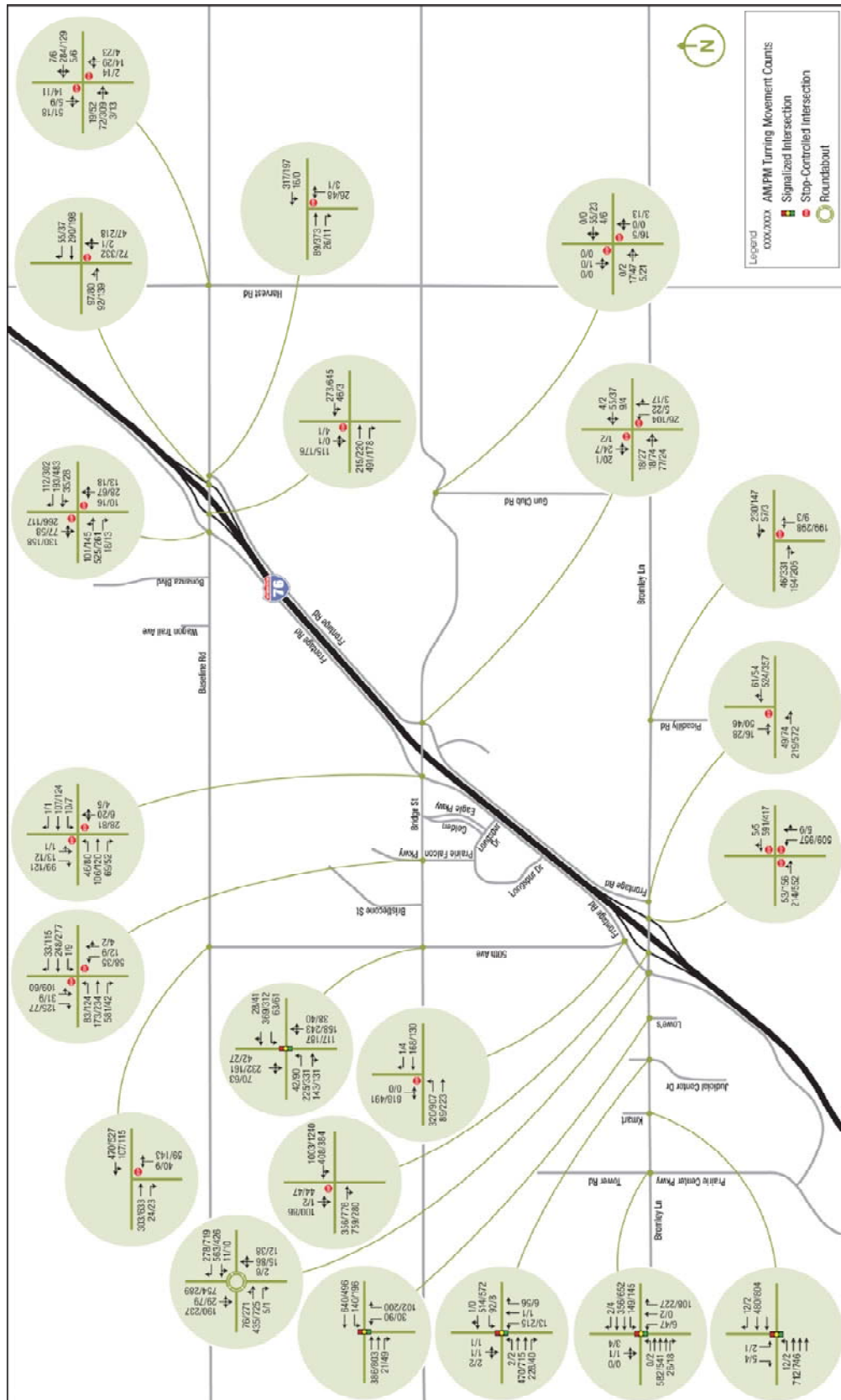


Exhibit 4-5. 2035 No-Action Alternative AM LOS



Exhibit 4-6. 2035 No-Action Alternative PM LOS



I-76 Freeway Elements

The operational analysis results for the 2035 No-Action Alternative freeway elements are shown in Exhibit 4-7. The density in all segments increases along with traffic volumes between 2013 and 2035. The majority of the basic freeway segments and ramp merge/diverge areas operate at LOS B or better during both peak hours, with the following exceptions:

- Westbound I-76 south of Bromley Lane operates at LOS D in the AM peak hour compared to LOS B in 2013.
- Eastbound I-76 south of Bromley Lane is LOS C in the PM peak hour.
- The Bromley Lane to Westbound I-76 merge area operates at LOS C in the AM peak.

Baseline Road Intersections

A summary of the LOS results for intersections along Baseline Road for the 2035 No-Action Alternative are shown in Exhibit 4-8. The majority of intersection approaches will operate at LOS C or better in 2035, with the following exceptions:

- The northbound and southbound approaches of the West Frontage Road will operate at LOS E/F in the AM and PM peak hours. The volumes on Baseline Road reduce the number of available gaps for the vehicles attempting to turn left from the Frontage Road onto Baseline Road and will result in increased delays and queues on these approaches:
- The northbound approach of the I-76 eastbound ramp intersection will operate at LOS F in the PM peak hour. The stop-controlled approach will result in increased delays and queues.
- The eastbound off-ramp queues are expected to be 1250 feet in the PM peak hour, compared to 275 feet in the existing conditions PM peak hour. The eastbound off-ramp is approximately 1500 feet long, so spillback of the queue onto mainline I-76 is not expected to occur.

Exhibit 4-7. 2035 No-Action Alternative Freeway Element LOS

Freeway Element	Description	2013 Existing (AM/PM)		2035 No-Action (AM/PM)	
		LOS*	Density (pc/mi/ln)	LOS*	Density (pc/mi/ln)
Mainline Segment					
North of Baseline Road	Eastbound	A/A	5.4/5.6	A/B	7.5/11.8
	Westbound	A/A	5.9/7.4	B/A	13.2/9.7
Under Baseline Road	Eastbound	A/A	4.4/4.6	A/A	6.3/10.8
	Westbound	A/A	5.1/6.0	B/A	12.2/8.1
Baseline Road to Bridge Street	Eastbound	A/A	5.3/8.6	A/B	7.2/15.2
	Westbound	A/A	9.1/7.5	B/A	16.7/9.7
Under Bridge Street	Eastbound	A/A	5.3/8.6	A/B	7.2/15.2
	Westbound	A/A	9.1/7.5	B/A	16.7/9.7
Bridge Street to Bromley Lane	Eastbound	A/A	5.3/8.6	A/B	7.2/15.2
	Westbound	A/A	9.1/7.5	B/A	16.7/9.7
Under Bromley Lane	Eastbound	A/A	4.8/7.3	A/B	6.8/13.9
	Westbound	A/A	8.2/6.7	B/A	15.5/8.5
South of Bromley Lane	Eastbound	A/B	7.8/12.4	A/C	10.9/22.0
	Westbound	B/A	14.0/10.5	D/B	26.8/14.3
Merge/Diverge Areas					
Baseline Road Interchange	Eastbound Diverge	A/B	6.1/10.4	A/B	8.5/18.7
	Eastbound Merge	A/A	4.1/4.3	A/B	6.4/11.0
	Westbound Diverge	A/A	6.0/7.8	B/B	14.8/10.5
	Westbound Merge	A/A	7.2/5.5	B/A	15.5/8.0
Bromley Lane Interchange	Eastbound Diverge	A/B	6.4/12.0	A/B	5.9/18.8
	Eastbound Merge	A/A	3.8/7.4	A/B	5.9/14.7
	Westbound Diverge	A/A	8.9/6.9	B/A	18.1/9.6
	Westbound Merge	B/A	13.0/10.0	C/B	25.2/14.5

*Note: The LOS font color matches the colors used in the LOS figures

Exhibit 4-8. 2035 No-Action Alternative Baseline Road Intersection LOS

Intersection	Approach	2013 Existing (AM/PM)			2035 No-Action (AM/PM)		
		LOS*	Delay (sec/veh)	95% Queue Length (ft)	LOS*	Delay (sec/veh)	95% Queue Length (ft)
50th Avenue	Eastbound	A/A	**	**	A/A	**	**
	Westbound	A/A	7.8/8.3	25/25	A/A	8.4/9.8	25/25
	Northbound ¹	B/B	12.4/12.9	25/25	C/C	18.7/20.7	50/75
West Frontage Road	Eastbound	A/A	7.7/8.8	25/25	A/B	8.3/10.7	25/25
	Westbound	A/A	8.1/7.7	25/25	A/A	8.8/7.9	25/25
	Northbound ¹	B/C	14.6/19.9	25/50	E/F**	44.0/>100	50/425
	Southbound ¹	E/E	35.5/35.3	150/100	F**/F**	>100/>100	4125/3250
Westbound I-76 Ramps	Eastbound	A/A	**	**	A/A	**	**
	Westbound	A/A	8.9/8.0	25/25	A/A	9.6/8.3	25/25
	Southbound ¹	B/B	10.4/14.1	25/50	B/C	11.8/20.7	25/75
Eastbound I-76 Ramps	Eastbound	A/A	7.8/7.7	25/25	A/A	8.6/8.1	25/25
	Westbound	A/A	**	**	A/A	**	**
	Northbound ¹	B/E	10.9/38.5	25/275	C/F**	16.4/>100	50/1250
East Frontage Road	Eastbound	A/A	**	**	A/A	**	**
	Westbound	A/A	7.4/7.7	25/25	A/A	7.6/8.4	25/25
	Northbound ¹	A/B	9.7/10.2	25/25	B/B	12.3/14.5	25/25
Harvest Road	Eastbound	A/A	7.9/7.4	25/25	A/A	8.5/7.7	25/25
	Westbound	A/A	7.4/7.7	0/0	A/A	7.5/8.1	25/25
	Northbound ¹	B/B	10.3/10.2	25/25	B/B	13.0/14.5	25/25
	Southbound ¹	A/A	9.4/9.3	25/25	B/B	12.5/12.7	25/25

*Note: The LOS font color matches the colors used in the LOS figures

**HCM is limited in calculating delays and queue lengths for these locations

¹Stop-controlled approach

Bridge Street Intersections

A summary of the 2035 No-Action Alternative operational results for the intersections along Bridge Street is provided in Exhibit 4-9. Almost all intersections and approaches along Bridge Street will operate at LOS D or better in the 2035 No-Action Alternative AM and PM peak hours, with the following exceptions:

- The northbound approach of 50th Avenue will operate at LOS F with increased queues during the PM peak. This is due to the high volume of left-turning traffic using 50th Avenue from the Bromley Lane interchange to access westbound Bridge Street.
- The overall intersection operations at 50th Avenue during the PM peak will degrade from LOS B in 2013 to LOS F in 2035.

Exhibit 4-9. 2035 No-Action Alternative Bridge Street Intersection LOS

Intersection	Approach	2013 Existing (AM/PM)			2035 No-Action (AM/PM)		
		LOS*	Delay (sec/veh)	95% Queue Length (ft)	LOS*	Delay (sec/veh)	95% Queue Length (ft)
50th Avenue ¹	Eastbound	B/B	11.4/17.6	50/75	C/E	27.5/60.6	150/425
	Westbound	B/B	11.9/16.8	50/50	C/D	32.9/39.0	175/275
	Northbound	B/B	15.8/19.4	50/100	C/F**	27.1/>100	125/775
	Southbound	B/B	15.4/13.4	50/50	B/C	19.6/28.2	100/150
	Overall	B/B	13.2/17.3	n/a	C/F**	27.3/>100	n/a
Prairie Falcon Parkway	Eastbound	A/A	7.7/7.9	25/25	A/A	8.2/8.5	25/25
	Westbound	A/A	7.6/7.7	0/25	A/A	7.8/7.8	0/25
	Northbound ²	B/B	13.4/14.4	25/25	D/D	31.3/27.7	50/25
	Southbound ²	B/B	11.8/11.8	25/25	C/C	22.3/17.7	100/50
West Frontage Road	Eastbound	A/A	7.6/7.8	25/25	A/A	7.7/7.9	25/25
	Westbound	A/A	7.5/7.6	25/25	A/A	7.6/7.6	25/25
	Northbound ²	B/C	12.3/15.2	25/25	B/C	14.2/16.5	25/50
	Southbound ²	B/B	10.1/10.2	25/25	B/B	10.2/10.4	25/25
East Frontage Road	Eastbound	A/A	7.5/7.4	25/25	A/A	7.5/7.4	25/25
	Westbound	A/A	7.6/7.6	25/0	A/A	7.6/7.6	25/25
	Northbound ²	B/B	10.0/10.5	25/25	B/B	10.3/10.9	25/25
	Southbound ²	A/A	9.3/9.7	25/25	A/B	10.0/10.5	25/25
Gun Club Road	Eastbound	A/A	7.5/7.4	0/0	A/A	7.5/7.4	0/0
	Westbound	A/A	7.4/7.5	25/0	A/A	7.4/7.5	25/25
	Northbound ²	A/A	9.1/9.1	25/25	A/A	9.3/9.0	25/25
	Southbound ²	A/A	9.6/9.2	0/0	A/A	9.1/9.1	25/25

*Note: The LOS font color matches the colors used in the LOS figures

**HCM is limited in calculating delays and queue lengths for these locations

¹Signalized intersection

²Stop-controlled approach

Bromley Lane Intersections

A summary of the results for the intersections along Bromley Lane is shown in Exhibit 4-10. The projected traffic volume being processed by the intersections will result in increasing levels of congestion and LOS E/F at several intersections.

- The southbound approach of 50th Avenue at the West Frontage Road will degrade from LOS B/C in 2013 to LOS F/F in 2035.
- The southbound approach at the westbound ramps will degrade to LOS F/F in the peak hours. The westbound approach of Bromley Lane will operate at LOS E in the AM peak hour at this location.
- Queues between the closely spaced intersections along Bromley Lane will continue to create additional operational and safety issues. Ramp queuing will spillback onto mainline I-76 which will impact I-76 safety and operations.

- The roundabout at the West Frontage Road will degrade in operations to LOS F in both the AM and PM peak hours. Operations of 50th Avenue and the West Frontage Road will be negatively affected by queuing that will spill back from the roundabout.
- All of the approaches and the overall intersection at the eastbound I-76 ramps will operate at LOS F in both the AM and PM peak hours. The operations at this intersection will cause queues to spillback onto mainline I-76 which will impact I-76 safety and operations.

The results of the HCS analysis are meant for comparative purposes only, realizing that when the volume-capacity ratio exceeds 1, the results are not as reliable.

Exhibit 4-10. 2035 No-Action Alternative Bromley Lane Intersection LOS

Intersection	Approach	2013 Existing (AM/PM)			2035 No-Action (AM/PM)		
		LOS*	Delay (sec/veh)	95% Queue Length (ft)	LOS*	Delay (sec/veh)	95% Queue Length (ft)
50th Avenue and West Frontage Road	Eastbound	A/A	8.1/9.0	25/50	A/B	8.8/12.8	50/175
	Westbound	A/A	**	**	A/A	**	**
	Southbound ¹	C/B	18.2/10.8	150/50	F**/F	>100/97.4	3250/625
Tower Road ²	Eastbound	A/A	7.9/8.5	25/25	B/B	12.5/13.9	50/50
	Westbound	A/A	7.3/8.4	25/25	B/B	12.0/13.9	50/75
	Northbound	B/B	16.7/17.3	25/50	B/B	15.2/16.1	25/50
	Southbound	B/B	15.5/15.2	0/0	B/B	13.9/13.1	0/0
	Overall	A/A	8.6/10.1	n/a	B/B	12.5/14.3	n/a
Kmart Access ²	Eastbound	B/B	13.5/12.1	50/75	A/A	7.4/8.6	25/50
	Westbound	C/C	32.9/32.0	75/125	B/C	14.0/21.0	50/125
	Southbound	B/B	14.0/17.5	0/0	B/B	12.4/18.1	0/0
	Overall	C/C	21.3/22.4	n/a	B/B	10.1/15.0	n/a
Judicial Center Drive ²	Eastbound	A/B	6.7/17.1	25/50	A/B	7.1/16.8	25/75
	Westbound	A/B	8.5/15.5	25/75	A/B	6.8/17.7	25/125
	Northbound	B/A	15.6/8.3	25/25	B/B	15.2/11.3	25/50
	Overall	A/B	7.7/14.7	n/a	A/B	7.1/16.2	n/a
Lowe's Access ²	Eastbound	B/C	10.1/23.2	25/100	B/B	13.0/18.5	50/125
	Westbound	B/B	10.2/10.4	50/75	B/B	14.0/14.8	125/100
	Northbound	B/B	13.7/18.8	25/50	B/B	12.9/16.9	25/50
	Overall	B/B	10.6/17.7	n/a	B/B	13.6/16.9	n/a
West Frontage Road ³	Eastbound	C/E	18.3/40.9	125/375	F**/F**	>100/>100	650/1450
	Westbound	A/A	6.2/5.3	75/75	B/C	14.1/20.6	150/150
	Northbound	A/B	9.1/14.3	25/50	C/E	17.2/37.3	25/100
	Southbound	E/B	46.0/13.8	350/100	F**/F	>100/71.0	1750/450
	Overall	D/C	25.1/21.0	n/a	F**/F**	>100/>100	n/a
Westbound I-76 Ramps	Eastbound	A/A	**	**	A/A	**	**
	Westbound	B/A	10.4/9.6	25/25	E/C	48.3/22.3	350/150
	Southbound ¹	C/C	16.4/16.7	25/25	F**/F**	>100/>100	n/a
Eastbound I-76 Ramps	Eastbound ¹	B/C	11.4/19.2	**	C/F**	23.1/>100	**
	Westbound ¹	C/C	18.0/15.8	**	F**/F	>100/54.5	**
	Northbound ¹	C/F ⁴	18.8/>100	**	F**/F**	>100/>100	**
	Overall	C/F	17.2/66.4	n/a	F**/F ⁴	>100/>100	n/a
East Frontage Road	Eastbound	A/A	8.2/7.9	25/25	A/A	9.1/8.5	25/25
	Westbound	A/A	**	**	A/A	**	**
	Southbound ¹	B/B	11.8/12.0	25/25	C/D	19.6/27.0	25/50
Picadilly Road	Eastbound	A/A	**	**	A/A	**	**
	Westbound	A/A	7.8/8.1	25/25	A/A	8.2/8.8	25/25
	Northbound ¹	B/B	13.4/12.7	25/25	D/D	26.8/33.7	125/175

*Note: The LOS font color matches the colors used in the LOS figures
 **HCM is limited in calculating delays and queue lengths for these locations
¹Stop-controlled approach
²Signalized intersection
³Roundabout

Interchange Area Delay

The results of the 2035 No-Action Alternative interchange delay analysis are shown in Exhibit 4-11. Total delay will increase significantly over the 2013 levels due to the increase in traffic volumes projected to use the roadway network.

- The Bromley Lane interchange area will still account for more than half of the overall delay.
- The minimal traffic growth will result in minimal increases in delay along Bridge Street.

The results of the delay analysis are a clear indication that drivers using the existing interchanges to access Brighton will experience increased delays and queues.

Exhibit 4-11. 2035 No-Action Alternative Interchange Area Delay

Alternative	Interchange	Total Delay (vehicle-hours)	
		AM	PM
2013 Existing	Baseline Road	6.4	11.5
	Bridge Street	1.4	1.9
	Bromley Lane	20.2	39.8
	Total	28.0	53.2
2035 No-Action	Baseline Road	442.3	486.2
	Bridge Street	1.8	3.7
	Bromley Lane	666.1	996.3
	Total	1,110.2	1,486.2

Travel Times

As traffic volume grows between 2013 and 2035, so will the amount of delay at many of the intersections in the study area, as indicated by the results of the operational and delay analyses. Without additional access to I-76 at Bridge Street, the preferred routes used by motorists to circulate through the area will experience increased trip times. Exhibit 4-12 shows the results of the travel time analysis using the same routes.

- Travel times in the AM and PM increase by as much as 200 seconds per vehicle.

Exhibit 4-12. 2035 No-Action Alternative Travel Times*

Alternative	Travel Time (seconds per vehicle)			
	Route 1		Route 2	
	AM	PM	AM	PM
2013 Existing	224	190	214	207
2035 No-Action	376	377	412	423

* Refer to Exhibit 26 for a description of the routes.

Summary

The 2035 No-Action Alternative indicates:

- An increase in the number of transportation elements that will operate at LOS E/F
- An increase in delays and queues that motorists will experience

- In 2035, Ramp queues may back onto I-76, creating safety and operational issues
- Travel times between the Bromley Lane interchange and the intersection of 50th Avenue and Bridge Street will increase by as much as 200 seconds per vehicle
- The structure at Bromley Lane will need to be reconstructed by the year 2025 to include widening if the Bridge Street interchange is not constructed.

4.3.2 2035 Action Alternatives

The following section describes the expected changes to the transportation network operations with the proposed interchange at Bridge Street in 2035.

Traffic Data

The projected traffic volumes for the 2035 Action Alternatives were developed by running the 2035 DRCOG regional travel demand model with a full interchange at Bridge Street. Adjustments to the volumes then were completed based on the procedures previously discussed.

Average Daily Traffic Volumes

With the addition of the proposed interchange, traffic will be redistributed from the Bromley Lane and Baseline Road interchanges to the Bridge Street interchange. Projected traffic volumes in the area of influence are summarized in the following section and in Exhibit 4-13, Exhibit 4-14, and Exhibit 4-15.

Baseline Road

Baseline Road will experience only slightly decreased volumes with the proposed interchange in 2035 compared to the No-Action Alternative. Traffic over I-76 will be less than 30 percent of daily capacity levels and less than 60 percent of the hourly volume capacities.

Bridge Street

With the addition of the proposed interchange, traffic volumes on Bridge Street will increase, with the overpass carrying 6,700 vehicles per day. This is an increase of more than 4,000 vpd, but still is only about 20 percent of the estimated daily capacity of a two-lane structure. The peak-hour volumes will be about 60 percent of the capacity for the structure.

Bromley Lane

The proposed interchange will result in decreased volumes on Bromley Lane compared to the 2035 No-Action Alternative volumes. The volume on the structure will be about 40 percent of the daily capacity (down by more than 10 percent), but the peak-hour volumes will continue to exceed capacity values. The majority of traffic that is expected to use the Bridge Street interchange is traffic that currently uses the Bromley Lane interchange.

I-76

The proposed interchange is expected to change traffic distribution along I-76 between Bromley Lane and Baseline Road. The proposed interchange will result in less traffic using the ramps at Bromley Lane and instead using the new ramps at Bridge Street to access the local transportation system.

All segments of I-76 will continue to operate below daily capacity levels. The segments south of Bromley Lane will continue to be about 75 percent of hourly capacity and the segment between Bromley Lane and Bridge Street will now serve about 60 percent of its hourly capacity.

Frontage Roads

The frontage road volumes will be lower than the 2035 No-Action Alternative levels, as vehicles are now able to directly access Bridge Street from I-76. The section of the West Frontage Road between Bromley Lane and 50th Avenue will have a volume that is about 6,000 vehicles per day less than the No-Action Alternative.

50th Avenue

50th Avenue traffic volumes will decrease, especially south of Bridge Street. This change in traffic volumes is consistent with vehicles using the Bridge Street interchange instead of the Bromley Lane interchange to gain access to/from I-76.

Peak-Hour Turning Movement Counts

After the peak-hour link volumes were projected, the peak-hour TMCs were determined using the NCHRP Report 255 methodology and the existing 2013 turning movement percentages. The projected 2035 Action Alternative TMC data used for the analysis are shown in Exhibit 4-16 and Exhibit 4-17.

Vehicle Classification

For the purposes of this analysis, the future truck percentages were assumed to remain the same as those measured in 2013.

Results of Operational Analysis

An operational analysis was completed for the 2035 Action Alternatives using the projected traffic volume data and the methodologies previously discussed. The overall results of the LOS analysis and the comparison to 2035 No-Action Alternative values are shown in Exhibit 4-18 and Exhibit 4-19 and described in more detail in the following sections.

Exhibit 4-14. 2035 Action Alternatives Daily and Peak-Hour Traffic Volumes at Bridge Street

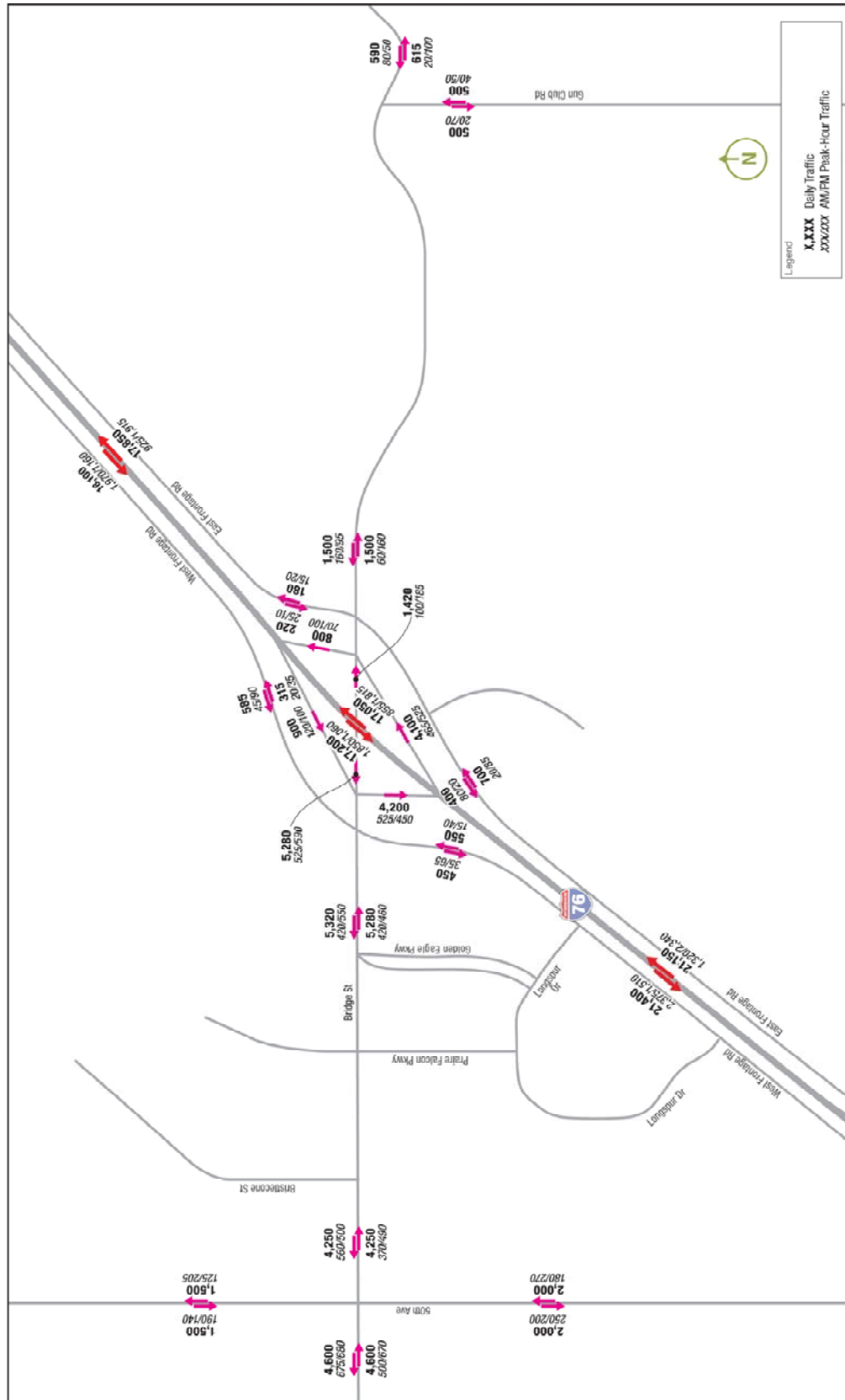


Exhibit 4-15. 2035 Action Alternatives Daily and Peak-Hour Traffic Volumes at Bromley Lane

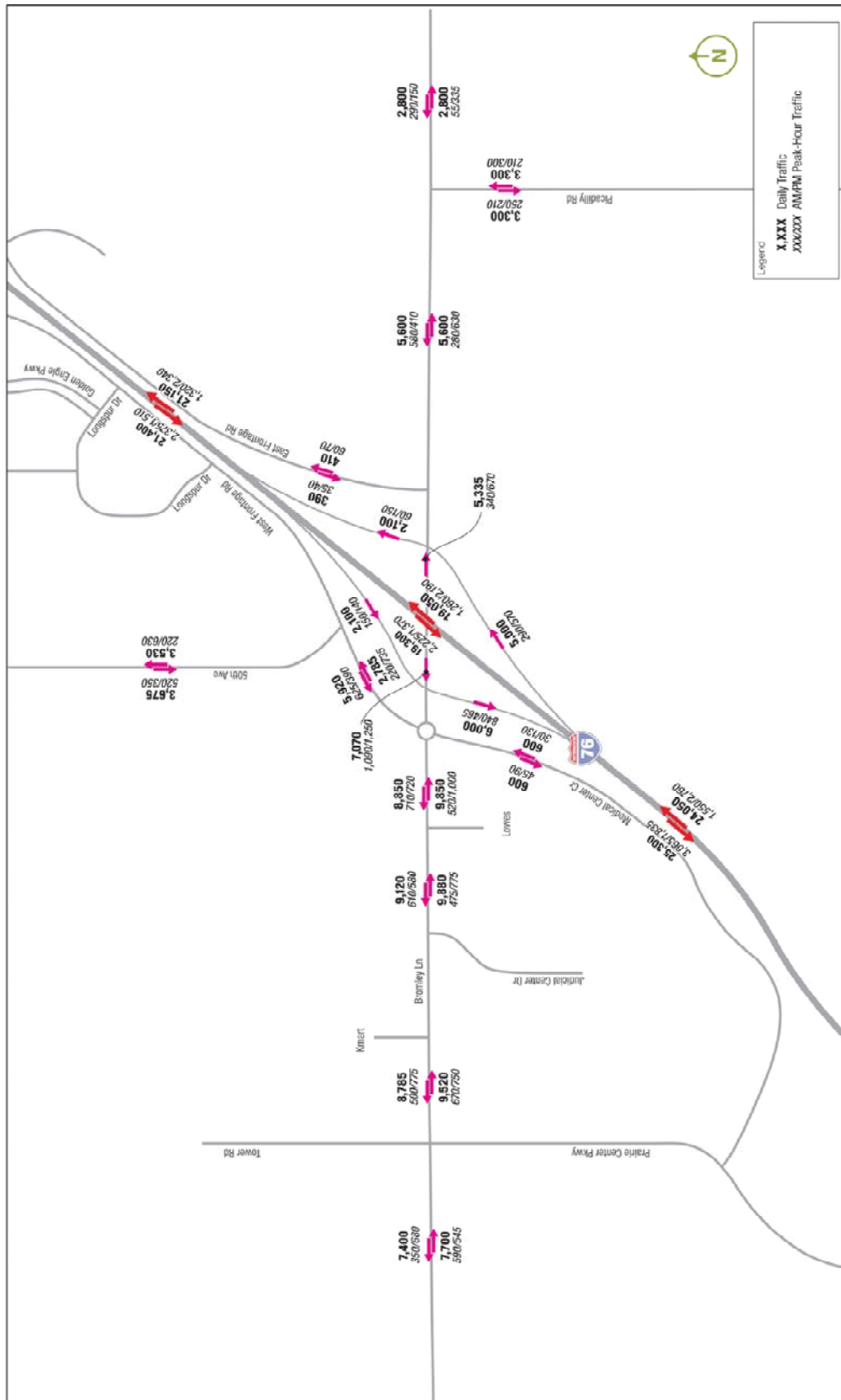


Exhibit 4-16. 2035 Action Alternatives Peak-Hour Turning Movement Counts

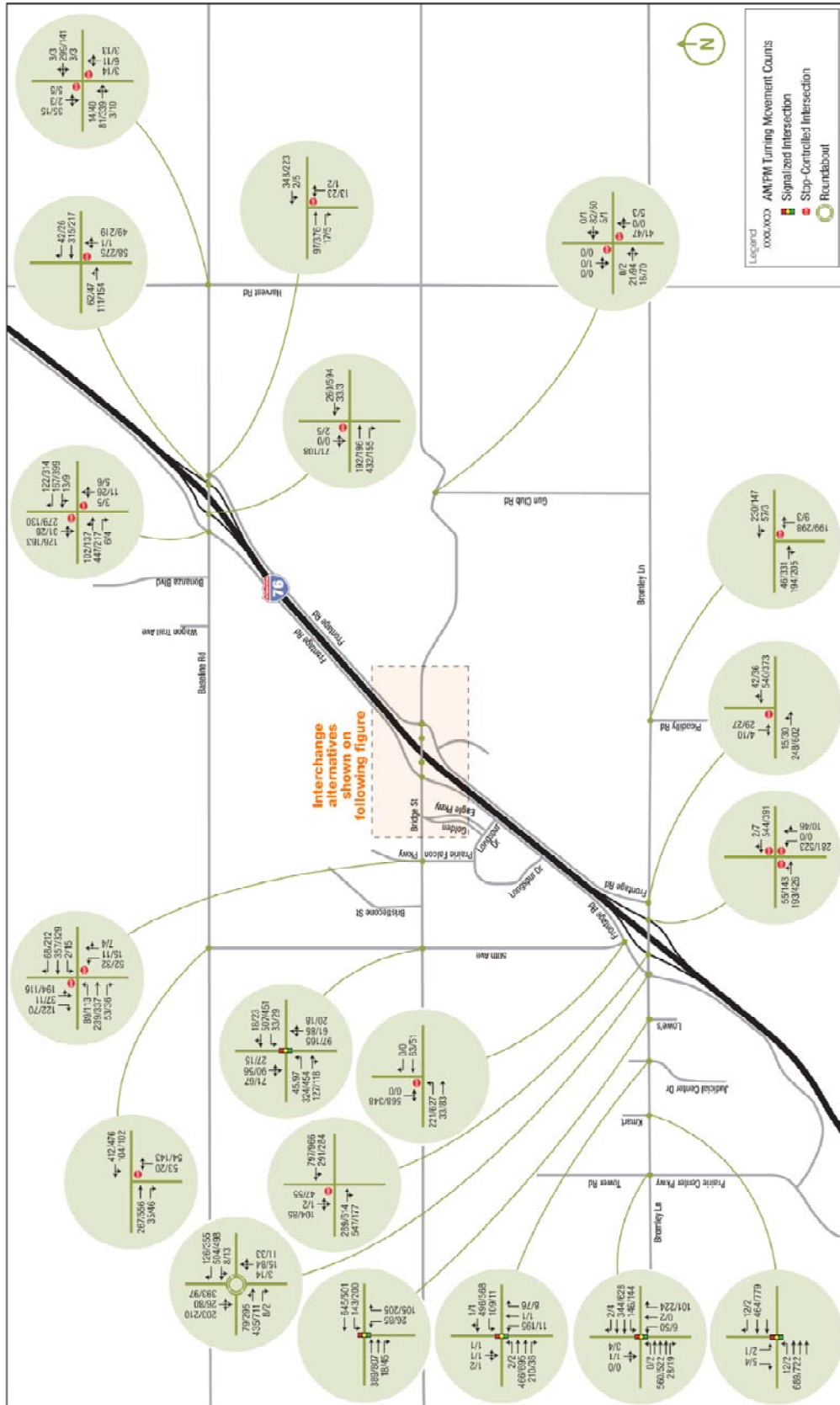


Exhibit 4-17. 2035 Action Alternatives Peak-Hour Turning Movement Counts at Bridge Street Interchange

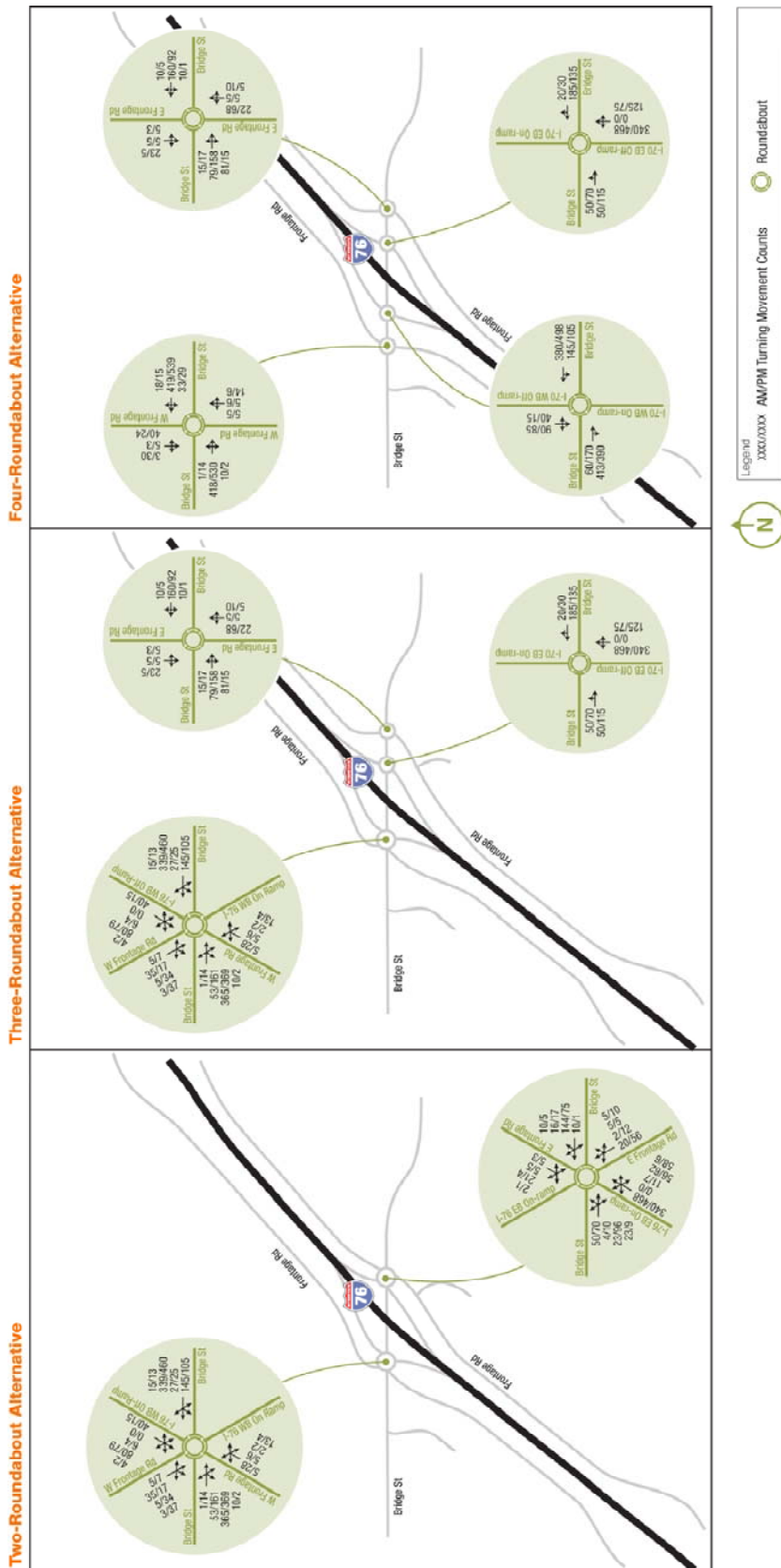


Exhibit 4-18. 2035 Action Alternatives AM LOS



Exhibit 4-19. 2035 Action Alternatives PM LOS



Freeway Elements

The analysis results for the 2035 Action Alternatives freeway elements are shown in Exhibit 4-20.

- The majority of the basic freeway segments and ramp merge/diverge areas operate at LOS C or better during both peak hours.
- The addition of the proposed interchange does result in more LOS C operations of the freeway elements between Bromley Lane and Bridge Street due to the increased traffic volumes using the facilities. However, the differences in density are minor; for example westbound I-76 between Bridge Street and Bromley Lane would change from 15.2 pc/mi/ln (LOS B) to 18.7 pc/mi/ln (LOS C). This is typical for all of the segments that change from LOS B to LOS C and from LOS A to LOS B, with the maximum increase in density being 4.3 pc/mi/ln. Several of the segments see small improvements, which are not enough to change to a better LOS, but are reflected in the lower densities of some of the segments. The biggest improvement is on westbound I-76 under Bridge Street, which sees a 1.2 pc/mi/ln reduction. The proposed interchange meets the purpose and need of the project and benefits include shorter travel times and longer life for the bridge structure at Bromley Lane.

Baseline Road Intersections

A summary of the operational results for intersections along Baseline Road are shown in Exhibit 4-21. Based on the results of the analysis:

- The addition of the Bridge Street interchange does not result in the operational degradation of any additional transportation elements compared to the No-Action Alternative. The overall number of transportation elements operating at LOS E/F is less than the 2035 No-Action Alternative.
- The overall magnitude of the delays and queues at all elements will improve.
- The northbound approach of the West Frontage Road will operate at LOS C/E in the AM and PM peak hours, which is an improvement from the LOS E/F operations in the 2035 No-Action Alternative. Queues in the PM peak hour are expected to decrease from 425 feet to 50 feet.
- The southbound approach of the West Frontage Road will continue to operate at LOS F in the AM and PM peak hours. However, when compared to the 2035 No-Build Alternative, queues are expected to decrease from 4125 feet to 2675 feet in the AM peak hour and from 3250 feet to 1550 feet in the PM peak hour.
- The northbound approach of the eastbound I-76 off-ramp will operate at LOS F during the PM peak hour, although it is an improvement from over 100 sec/veh of delay in the 2035 No-Build Alternative to 64.4 sec/veh of delay. When compared to the 2035 No-Build Alternative, queues are expected to decrease from 1250 feet to 500 feet in the PM peak hour.

Exhibit 4-20. 2035 Action Alternatives Freeway Element LOS

Freeway Element	Description	2035 No-Action (AM/PM)		2035 Action (AM/PM)	
		LOS*	Density (pc/mi/ln)	LOS*	Density (pc/mi/ln)
Mainline Segments					
I-76 North of Baseline Road	Eastbound	A/B	7.5/11.8	A/B	7.4/11.9
	Westbound	B/A	13.2/9.7	B/A	13.2/9.7
I-76 Under Baseline Road	Eastbound	A/A	6.3/10.8	A/B	6.6/11.3
	Westbound	B/A	12.2/8.1	B/A	12.6/8.7
I-76 Baseline Road to Bridge Street	Eastbound	A/B	7.2/15.2	A/B	7.5/15.2
	Westbound	B/A	16.7/9.7	B/A	16.5/10.1
I-76 Under Bridge Street	Eastbound	A/B	7.2/15.2	A/B	6.9/14.4
	Westbound	B/A	16.7/9.7	B/A	15.5/9.3
I-76 Bridge Street to Bromley Lane	Eastbound	A/B	7.2/15.2	A/C	10.7/18.7
	Westbound	B/A	16.7/9.7	C/B	20.0/13.2
I-76 Under Bromley Lane	Eastbound	A/B	6.8/13.9	A/B	10.2/17.4
	Westbound	B/A	15.5/8.5	C/B	18.7/12.0
I-76 South of Bromley Lane	Eastbound	A/C	10.9/22.0	B/C	12.5/22.4
	Westbound	D/B	26.8/14.3	D/B	27.3/16.1
Merge/Diverge Areas					
Baseline Road Interchange	Eastbound Diverge	A/B	8.5/18.7	A/B	8.8/18.7
	Eastbound Merge	A/B	6.4/11.0	A/B	6.3/11.0
	Westbound Diverge	B/B	14.8/10.5	B/B	14.8/10.5
	Westbound Merge	B/A	15.5/8.0	B/A	15.3/8.5
Bridge Street Interchange	Eastbound Diverge	n/a	n/a	A/B	8.1/17.7
	Eastbound Merge	n/a	n/a	A/B	7.0/15.1
	Westbound Diverge	n/a	n/a	B/A	15.1/7.5
	Westbound Merge	n/a	n/a	C/B	20.7/14.2
Bromley Lane Interchange	Eastbound Diverge	A/B	5.9/18.8	A/B	7.8/19.2
	Eastbound Merge	A/B	5.9/14.7	A/B	9.7/18.4
	Westbound Diverge	B/A	18.1/9.6	C/B	21.9/13.9
	Westbound Merge	C/B	25.2/14.5	C/B	25.7/16.1

*Note: The LOS font color matches the colors used in the LOS figures

Exhibit 4-21. 2035 Action Alternatives Baseline Road Intersection LOS

Intersection	Approach	2035 No-Action (AM/PM)			2035 Action (AM/PM)		
		LOS*	Delay (sec/veh)	95% Queue Length (ft)	LOS*	Delay (sec/veh)	95% Queue Length (ft)
50th Avenue	Eastbound	A/A	**	**	A/A	**	**
	Westbound	A/A	8.4/9.8	25/25	A/A	8.3/9.4	25/25
	Northbound ¹	C/C	18.7/20.7	50/75	C/C	18.6/21.4	50/75
West Frontage Road	Eastbound	A/B	8.3/10.7	25/25	A/B	8.2/10.2	25/25
	Westbound	A/A	8.8/7.9	25/25	A/A	8.4/7.8	25/25
	Northbound ¹	E/F**	44.0/>100	50/425	C/E	22.4/38.6	25/50
	Southbound ¹	F**/F**	>100/>100	4125/3250	F**/F**	>100/>100	2675/1550
Westbound I-76 Ramps	Eastbound	A/A	**	**	A/A	**	**
	Westbound	A/A	9.6/8.3	25/25	A/A	9.2/8.1	25/25
	Southbound ¹	B/C	11.8/20.7	25/75	B/C	11.0/16.0	25/50
Eastbound I-76 Ramps	Eastbound	A/A	8.6/8.1	25/25	A/A	8.5/8.0	25/25
	Westbound	A/A	**	**	A/A	**	**
	Northbound ¹	C/F**	16.4/>100	50/1250	B/F	14.3/64.4	25/500
East Frontage Road	Eastbound	A/A	**	**	A/A	**	**
	Westbound	A/A	7.6/8.4	25/25	A/A	7.5/8.3	0/25
	Northbound	B/B	12.3/14.5	25/25	B/B	12.0/14.1	25/25
Harvest Road	Eastbound	A/A	8.5/7.7	25/25	A/A	8.5/7.7	25/25
	Westbound	A/A	7.5/8.1	25/25	A/A	7.6/8.2	25/25
	Northbound ¹	B/B	13.0/14.5	25/25	B/B	12.8/13.9	25/25
	Southbound ¹	B/B	12.5/12.7	25/25	B/B	11.6/11.2	25/25

*Note: The LOS font color matches the colors used in the LOS figures

**HCM is limited in calculating delays and queue lengths for these locations

¹ Stop-controlled approach

Bridge Street Intersections

A summary of the results for intersections along Bridge Street are shown in Exhibit 4-22. Based on the results of the analysis:

- A reduction of vehicles traveling to Bromley Lane will result in improved operations at the 50th Avenue intersection.
- Both the northbound and southbound Prairie Falcon Parkway approaches will experience an increase in delay. Improving the connection of Bridge Street to I-76 with the proposed new interchange will draw more regional traffic to the segment of Bridge Street between 50th Avenue and I-76. This additional traffic on Bridge Street results in fewer gaps for vehicles to turn from the stop-controlled approaches onto Bridge Street. By 2035, the northbound and southbound approaches at this intersection will operate at LOS E/F in the AM and PM peak hours.

Exhibit 4-22. 2035 Action Alternatives Bridge Street Intersection LOS

Intersection	Approach	2035 No-Action (AM/PM)			2035 Action (AM/PM)		
		LOS*	Delay (sec/veh)	95% Queue Length (ft)	LOS*	Delay (sec/veh)	95% Queue Length (ft)
50th Avenue ¹	Eastbound	C/E	27.5/60.6	150/425	D/D	38.7/38.3	200/300
	Westbound	C/D	32.9/39.0	175/275	D/C	53.8/23.4	250/200
	Northbound	C/F**	27.1/>100	125/775	C/E	22.5/68.2	75/175
	Southbound	B/C	19.6/28.2	100/150	C/C	21.1/26.6	75/75
	Overall	C/F**	27.3/>100	n/a	D/D	40.3/37.6	n/a
Prairie Falcon Parkway	Eastbound	A/A	8.2/8.5	25/25	A/A	8.8/9.3	25/25
	Westbound	A/A	7.8/7.8	0/25	A/A	8.0/8.1	0/25
	Northbound ²	D/D	31.3/27.7	50/25	F/E	65.3/45.1	100/50
	Southbound ²	C/C	22.3/17.7	100/50	F**/F	>100/63.9	1,175/200
West Frontage Road	Eastbound	A/A	7.7/7.9	25/25	See Bridge Street interchange detailed alternative analysis (next section of document).		
	Westbound	A/A	7.6/7.6	25/25			
	Northbound ²	B/C	14.2/16.5	25/50			
	Southbound ²	B/B	10.2/10.4	25/25			
East Frontage Road	Eastbound	A/A	7.5/7.4	25/25	See Bridge Street interchange detailed alternative analysis (next section of document).		
	Westbound	A/A	7.6/7.6	25/25			
	Northbound ²	B/B	10.3/10.9	25/25			
	Southbound ²	A/B	10.0/10.5	25/25			
Gun Club Road	Eastbound	A/A	7.5/7.4	0/0	A/A	7.6/7.4	0/0
	Westbound	A/A	7.4/7.5	25/25	A/A	7.5/7.8	0/0
	Northbound ²	A/A	9.3/9.0	25/25	A/B	9.9/10.3	25/25
	Southbound ²	A/A	9.1/9.1	25/25	A/A	9.4/9.6	25/25

*Note: The LOS font color matches the colors used in the LOS figures

**HCM is limited in calculating delays and queue lengths for these locations

¹Signalized intersection

²Stop-controlled approach

Bridge Street Interchange Detailed Alternatives Analysis

An operational analysis was completed for the different proposed Action Alternatives for the Bridge Street interchange at I-76, which includes the addition of two ramp terminals and improvements to the existing frontage road intersections. As previously described, the recommended alternatives include the addition of two, three, or four roundabouts to accommodate the vehicle movements at the frontage roads and new ramp termini.

The analysis for each alternative was performed with the ARCADY model in Junctions 8 roundabout design and capacity analysis software. Preliminary geometric parameters were used with a 10-percent capacity reduction to correlate the results to recent U.S. observations and provide conservative results. In addition to the ARCADY analysis, an HCM 2010 analysis was conducted in Junctions 8 to provide a comparison to the ARCADY results.

The results of the operational analyses for 2035 Action Alternatives at the Bridge Street interchange area are shown in Exhibit 4-23, Exhibit 4-24, and Exhibit 4-25.

- All of the roundabouts in the different Action Alternatives will operate at LOS B or better in 2035, with a majority of the approaches and overall intersections operating at LOS A.

Bromley Lane Intersections

A summary of the 2035 Action Alternatives operational analysis results for intersections along Bromley Lane are shown in Exhibit 4-26.

- 50th Avenue at the West Frontage Road will improve from LOS F/F to LOS C/B during the AM/PM peak hours, compared to the 2035 No-Build Alternative. Queues are expected to decrease from 3250 feet to 225 feet in the AM peak hour, and from 625 feet to 50 feet in the PM peak hour.
- The West Frontage Road will continue to operate poorly (LOS F/F) in the peak hours, but the magnitude of the poor operations will be reduced, compared to the 2035 No-Build Alternative. Delay is expected to reduce from over 100 sec/veh to 55.7 sec/veh in the AM peak hour, and from over 100 sec/veh to 94.1 sec/veh in the PM peak hour.
- The westbound ramp intersection will continue to operate poorly (LOS F/F) in both the AM and PM peak hours, but the magnitude of the poor operations will be reduced, compared to the 2035 No-Build Alternative. The westbound approach will improve from LOS E to LOS B in the AM peak hour, with delay reduced from 48.3 sec/veh to 14.5 sec/veh, and the expected queue is reduced from 350 feet to 75 feet. The westbound approach will improve from LOS C to LOS B in the PM peak hour, with delay reduced from 22.3 sec/veh to 12.5 sec/veh, and the expected queue is reduced from 150 feet to 50 feet. The southbound queue is expected to be 1600 feet in the AM peak hour and 1425 feet in the PM peak hour. The ramp is approximately 1500 feet long, so queues are expected to spillback onto mainline I-76 during the AM peak hour which will impact I-76 safety and operations.
- The eastbound ramp intersection will continue to operate poorly (LOS F/F) in both the AM and PM peak hours, but the magnitude of the poor operations will be reduced, compared to the 2035 No-Build Alternative. The westbound approach will improve from LOS F to LOS E in the PM peak hour, with delay reduced from 54.5 sec/veh to 44.0 sec/veh. The northbound approach will improve from LOS F to LOS C in the AM peak hour, with delay reduced from over 100 sec/veh to 22.8 sec/veh. Queuing on the ramp will spillback onto mainline I-76 which will impact I-76 safety and operations.
- Queues between the closely spaced intersections along Bromley Lane will continue to create additional operational and safety issues. Operations at the intersections west of I-76 along Bromley Lane are very similar to the 2035 No-Build Alternative.

Exhibit 4-23. 2035 Action Alternatives, Four-Roundabout Alternative LOS Results

Model	Movement	AM Peak Hour			PM Peak Hour		
		Delay (sec/veh)	LOS*1	95% Queue Length (ft)	Delay (sec/veh)	LOS*1	95% Queue Length (ft)
West Frontage Road							
ARCADY	Overall	6.6	A	n/a	8.6	A	n/a
	Southbound	4.9	A	25	6.2	A	25
	Eastbound	6.8	A	25	10.0	B	50
	Northbound	4.6	A	25	5.1	A	25
	Westbound	6.7	A	25	7.7	A	25
HCM	Overall	8.0	A	n/a	10.1	B	n/a
	Southbound	5.4	A	25	7.3	A	25
	Eastbound	8.4	A	75	11.6	B	100
	Northbound	5.0	A	25	5.7	A	25
	Westbound	8.1	A	75	9.3	A	100
I-76 Westbound Ramps							
ARCADY	Overall	7.9	A	N/A	9.0	A	N/A
	Southbound	6.0	A	25	5.9	A	25
	Eastbound	8.7	A	25	11.0	B	50
	Westbound	7.5	A	25	7.6	A	25
HCM	Overall	9.6	A	N/A	10.5	B	N/A
	Southbound	7.4	A	25	7.1	A	25
	Eastbound	11.0	B	100	12.6	B	125
	Westbound	8.8	A	75	9.0	A	100
I-76 Eastbound Ramps							
ARCADY	Overall	6.4	A	N/A	7.8	A	N/A
	Eastbound	3.8	A	25	3.9	A	25
	Northbound	6.9	A	25	9.4	A	25
	Westbound	6.4	A	25	6.8	A	25
HCM	Overall	8.0	A	N/A	9.8	A	N/A
	Eastbound	3.8	A	25	4.4	A	25
	Northbound	8.7	A	75	11.9	B	125
	Westbound	8.3	A	50	8.8	A	50
East Frontage Road							
ARCADY	Overall	4.2	A	N/A	4.0	A	N/A
	Southbound	3.6	A	25	3.4	A	25
	Eastbound	4.0	A	25	4.0	A	25
	Northbound	3.8	A	25	3.7	A	25
	Westbound	4.6	A	25	4.2	A	25
HCM	Overall	4.7	A	N/A	4.4	A	N/A
	Southbound	3.8	A	25	3.4	A	25
	Eastbound	4.5	A	25	4.5	A	25
	Northbound	3.8	A	25	4.0	A	25
	Westbound	5.2	A	25	4.5	A	25

*Note: The LOS font color matches the colors used in the LOS figures

¹LOS Source: 2010 Highway Capacity Manual—Unsignalized Intersections

Exhibit 4-24. 2035 Action Alternatives, Three-Roundabout Alternative LOS Results

Model	Movement	AM Peak Hour			PM Peak Hour		
		Delay (sec/veh)	LOS ^{*1}	95% Queue Length (ft)	Delay (sec/veh)	LOS ^{*1}	95% Queue Length (ft)
I-76 Westbound Ramps and West Frontage Road							
ARCADY	I-76 Off Ramp	5.8	A	25	5.9	A	25
	West Frontage Road	5.5	A	25	6.6	A	25
	Eastbound	8.4	A	25	11.9	B	75
	Northbound	5.1	A	25	5.4	A	25
	Westbound	7.6	A	25	8.1	A	25
	Overall	7.6	A	N/A	9.3	A	N/A
HCM	I-76 Off Ramp	7.5	A	25	7.4	A	25
	West Frontage Road	6.5	A	25	8.4	A	25
	Eastbound	11.3	B	100	14.7	B	150
	Northbound	6.0	A	25	6.4	A	25
	Westbound	9.0	A	75	9.7	A	100
	Overall	9.5	A	N/A	11.4	B	N/A
I-76 Eastbound Ramps							
ARCADY	Eastbound	3.6	A	25	3.9	A	25
	Northbound	6.9	A	25	9.4	A	25
	Westbound	6.4	A	25	6.8	A	25
	Overall	6.4	A	N/A	7.8	A	N/A
HCM	Eastbound	3.8	A	25	4.4	A	25
	Northbound	8.7	A	75	11.9	B	125
	Westbound	8.3	A	50	8.8	A	50
	Overall	8.0	A	N/A	9.8	A	N/A
East Frontage Road							
ARCADY	Southbound	3.6	A	25	3.4	A	25
	Eastbound	4.0	A	25	4.0	A	25
	Northbound	3.8	A	25	3.7	A	25
	Westbound	4.6	A	25	4.2	A	25
	Overall	4.2	A	N/A	4.0	A	N/A
HCM	Southbound	3.8	A	25	3.4	A	25
	Eastbound	4.5	A	25	4.5	A	25
	Northbound	3.8	A	25	4.0	A	25
	Westbound	5.2	A	25	4.5	A	25
	Overall	4.7	A	N/A	4.4	A	N/A

*Note: The LOS font color matches the colors used in the LOS figures

¹LOS Source: 2010 Highway Capacity Manual—Unsignalized Intersections

Exhibit 4-25. 2035 Action Alternatives, Two-Roundabout Alternative LOS Results

Model	Movement	AM Peak Hour			PM Peak Hour		
		Delay (sec/veh)	LOS* ¹	95% Queue Length (ft)	Delay (sec/veh)	LOS* ¹	95% Queue Length (ft)
I-76 Westbound Ramps and West Frontage Road							
ARCADY	I-76 Off Ramp	5.8	A	25	5.9	A	25
	West Frontage Road	5.5	A	25	6.6	A	25
	EB Bridge Street	8.4	A	25	11.9	B	75
	NB West Frontage Road	5.1	A	25	5.4	A	25
	WB Bridge Street	7.6	A	25	8.1	A	25
	Overall	7.6	A	N/A	9.3	A	N/A
HCM	I-76 Off Ramp	7.5	A	25	7.4	A	25
	West Frontage Road	6.5	A	25	8.4	A	25
	EB Bridge Street	11.3	B	100	14.7	B	150
	NB West Frontage Road	6.0	A	25	6.4	A	25
	WB Bridge Street	9.0	A	75	9.7	A	100
	Overall	9.5	A	N/A	11.4	B	N/A
I-76 Eastbound Ramps and East Frontage Road							
ARCADY	East Frontage Road	4.7	A	25	4.9	A	25
	EB Bridge Street	3.7	A	25	4.0	A	25
	I-76 Off Ramp	7.1	A	25	9.5	A	25
	NB East Frontage Road	4.9	A	25	5.5	A	25
	WB Bridge Street	6.3	A	25	6.3	A	25
	Overall	6.3	A	N/A	7.6	A	N/A
HCM	East Frontage Road	5.5	A	25	5.6	A	25
	EB Bridge Street	3.9	A	25	4.5	A	25
	I-76 Off Ramp	9.0	A	75	12.1	B	125
	NB East Frontage Road	5.5	A	25	7.0	A	25
	WB Bridge Street	8.2	A	50	8.0	A	25
	Overall	7.9	A	N/A	9.6	A	N/A

*Note: The LOS font color matches the colors used in the LOS figures

¹LOS Source: 2010 Highway Capacity Manual—Unsignalized Intersections

Exhibit 4-26. 2035 Action Alternatives Bromley Lane Intersection LOS

Intersection	Approach	2035 No-Action (AM/PM)			2035 Action (AM/PM)		
		LOS*	Delay (sec/veh)	95% Queue Length (ft)	LOS*	Delay (sec/veh)	95% Queue Length (ft)
50th Avenue and West Frontage Road	Eastbound	A/B	8.8/12.8	50/175	A/A	7.9/9.2	25/75
	Westbound	A/A	**	**	A/A	**	**
	Southbound ¹	F**/F	>100/97.4	3250/625	C/B	19.4/11.4	225/50
Tower Road ²	Eastbound	B/B	12.5/13.9	50/50	B/B	12.2/13.7	50/50
	Westbound	B/B	12.0/13.9	50/75	B/B	11.9/13.9	50/75
	Northbound	B/B	15.2/16.1	25/50	B/B	15.2/15.9	25/50
	Southbound	B/B	13.9/13.1	0/0	B/B	13.8/13.0	0/0
	Overall	B/B	12.5/14.3	n/a	B/B	12.4/14.2	n/a
Kmart Access ²	Eastbound	A/A	7.4/8.6	25/50	B/A	11.3/7.9	50/50
	Westbound	B/C	14.0/21.0	50/125	C/C	26.2/23.6	100/150
	Southbound	B/B	12.4/18.1	0/0	B/C	15.3/20.8	25/25
	Overall	B/B	10.1/15.0	n/a	B/B	17.3/16.1	n/a
Judicial Center Drive ²	Eastbound	A/B	7.1/16.8	25/75	A/B	7.2/16.8	25/75
	Westbound	A/B	6.8/17.7	25/125	A/B	8.5/17.7	25/125
	Northbound	B/B	15.2/11.3	25/50	B/B	15.1/11.1	25/50
	Overall	A/B	7.1/16.2	n/a	A/B	7.9/16.2	n/a
Lowe's Access ²	Eastbound	B/B	13.0/18.5	50/125	B/C	12.9/28.7	50/175
	Westbound	B/B	14.0/14.8	125/100	B/B	14.0/13.7	125/150
	Northbound	B/B	12.9/16.9	25/50	B/C	13.0/22.6	25/75
	Overall	B/B	13.6/16.9	n/a	B/C	13.6/22.0	n/a
West Frontage Road ³	Eastbound	F**/F**	>100/>100	650/1450	E/F**	37.1/>100	275/1050
	Westbound	B/C	14.1/20.6	150/150	B/D	12.1/33.7	100/250
	Northbound	C/E	17.2/37.3	25/100	B/D	11.0/25.6	25/75
	Southbound	F**/F	>100/71.0	1750/450	F**/D	>100/25.1	575/175
	Overall	F**/F**	>100/>100	n/a	F/F	55.7/94.1	n/a
Westbound I-76 Ramps	Eastbound	A/A	**	**	A/A	**	**
	Westbound	E/C	48.3/22.3	350/150	B/B	14.5/12.5	75/50
	Southbound ¹	F**/F**	>100/>100	n/a	F**/F**	>100/>100	1600/1425
Eastbound I-76 Ramps	Eastbound ¹	C/F**	23.1/>100	**	C/F**	16.7/>100	n/a
	Westbound ¹	F**/F	>100/54.5	**	F**/E	>100/44.0	n/a
	Northbound ¹	F**/F**	>100/>100	**	C/F**	22.8/>100	n/a
	Overall	F**/F**	>100/>100	n/a	F**/F**	>100/>100	n/a
East Frontage Road	Eastbound	A/A	9.1/8.5	25/25	A/A	8.9/8.4	25/25
	Westbound	A/A	**	**	A/A	**	**
	Southbound ¹	C/D	19.6/27.0	25/50	C/C	17.4/22.7	25/25
Picadilly Road	Eastbound	A/A	**	**	A/A	**	**
	Westbound	A/A	8.2/8.8	25/25	A/A	8.2/8.8	25/25
	Northbound ¹	D/D	26.8/33.7	125/175	D/D	26.8/33.7	125/175

*Note: The LOS font color matches the colors used in the LOS figures

**HCM is limited in calculating delays and queue lengths for these locations

¹Stop-controlled approach

²Signalized intersection

³Roundabout

The results of the HCS analysis are meant for comparative purposes only, realizing that when the volume-capacity ratio exceeds 1, the results are not as reliable. Results of the analysis indicate that in 2035, the proposed interchange will reduce the number of elements operating at LOS E/F.

Interchange Area Delay

The results of the delay analysis are shown in Exhibit 4-27 and are compared to the results from the 2013 Existing Conditions and 2035 No-Action Alternative.

- The addition of the Bridge Street interchange will reduce overall delay in the area below the 2035 No-Action Alternative levels, and by as much as 75 percent.
- The majority of the delay will continue to occur at the Bromley Lane interchange.
- As a matter of comparison, delay encountered at the proposed Bridge Street interchange will be similar to that experienced under today’s traffic conditions at the Baseline Road interchange.

Exhibit 4-27. 2035 Action Alternatives Interchange Area Delay

Alternative	Interchange	Total Delay (vehicle-hours/day)					
		AM			PM		
2013 Existing	Baseline Road	6.4			11.5		
	Bridge Street	1.4			1.9		
	Bromley Lane	20.2			39.8		
	Total	28.0			53.2		
2035 No-Action	Baseline Road	442.3			486.2		
	Bridge Street	1.8			3.7		
	Bromley Lane	666.1			996.3		
	Total	1,110.2			1,486.2		
2035 Action	Baseline Road	180.7			98.0		
	Bridge Street	7.4 ¹	4.8 ²	5.3 ³	10.1 ¹	6.8 ²	7.2 ³
	Bromley Lane	262.7			263.3		
	Total	450.9¹	448.3²	448.8³	371.4¹	368.1²	368.5³

¹Four-roundabout alternative
²Three-roundabout alternative
³Two-roundabout alternative

Travel Times

The addition of the Bridge Street interchange provides motorists with a choice of routes to complete their trip. Motorists who are currently traveling between the Bromley Lane interchange and the intersection of 50th Avenue and Bridge Street can use Route 1 or Route 2 (see Exhibit 4-28). With the proposed interchange, motorists can continue to use these routes or they can instead use Route 3 or Route 4 to reach the same destinations. The new routes are approximately twice as long as the original routes, but half of the distance is on I-76, which will allow traffic to travel at highway speeds.

Exhibit 4-28. 2035 Action Alternative Travel Time Routes



The results of the 2035 Action Alternatives travel time analysis are shown in Exhibit 4-29.

Exhibit 4-29. 2035 Action Alternatives Travel Times

Alternative	Travel Time (seconds per vehicle)*							
	Route 1**		Route 2**		Route 3**		Route 4**	
	AM	PM	AM	PM	AM	PM	AM	PM
2013 Existing	224	190	214	207	n/a	n/a	n/a	n/a
2035 No-Action	376	377	412	423	n/a	n/a	n/a	n/a
2035 Action	301	220	245	369	211	218	233	220

*Note: Travel times were calculated for the four-roundabout alternative, which was determined to reflect the worst-case scenario.

**Refer to Exhibit 4-28 for a description of the routes.

- The travel times for Routes 1 and 2 are reduced compared to the No-Action Alternative, but they are still longer than 2013 travel times
- Routes 3 and 4 travel times are lower than the 2035 No-Action Alternative times for Routes 1 and 2 and are similar to 2013 travel times
- Routes 3 and 4 travel times are similar to Routes 1 and 2 travel times for the Existing Conditions
- Motorists have more route choices that will all save time, as much as three minutes, compared to the No-Action Alternative

Other Improvements

The addition of the interchange at Bridge Street does not result in all transportation elements operating at LOS D or better. Adding an interchange at I-76 will result in rerouting traffic to the transportation network elements on and around Bridge Street. As a result, the northbound and southbound approaches to the intersection of Prairie Falcon Parkway will operate at LOS E/F during the peaks. Since the addition of the interchange resulted in this degradation in operations, the proposed project will need to improve this intersection to operate at LOS D or better.

A traffic signal at this location will be an acceptable improvement measure because the spacing of intersections along Bridge Street will better accommodate a traffic signal. This is the only other improvement measure that will be related to the proposed interchange. A signal must also meet a signal warrant, as per MUTCD Chapter 4C. This analysis is a first step to help reduce any delays. The results of the improvement analysis are shown in Exhibit 4-30.

Exhibit 4-30. 2035 Action Alternatives, Other Improvements

Intersection/ Approach	Before Mitigation (AM/PM)			After Mitigation (AM/PM)		
	LOS*	Delay (sec/veh)	95% Queue Length (ft)	LOS*	Delay (sec/veh)	95% Queue Length (ft)
Bridge Street and Prairie Falcon Parkway						
Eastbound	A/A	8.8/9.3	25/25	C ² /C ²	31.5/32.6	125/175
Westbound	A/A	8.0/8.1	0/25	D ² /C ²	36.1/30.1	225/200
Northbound ¹	F/E	65.3/45.1	100/50	D ² /D ²	39.3/37.7	50/25
Southbound ¹	F ^{**} /F	>100/63.9	1,175/200	C ² /C ²	32.4/27.4	150/75
Overall	n/a	n/a	n/a	C ² /C ²	33.8/30.9	n/a

*Note: The LOS font color matches the colors used in the LOS figures

**HCM is limited in calculating delays and queue lengths for these locations

¹Stop-controlled approach

²Signalized intersection

Summary

The 2035 Action Alternatives will:

- Improve overall connectivity to/from I-76 and Brighton
- Reduce the number of transportation network elements operating at LOS E/F
- Reduce overall delay and queues at key intersections
- Save motorists as much as three minutes in travel time per vehicle while completing trips to destinations along Bridge Street and to the west of 50th Avenue
- Require the addition of a traffic signal or other mitigation to the Bridge Street and Prairie Falcon Parkway intersection
- Extend the life of the infrastructure at Bromley Lane to at least the year 2030, which is about five years longer than the No-Action Alternative

Pedestrian and bicycle operations and safety will be affected by growing congestion as traffic volumes increase along the existing streets, a negative direct impact of the No-Action Alternative. Additionally, negative indirect impacts to pedestrian and bicycle operations and safety will occur outside the study area from diverted traffic and the resulting increased congestion.

4.4 Impacts to System Connectivity

Connectivity in the study area will improve with the addition of a new access point at I-76 and Bridge Street. This access point will increase redundancy in the system and benefit mobility for regional trips, local trips, and emergency vehicles. Trips with origins or destinations along Bridge Street will have direct access to the interstate system and will no longer need to utilize frontage roads and additional surface streets to make regional connections. This will decrease travel times (shorter trip lengths with less out-of-direction travel) and traffic volumes at those interchanges and on the surface streets between the interchanges.

4.5 Impacts to Transit Service

No transit routes currently extend over the Bridge Street overpass. The addition of a new access point at I-76 and Bridge Street may provide an opportunity for the Regional Transportation District (RTD) to adjust bus routes, schedules, and stops to provide more efficient service to the eastern Brighton area. Buses traveling in traffic will be impacted by changing travel patterns, though no direct or negative impacts are anticipated along Bridge Street, 50th Street, or Bromley Lane west of the proposed interchange.

4.6 Impacts to Pedestrian and Bicycle Facilities

The City of Brighton requires new developments to construct sidewalks on lots located adjacent to a major or minor arterial, a collector, or adjacent to a primary transportation route to a public or private school within the city limits. The proposed interchange at I-76 and Bridge Street will not preclude or disrupt any existing or future investments in pedestrian and bicycle facilities in eastern Brighton.

According to CDOT's bicycle policy directive and Roadway Design Guide, bicycles are permitted on Bridge Street and the surrounding street network, with the exception of on I-76. The policy's directive is to provide transportation infrastructure that accommodates bicycle and pedestrian use of the highways in a manner that is safe and reliable for all highway users. The needs of bicyclists and pedestrians will be included in the planning, design, and operation of transportation facilities, as a matter of routine.

Under the Preferred Alternative, small direct positive impacts will occur from widened sidewalks and improved traffic operations. Positive indirect impacts will potentially occur from individuals using pedestrian and bicycle facilities to avoid the traffic congestion.

4.7 Impacts to Truck and Rail Freight Facilities

The proposed interchange at I-76 and Bridge Street will not impact the truck routes designated by the City of Brighton. The Preferred Alternative is designed to accommodate trucks so that Bridge Street will continue to serve truck freight both locally and regionally. The additional access point to the interstate will benefit trucks and emergency response vehicles by providing more direct routes to destinations and the interstate. Overall truck percentages are expected to remain consistent within the study area. However, truck percentages along the frontage roads are expected to decrease as a more direct regional connection is available.

4.8 Impacts to Safety

Safety is a critical consideration in determining the Preferred Alternative for the proposed interchange. No direct impacts to safety along I-76 or surrounding surface roads are anticipated with the addition of a new access point. In fact, the additional access point will benefit emergency response vehicles. Additionally, the roundabouts are designed to improve safety and mobility in east Brighton. The interchange and all conflict points will have adequate lighting; details on the exact locations and type of lighting will be decided in final design. The Preferred Alternative meets driver expectations, limits conflict and decision points through the roundabouts, and provides a clear, direct route between I-76 and Bridge Street.

5. Mitigation

Mitigation measures are not required since there are no adverse effects to transportation as a part of this project. When construction begins, temporary construction impacts may occur, which will be mitigated with traffic control and detours.

Appendices

Appendix A: Traffic Operations Methodology Memorandum

Appendix B: Methodology for Developing Future Projected Traffic Volumes

Appendix C: Vehicle Classification Data

Appendix D: Safety Assessment

Appendix E: HCS Reports

I-76 & Bridge Street INTERCHANGE

Technical Memorandum

To: Joe Smith, City of Brighton; Markos Atamo, CDOT; Steve Hersey, CDOT; Monica Pavlik, FHWA

From: Dave Sprague

CC: Ken DePinto, Jeff Kullman, Tory McKennan

Date: August 2013

Subject: Traffic Operations Methodology

1.0 INTRODUCTION

Atkins has been asked to study the possibility of constructing a new interchange along I-76 at Bridge Street (old State Highway 7) within the City of Brighton. The steps required for the interchange approval from the Colorado Department of Transportation (CDOT), Denver Regional Council of Governments (DRCOG), and the Federal Highway Administration (FHWA) include completion of:

- System Level Study (SLS)
- Environmental Assessment (EA)
- Interchange Access Request (IAR)

This memorandum describes the methodologies used to complete the traffic operations analysis for the Bridge Street System Level Study (SLS), including the traffic operations modeling tools and the measures of effectiveness that will be reported. The methodologies outlined in this document will be applied for the completion of the EA and the IAR. If changes are required to complete the remaining steps, an updated methodology memorandum will be produced to document the reasons for a change and describe changes to tools, measure of effectiveness, and/or overall procedures necessary to complete the interchange approval process.

2.0 TRAFFIC OPERATIONS MODEL DEVELOPMENT

There are several traffic operations analyses that will be completed for the Bridge Street SLS. This section discusses the questions that need to be answered, the time periods that will be evaluated, the alternatives that will be modeled, and the tools that will be used to complete the various analyses.

The traffic operations analysis for the study area, which is the I-76 corridor between Bromley Lane and Baseline Avenue, will include:

- Confirmation that all elements of the proposed alternative will have satisfactory operations during the peak periods including:
 - All ramp merge and diverge areas, weave sections, and basic freeway segments
 - All ramp junction intersections with surface streets
 - Major intersections (controlled by traffic signals/roundabouts, or the intersection of two collector/arterials) along surface streets within ½ mile of the existing and planned interchanges

This analysis will be used to assist in the selection of a preferred alternative while meeting the requirements of the CDOT, National Environmental Policy Act (NEPA), and the FHWA.

2.1 Required Analysis

In order to answer the questions necessary to complete the interchange approval process, the following scenarios will be modeled for both the AM and PM peak hours:

- Existing Conditions 2013
- 2019 No Action (Opening Year)
- 2019 Build (Opening Year)
- 2035 No Action (Horizon Year)
- 2035 Build (Horizon Year)

The Build conditions may include multiple design alternatives to be identified through the public involvement process and the project screening/evaluation phase.

2.2 Reporting Approach

Results of the traffic operations analysis will be reported in the SLS as well as in the transportation chapter of the EA and as support of the IAR process. The reports will include discussion regarding model development, calibration, results of the various analyses completed, and the comparison between the No-Action Alternative and different build alternatives. Recommended mitigation necessary to alleviate impacts caused by the project will also be discussed.

For the EA, the following questions need to be answered to address NEPA requirements:

1. Does the alternative work?
2. What is the experience of a highway user? (Examples include; How much delay will I experience on I-76? How do I get on and off the freeway?)
3. What is the experience of a neighborhood resident or business?(Examples include; How much traffic will there be on S. 50th Street? How will customers get to my business?)

For the SLS and Final EA, the questions above will be verified for any alternative changes. For the IAR, the following policy points will need to be addressed by the traffic analysis:

Policy Point 1 *“The existing interchanges and/or local roads and streets in the corridor can neither provide the necessary access nor be improved to satisfactorily accommodate the design year traffic demands while at the same time providing the access intended by the proposal.”*

Policy Point 2 *“All reasonable alternatives for design options, location and transportation system management type improvements (such as ramp metering, mass transit, and HOV facilities) have been assessed and provided for if currently justified, or provisions are included for accommodating such facilities if a future need is identified.”*

Policy Point 3 *“An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network. Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative.”*

3.0 RECOMMENDED MODELING TOOLS

The following tools are recommended for the traffic operations analysis for the Bridge Street Interchange project:

- DRCOG Regional Travel Demand Model (TDM)
- National Cooperative Highway Research Program Report (NCHRP)-255, 572, and 672
- Highway Capacity Manual (HCM) utilizing Highway Capacity Software (HCS 6.41)

The DRCOG Regional TDM uses various employment, population, and other factors to forecast traffic patterns on the future roadway network and ridership on the transit networks. This model is used to generate projected traffic volumes along with origin-destination data. NCHRP 255 includes standard procedures to translate travel model assignments, land use information, and historical data into information to support project development decisions.

HCS implements the procedures defined in the Highway Capacity Manual (HCM) to automate the process of using equations and tables. The software is used to report on traffic conditions based on user inputs. CDOT and Atkins will provide opportunities for the FHWA and City of Brighton staff to review validation material, and respond to comments and questions.

3.1 DRCOG Compass Travel Demand Model

The Compass travel demand model of the Denver Regional Council of Governments (DRCOG) will be refined and applied to produce forecasted daily traffic volumes and peak hour turning movements for the year 2035. The analysis includes the following steps:

- Assemble, collect, and analyze existing traffic data;
- Obtain and refine the DRCOG regional travel demand model, including review of socioeconomic and network assumptions;
- Refine and run the base year 2010 model;
- Prepare and run 2035 models with Build and No-Build assumptions;
- Adjust daily traffic volume forecasts from the model using techniques described in Report No. 255 of the National Cooperative Highway Research Program (NCHRP 255); and
- Utilize the traffic forecasts to estimate future peak hour turning movements at key intersections.

The regional 2010 and 2035 Compass travel models will be obtained from DRCOG and refined for the traffic forecast analysis. The region's most current socioeconomic data will be obtained from DRCOG. Based on the City of Brighton's recommendations, adjustments will be made to the 2035 socioeconomic forecasts. Anticipated adjustments include redistributing forecasted activity in and around the study area. The 2010 and 2035 Compass model roadway networks will be refined with additional local detail in and around the interchange study area. A full description of the adjustments, clean up, and calibration of the models will be included as part of the SLS documentation process.

The base year used to develop traffic forecasts is 2013, consistent with the study time frame and the data collection effort. The 2010 traffic counts in the DRCOG model and the 2013 turning movement counts were recorded in a spreadsheet and compared. The 2010 counts and volumes in the model were adjusted by 1.2 percent per year to simulate 2013 conditions. Network changes between 2010 and 2013, although minimal in the project study area, were considered in the comparison. The continuum of counts and model volumes along a corridor and local access points were also considered in establishing the 2013 counts. From this exercise, a 2013 final count was recorded for each roadway segment in the study area. These 2013 final counts were used as the basis for adjusting the 2035 model volumes to account for differences between counts and volumes in the base year model.

3.2 NCHRP-255 Methodology

The NCHRP-255 methodology is a post processing technique used to calibrate the 2035 forecasted volumes. The process compares the calibrated travel demand model output with actual traffic counts. The NCHRP 255 process adjusts the 2035 traffic volume forecasts from the regional model to account for differences between model

estimates and observed traffic counts in the 2013 base year. Future turning movements counts are then developed based on existing 2013 observed data, future projected link volumes, and the procedures outlined in the NCHRP 255 report.

3.3 HCS

Based on discussion with CDOT and FHWA, an agreement was reached that micro-simulation of the roadway was not necessary as long as existing and projected traffic volumes on I-76, I-76 ramps, and Bridge Street in the area of the proposed interchange were not above capacity for the existing or planned facilities. Based on the adjusted 2035 traffic volumes from the DRCOG model, Atkins was able to evaluate the daily and peak hour volumes on the facilities to determine if any roadways would exceed capacity. The following table shows the results of the capacity analysis.

Table 1: Results of Capacity Analysis for Bridge Street Interchange Project

Facility	Capacity (vehicles per hour)*	2035 No-Build Projected Volumes (AM/PM peak hour)	2035 Build Projected Volumes (AM/PM peak hour)
I-76 south of Bromley Lane	4,000 (each direction)	Northbound: 1,350/2,700 Southbound: 3,000/1,600	Northbound: 1,600/2,800 Southbound: 3,100/1,800
I-76 between Bromley Lane and Bridge Street	4,000 (each direction)	Northbound: 900/1,900 Southbound: 2,000/1,100	Northbound: 1,300/2,400 Southbound: 2,400/1,500
I-76 between Bridge Street and Baseline Road	4,000 (each direction)	Northbound: 900/1,900 Southbound: 2,000/1,100	Northbound: 1,000/1,900 Southbound: 2,000/1,200
I-76 north of Baseline Road	4,000 (each direction)	Northbound: 900/1,500 Southbound: 1,600/1,100	Northbound: 900/1,500 Southbound: 1,600/1,100
Bridge Street west of I-76	700 (each direction)	Eastbound: 250/260 Westbound: 200/350	Eastbound: 450/500 Westbound: 450/550
Bridge Street over I-76	700 (each direction)	Eastbound: 100/150 Westbound: 150/150	Eastbound: 100/200 Westbound: 550/600
Bridge Street east of I-76	700 (each direction)	Eastbound: 50/100 Westbound: 100/50	Eastbound: 100/200 Westbound: 200/100
I-76 SB off ramp at Baseline Road	1,500	150/200	100/100
I-76 SB on ramp at Baseline Road	1,500	550/200	450/150
I-76 NB off ramp at Baseline Road	1,500	150/550	100/500

I-76 NB on ramp at Baseline Road	1,500	150/150	100/100
I-76 SB off ramp at Bridge Street	1,500	N/A	150/100
I-76 SB on ramp at Bridge Street	1,500	N/A	550/450
I-76 NB off ramp at Bridge Street	1,500	N/A	500/550
I-76 NB on ramp at Bridge Street	1,500	N/A	100/100
I-76 SB off ramp at Bromley Lane	1,500	150/150	150/150
I-76 SB on ramp at Bromley Lane	1,500	1200/700	850/500
I-76 NB off ramp at Bromley Lane	1,500	500/1000	300/600
I-76 NB on ramp at Bromley Lane	1,500	60/150	100/150

* Based on the latest Highway Capacity Manual: I-76 is a 4-lane freeway with a calculated capacity of 2,000 vehicles per lane per hour based on prevailing existing conditions within the study area as collected in 2013. Bridge Street is a 2-lane arterial with an assumed capacity of 700 vehicles per hour per lane. All single lane ramps have a calculated capacity of 1,500 vehicles per hour.

Based on the projected volumes in the area and the defined capacities from the latest version of the Highway Capacity Manual, all of the critical links in the area are projected to operate well below capacity for the 2035 conditions. Thus, HCS is the recommended tool to analyze traffic operations for the projected traffic conditions. For HCS, the Level of Service will be reported for the Existing, No-Action, and Build Alternatives at the following locations:

- All merge and diverge areas on I-76
- Mainline segments of I-76
- Existing and future ramp junction intersections
- Existing and future major intersections within ½ mile of the existing and planned interchanges

Boundaries for the HCM analysis are shown in Figure 1 below:

Figure 1: Study Area



The data collection attachment identifies all critical intersections that will be analyzed.

4.0 ROUNDABOUT ANALYSIS

If necessary, an alternative including roundabouts will be designed using two separate capacity models, HCM procedures and Assessment of Roundabout Capacity and Delay (ARCADY) software. The HCM 2010 capacity equations, which are dependent on critical and follow-up headways, are based on national averages; however, lower headways are observed than the HCM 2010 defaults. Critical headway and follow-up headway values will be adjusted in the HCM analysis to better reflect observations at U.S. roundabouts. Headway values used in the analysis are listed in Table 2. These headways are expected to decrease as driver familiarity increases over time.

Table 2: Adjusted Headway Values

# of Circulating (Conflicting) Lanes	Critical Headway (s)	Follow-up Headway (s)
One	4.2	2.8
Two	4.0	2.8

Therefore, an empirical, regression-based deterministic model, ARCADY, is proposed for the roundabout operational analysis with calibration for U.S. conditions. ARCADY software, intrinsically links roundabout geometry to driver behavior and in turn to predicted capacities, queues and delays. ARCADY has been successfully used to design or improve thousands of roundabouts throughout the world.

Operational results are based on the Highway Capacity Manual (HCM) method. Due to the complex nature of the proposed roundabouts on this project the normal HCM method of roundabout capacity analysis may not accurately predict operating conditions for the design year traffic volumes. The FHWA publication *Roundabouts: An Informational Guide, Second Edition* suggests three basic types of analysis for roundabout design: HCM method, deterministic software, or simulation. Results of the HCM method will be supplemented with ARCADY (deterministic), a more sophisticated analysis for this project. The following considerations are the basis for supplementing the HCM analysis with an empirical model:

The current Highway Capacity Manual roundabout procedure is a low definition model, basing capacity on gap parameters alone, not accounting for variation in geometry, environment or driver behavior. In addition, it does not account for the dynamic aspects of roundabout operation, whereby the capacity of an entry is a function of the capacity and flow of an upstream entry iteratively beyond a 15 minute time slice. While the database on which these procedures are based is the most comprehensive yet developed for U.S. conditions, it has limitations. It covers typical roundabout facilities quite well, but lacks examples of situations where:

- priority reversal occurs, such as unusual forced entry conditions under high flows;
- a high level of pedestrian or bicycle activity is present;
- the roundabout is in close proximity to one or more other roundabouts;
- a two-lane right-turn bypass is proposed;
- more than four legs and more than two entry lanes are present;
- the effectiveness of the geometry, e.g. natural paths into the roundabout; and/or
- lane utilization and balance depending on downstream destinations.

Additionally, ARCADY software can report results based on the HCM method. Since we are considering roundabouts with more than 4 legs, a tool other than HCS software must be used. HCS software can only model roundabouts with 4 legs.

ARCADY software contains a calibration function which allows for adjusting the modeling to reflect local conditions. ARCADY software also provides the following capabilities not present in the current HCM method of analysis:

- Iterative analysis over multiple time periods
- Geometric sensitivity
- Peak hour traffic flow profile
- Residual capacity analysis
- Bypass lane analysis (including 2 lanes)
- Pedestrian crossing analysis
- Linked roundabouts
- Graphical output

5.0 SUMMARY

Level of service is the primary measure to determine the efficiency of alternatives considered for the I-76 and Bridge Street Interchange. Based on V/C results which display unsaturated conditions, HCS is the appropriate analysis tool. Roundabout alternatives will be analyzed with ARCADY software, and results will be reported for both the HCM method and the ARCADY method.

ATTACHMENT

DATA COLLECTION PROCESS

The following traffic data was collected and will be used in the traffic operations model development and calibration process:

- Average daily traffic (ADT) volumes
- Peak hour turning movement counts (TMC)
- Average Speeds
- Truck Percentages

Average Daily Traffic Volumes

The ADT counts will provide a baseline for evaluating existing 2013 conditions and calibrating the output of the 2013 base year models. The ADT data was collected over a 24-hour weekday period, to represent typical traffic volumes and avoid possible atypical traffic patterns that may occur on the weekends. The ADT data includes the collection of vehicle counts, classification data, and average speed data in 1-hour intervals. ADT counts were collected on a mix of surface streets and highway segments and on the ramps along I-76 at the following locations:

- I-76 SB Off Ramp at Baseline Road
- I-76 SB On Ramp at Baseline Road
- I-76 SB Off Ramp at Baseline Road
- I-76 SB On Ramp at Baseline Road
- I-76 SB Off Ramp at Bromley Road
- I-76 SB On Ramp at Bromley Road
- I-76 SB Off Ramp at Bromley Road
- I-76 SB On Ramp at Bromley Road
- I-76 SB/NB mainline at a location north of Baseline Road

Peak Hour Turning Movement Counts (TMCs)

Peak hour TMCs were collected at key intersections within the area surrounding the Bridge Street corridor. The main purpose of the TMCs is to help evaluate the operations of intersections under 2013 conditions, as well as to derive, future year turning volumes from projected link volumes. The TMC data was collected between the hours of 7:00 and 8:00 a.m. and 5:00 and 6:00 p.m. on a Wednesday to represent typical traffic volumes and avoid possible atypical traffic patterns that may occur on Monday, Friday, or the weekends. The TMC data includes the collection of vehicle counts in 15-minute intervals by placing an individual at the intersection and using an electronic count board to count vehicle demands. TMC data was collected at the following locations:

- Tower Road and Bromley Lane
- Kmart distribution center and Bromley Lane
- Judicial Center Drive and Bromley Lane
- Lowes driveway and Bromley Lane
- West Frontage Road and Bromley Lane
- I-76 SB Ramps and Bromley Lane
- I-76 NB Ramps and Bromely Lane
- East Frontage Road and Bromley Lane
- Picadilly Road and Bromley Lane

- 50th Street and West Frontage Road
- 50th Street and 160th Ave
- Prairie Falcon Parkway and 160th Ave
- West Frontage Road and 160th Ave
- East Frontage Road and 160th Ave
- East Frontage Road and Bromley Business Parkway
- Gun Club Road and 160th Ave
- Harvest Road and Baseline Road
- East Frontage Road and Baseline Road
- I-76 NB Ramps and Baseline Road
- I-76 SB Ramps and Baseline Road
- West Frontage Road and Baseline Road
- 50th Street and Baseline Road

Vehicle Classification and Speed Data

Vehicle classification and speed data was collected along portions of major arterials and highways within the area surrounding the Bridge Street corridor. The main purpose of speed data will be to provide details regarding existing operations to assist in the calibration of the various traffic operation models for the existing 2013 baseline conditions. The data was collected between the hours over a 24-hour weekday period Wednesday to avoid possible atypical traffic patterns that may occur on the weekends. The data was collected at the following locations:

- Baseline Road – West of Homestead Ave
- Baseline Road – West of Harvest Road
- Bridge Street – West of West Frontage Road
- Bridge Street – East of West Frontage Road
- Bridge Street – East of East Frontage Road
- Bridge Street – West of East Frontage Road
- Bromley Lane – West of West Frontage Road
- Bromley Lane – West of Picadilly Road
- West Frontage Road – South of Baseline Road
- West Frontage Road – South of Longspur Drive
- East Frontage Road – South of Baseline Road
- East Frontage Road- South of Bromley Business Parkway



Appendix B

Methodology for Developing Future Projected Traffic Volumes

Appendix B
I-76 at Bridge Street Interchange
Traffic Forecasts
City of Brighton

ATKINS



I-76 at Bridge Street Interchange Study

Technical Report – Traffic Forecasts

As part of the services provided for the proposed new interchange at I-76 and Bridge Street in Brighton, Colorado, traffic volume forecasts were prepared to support the sizing of roadway facilities and the operational analysis to identify signal and intersection specifications. This report documents the process through which the Compass travel demand model of the Denver Regional Council of Governments (DRCOG) was refined and applied to produce forecasted daily traffic volumes and peak hour turning movements for the year 2035.

The following steps were undertaken in this analysis:

- Assemble, collect, and analyze existing traffic data
- Obtain and refine the DRCOG regional travel demand model, including review of socioeconomic and network assumptions
- Refine and run the base year 2010 model
- Prepare and run 2035 models with Build and No-Build assumptions
- Adjust daily traffic volume forecasts from the model using techniques described in Report No. 255 of the National Cooperative Highway Research Program (NCHRP 255)
- Utilize the traffic forecasts to estimate future peak hour turning movements at key intersections

1.0 TRAFFIC DATA COLLECTION AND ANALYSIS

Daily traffic counts were collected by All Traffic Data to support the traffic analysis for the interchange and surrounding roads in the study area. In addition, the DRCOG Compass model's 2010 roadway network included traffic counts on some roads in the study area. These traffic counts were used to establish the 2013 base year traffic volumes and to adjust the 2035 traffic volumes from the model using NCHRP 255 techniques.

2.0 TRAVEL MODEL REFINEMENT AND APPLICATION

The regional 2010 and 2035 Compass travel models were obtained from DRCOG and refined for the traffic forecast analysis. Compass is the model provided to local governments and consultants for project-level analyses. It is based on TransCAD software and uses DRCOG's most recent planning assumptions.

2.1 TRAFFIC ANALYSIS ZONES AND SOCIOECONOMIC DATA

Traffic analysis zones (TAZs) within the interchange study area were reviewed by the City of Brighton for appropriate size and shape when considering local traffic and development patterns. TAZs are small areas in which aggregations of socioeconomic data (e.g., population, households, employment) are contained. This is what is meant by aggregate modeling – jobs and households are not modeled individually. Rather, they are aggregated into TAZs and treated as a group. This greatly reduces the detail in the model so that every household, job, and driveway access does not need to be defined and maintained.

Again, the TAZs contain the socioeconomic data, also referred to as the activity that generates trips and travel. The socioeconomic data is converted to trips, which are loaded onto the roadway network using centroid connectors that connect the center of each TAZ to the network. The centroid connectors represent roads interior to each TAZ so that it is not necessary to model all of the local streets and driveway/access points to the network. When reviewing TAZs for a subarea study such as this, the number and location of these access points are important considerations. Typically, TAZs are defined along roadways, natural features (e.g., rivers), railroads, and other delineations. They tend to be smaller the closer they are to the area of interest (i.e., near the interchange).

Based on the City's recommendations, several adjustments were made to the 2035 socioeconomic forecasts but the TAZ structure was not changed as the model's existing TAZ boundary assumptions were sufficient to accommodate the future growth and resulting traffic patterns in the local area. Overall, the total number of activity units (e.g., households, employment) did not change from the model's control totals although some of the activity forecasted for 2035 was re-distributed in and around the study area. Exhibit 1 shows the TAZ layer in the local area of the proposed interchange, and Exhibit 2 summarizes socioeconomic data in the study area. The full set of socioeconomic data assumptions are contained in Appendix H-1.

Exhibit 1 – Traffic Analysis Zones

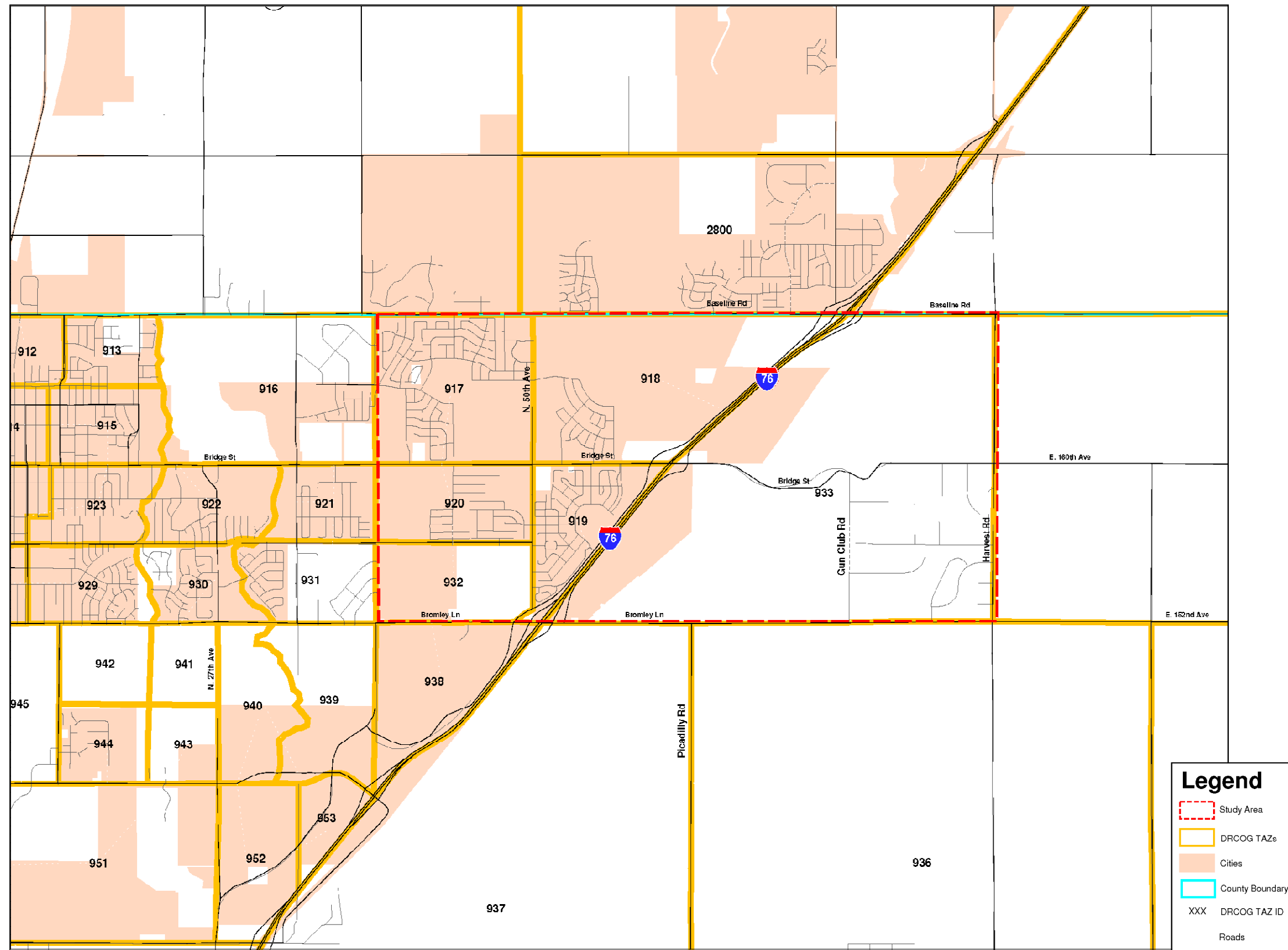


Exhibit 2 – Socioeconomic Data Summary

Study Area				
Activity Unit	2010	2035	Difference	Growth Rate (%/yr., compd.)
Households	1,496	5,177	3,681	5.1%
Basic Employment	174	244	70	1.4%
Retail Employment	23	40	17	2.2%
Service Employment	389	480	91	0.8%
Total Employment	586	764	178	1.1%

2.2 ROADWAY NETWORK ADJUSTMENTS

The 2010 and 2035 Compass model roadway networks were refined with additional local detail in and around the interchange study area. Exhibits 3, 4, and 5 show the final 2010, 2035 No-Build, and 2035 Build networks, respectively.

Exhibit 3 – 2010 Roadway Network

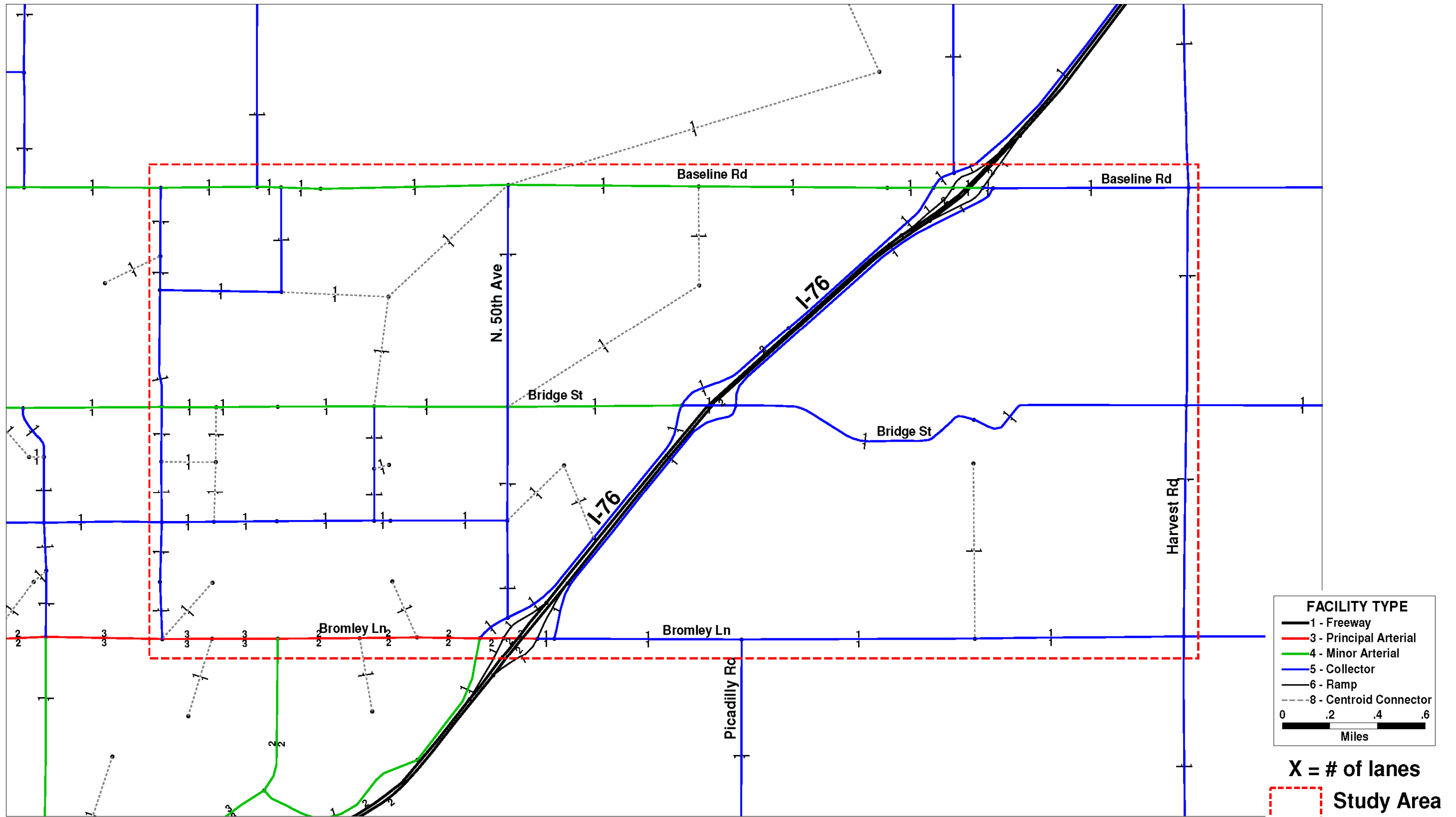


Exhibit 4 – 2035 No-Build Roadway Network

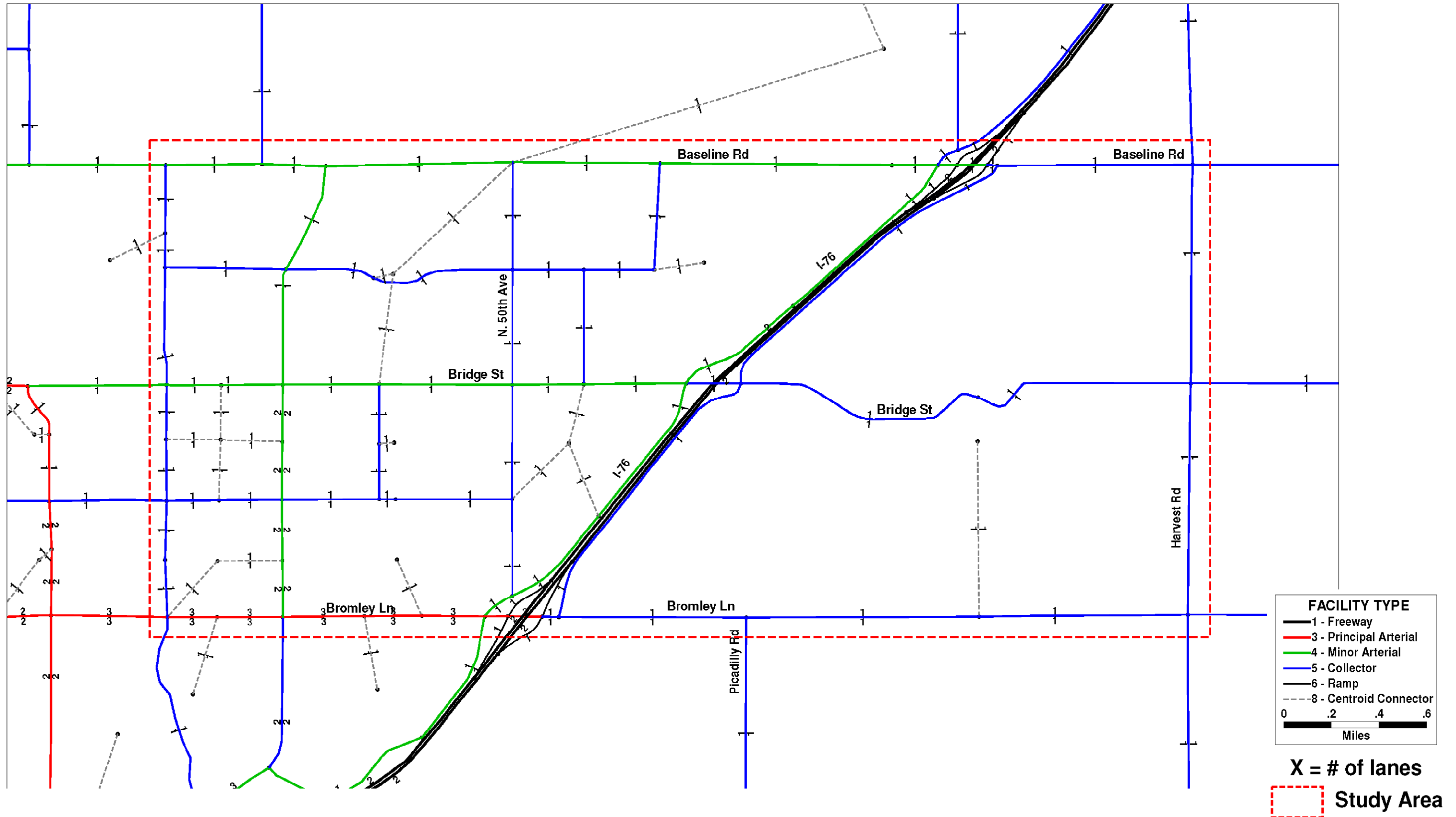
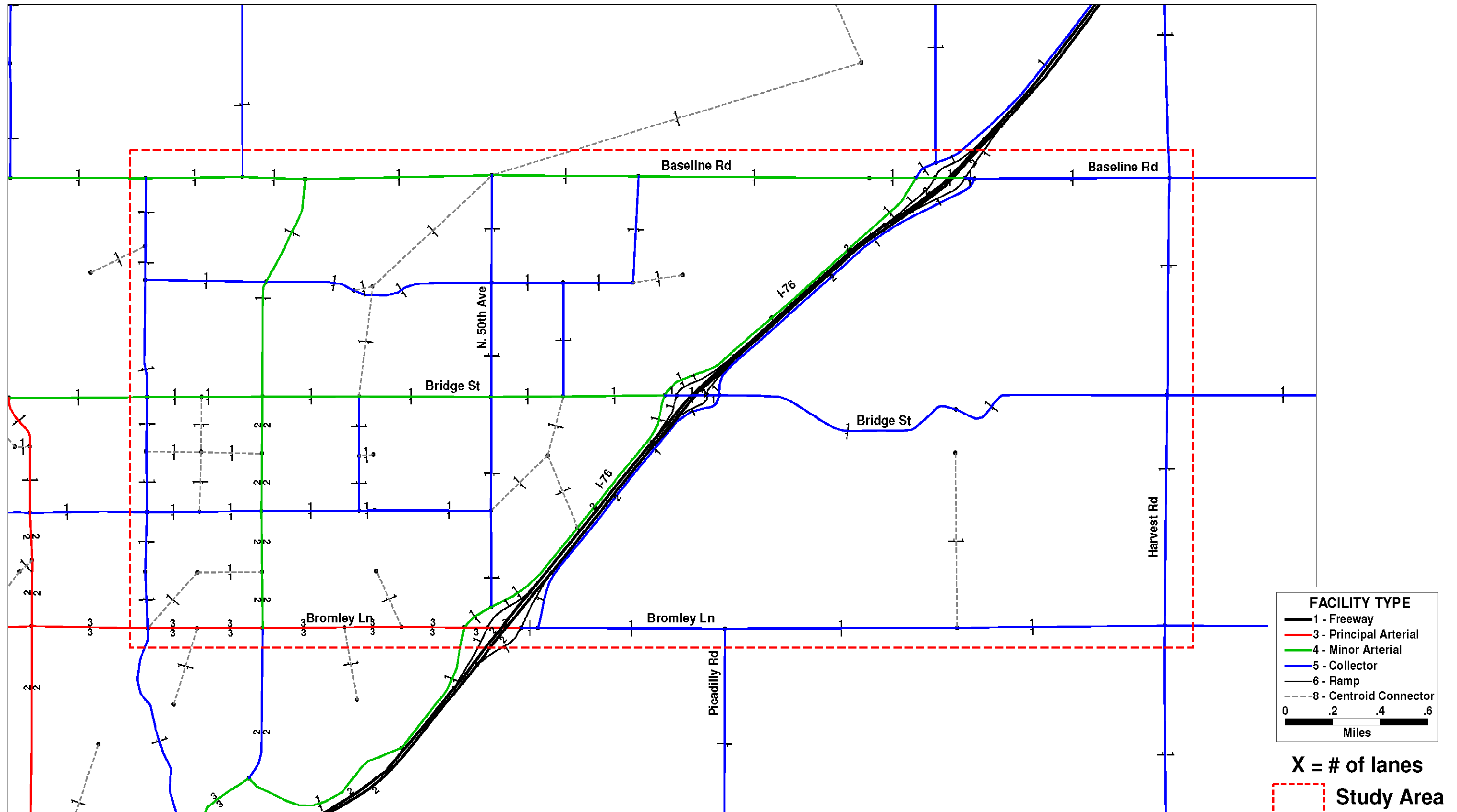


Exhibit 5 – 2035 Build Roadway Network



2.3 TRAFFIC FORECASTING AND ANALYSIS

After refinement of the travel model to provide more detail within the study area, the model was run for the 2010 base year. Model results were then compared to observed traffic counts. Some centroid connector adjustments were made to better simulate local traffic patterns, and the 2010 model was run a final time. Again, the centroid connectors represent roads within the interior of each TAZ so that all of the individual local/residential streets and driveway/access points to the network do not need to be modeled. The location at which they connect to the network influences the forecasts of local traffic patterns.

The model was then updated for the future horizon year of 2035 and run for the No-build and Build scenarios. Once the traffic forecasts from these model runs were completed, the results were processed using NCHRP 255 techniques. The NCHRP 255 process adjusts the 2035 traffic volume forecasts from the regional model to account for differences between model estimates and observed traffic counts in the 2010 base year. The process uses ratio, difference, or a combination of both functions to adjust the traffic forecasts. In some cases, traffic forecasts were smoothed by hand to account for conflicting traffic count data for example.

The 2010 and 2035 traffic volumes from the DRCOG Compass model are shown in Exhibits 6, 7, and 8 for the study area. The adjusted 2013 and 2035 traffic volumes are shown on Exhibits 9, 10, and 11 for the Baseline, Bridge, and Bromley interchange areas.

Exhibit 6 – 2010 Traffic Volumes from Compass Model

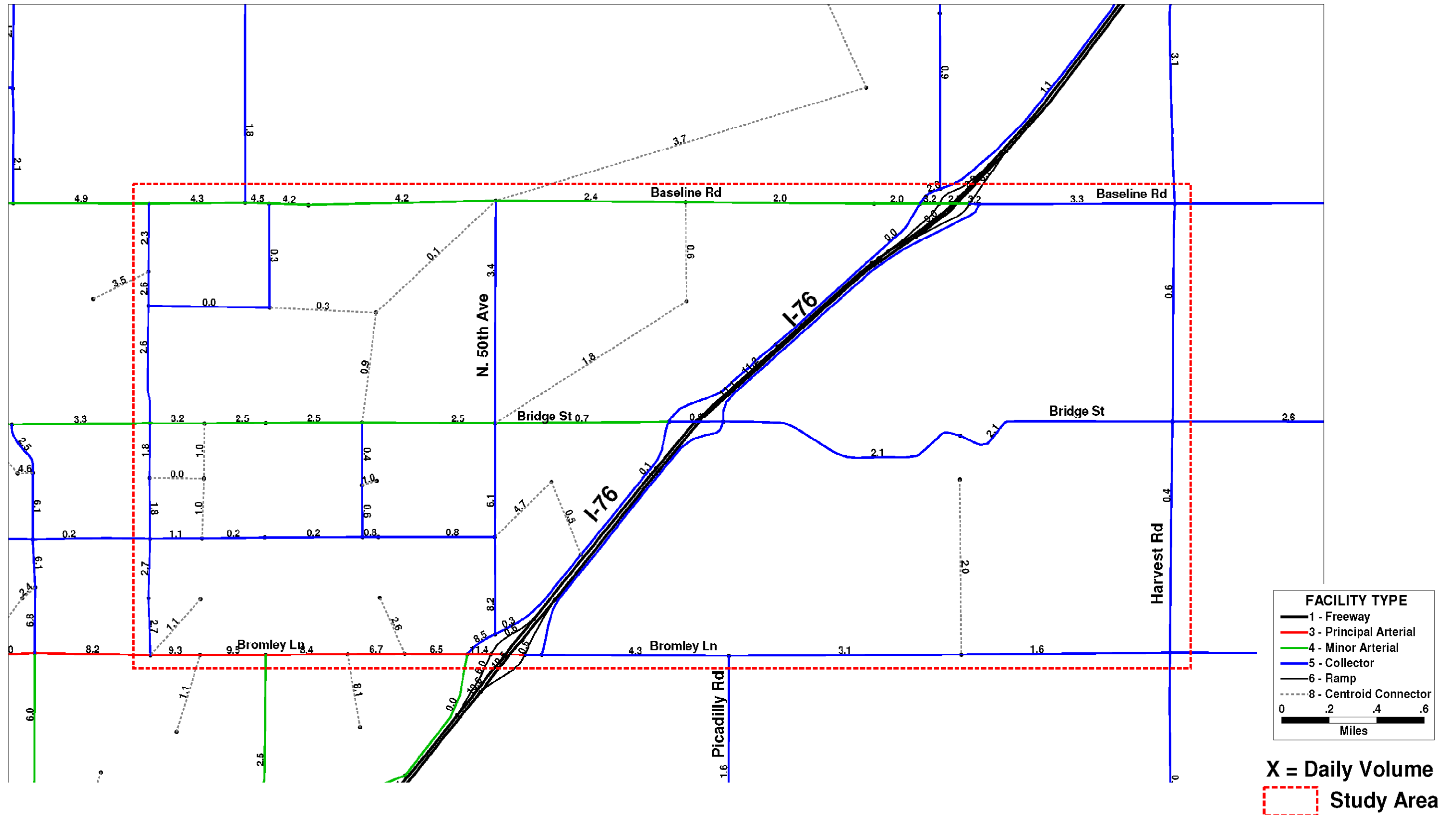


Exhibit 7 – 2035 No-Action Traffic Volumes from Compass Model

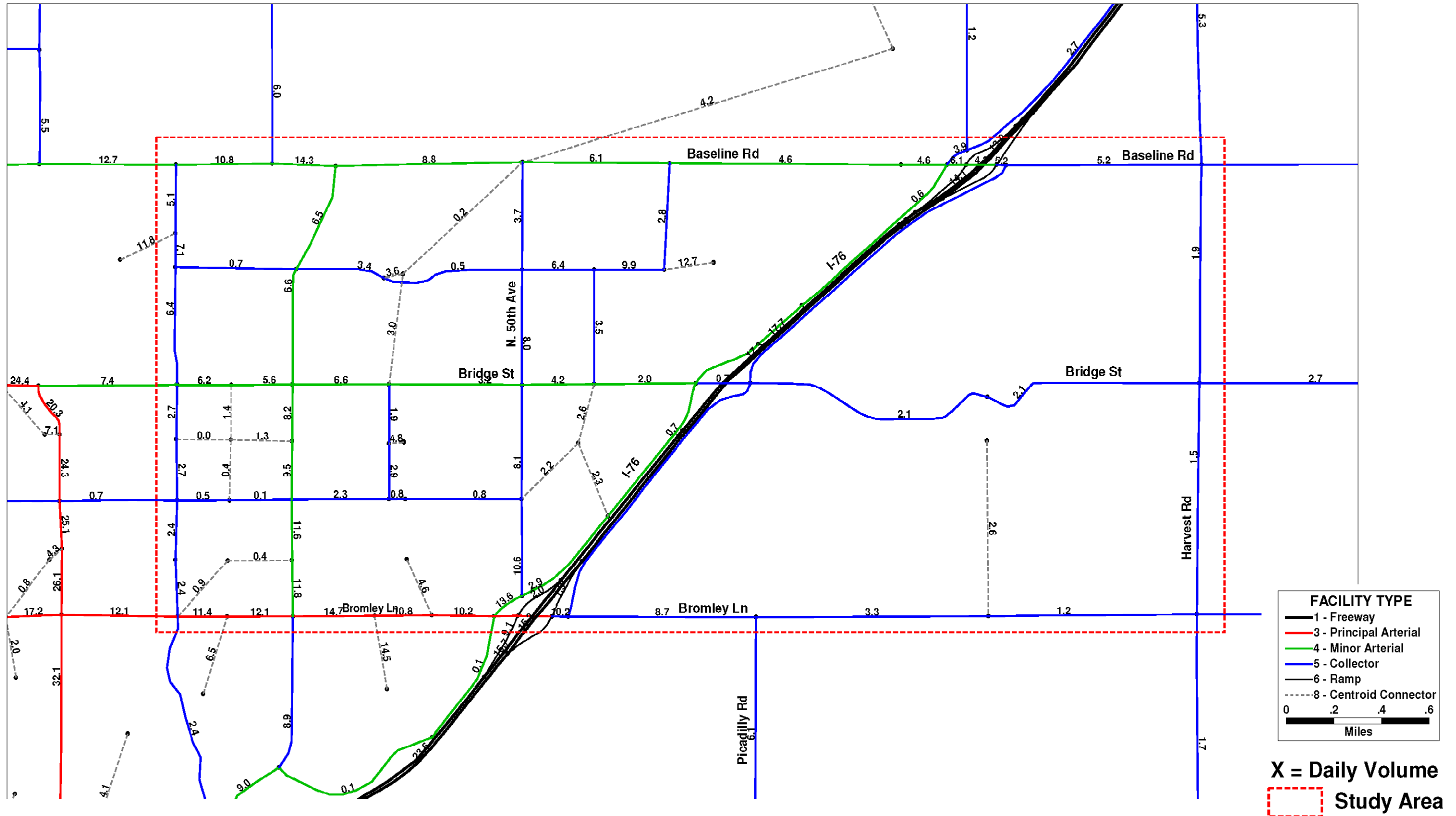


Exhibit 8 – 2035 Build Traffic Volumes from Compass Model

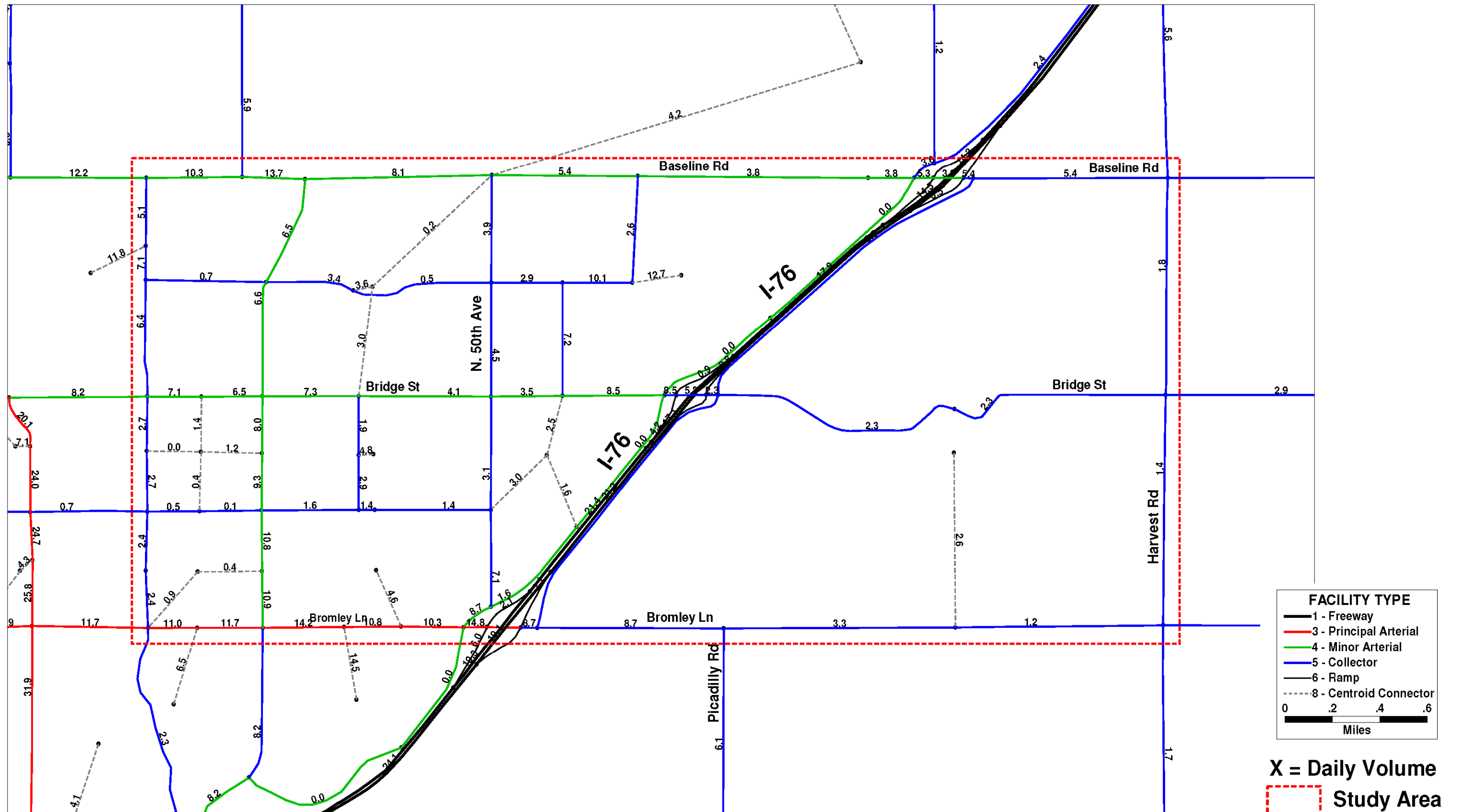
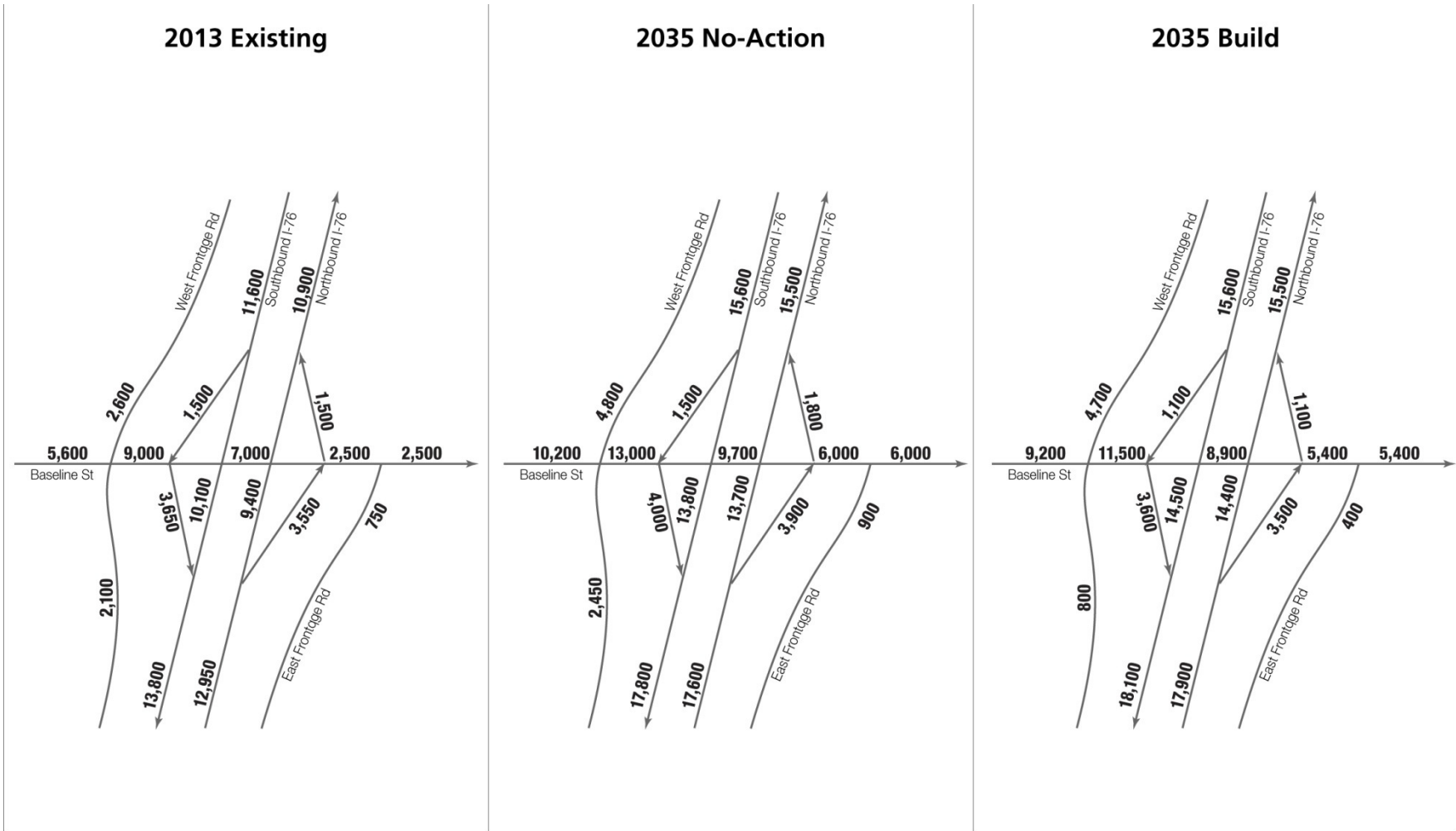
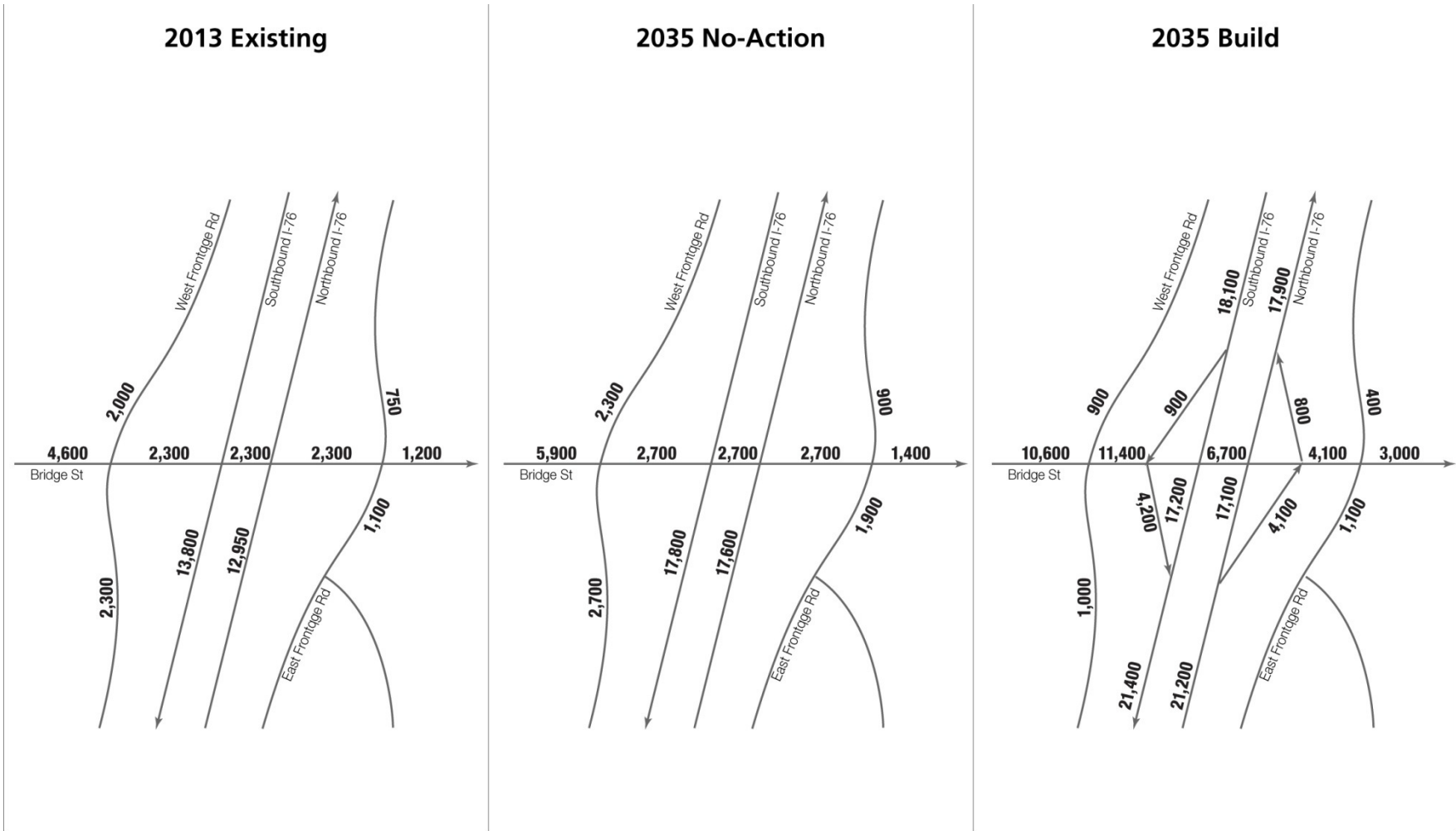


Exhibit 9 – Adjusted Traffic Volumes (Baseline Street Interchange)



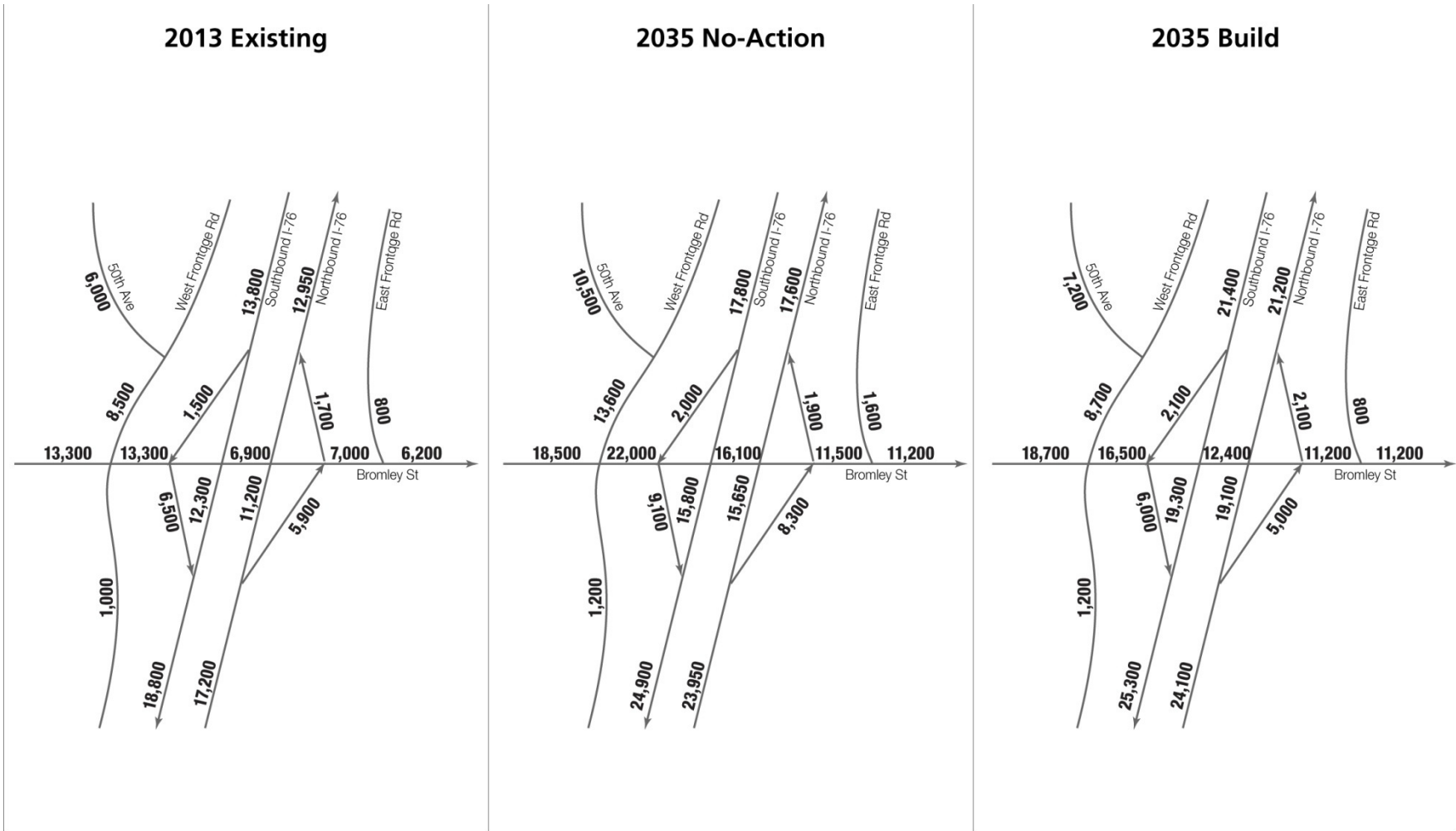
XX,XXX = vehicles per day

Exhibit 10 – Adjusted Traffic Volumes (Bridge Street Interchange)



XX,XXX = vehicles per day

Exhibit 11 – Adjusted Traffic Volumes (Bromley Street Interchange)



XX,XXX = vehicles per day

2.4 PERFORMANCE SUMMARIES

Exhibit 6 summarizes input data and results for the 2010 and 2035 model runs. Information is included for both the interchange study area and the entire DRCOG region. The summaries include roadway network lane-miles and center-line miles to indicate where and what types of improvements are assumed from 2010 to 2035. Vehicle miles of travel (VMT) and congestion delay are also reported in Exhibit 12. Additional VMT information by roadway functional classification is shown in Exhibit 13.

Exhibit 12 – Input Data and Travel Performance Summaries

Study Area						
Measure	2010 / 2013	2035 No- Action	Growth Rate (%/yr., 2010/3 to 2035 No- Action)	2035 Build	Diff. (2035 Build – 2035 No-Action)	Percent Diff. (2035 Build : 2035 No-Action)
Centerline Miles	30.9	35.0	0.5%/yr.	36.0	1.0	2.9%
Lane Miles	38.6	44.9	0.6%/yr.	45.9	1.0	2.2%
VMT (unadjusted model volumes)	123,900	230,000	2.5%/yr.	234,400	4,500	1.9%
Congestion Delay (planning model estimate, daily hours of vehicle delay)	200	740	5.4%/yr.	650	-90	-12.2%

Exhibit 13 – Vehicle Miles of Travel by Roadway Type

VMT by Roadway Functional Class							
Roadway Functional Class	Description	2010 / 2013	2035 No- Action	Growth Rate (%/yr., 2010/3 to 2035 No-Action)	2035 Build	Diff. (2035 Build – 2035 No-Action)	Percent Diff. (2035 Build : 2035 No-Action)
1	Freeway	70,300	109,100	1.8%	119,800	10,700	9.8%
2	Expressway	--	--	--	--	--	--
3	Principal Arterial	8,700	14,800	2.1%	13,600	-1,200	-8.1%
4	Minor Arterial	11,700	49,800	6.0%	47,700	-2,100	-4.2%
5	Collector Street	31,600	53,300	2.1%	47,400	-5,900	-11.1%
6	Ramp	1,600	3,000	2.5%	5,900	2,900	96.7%
Total		123,900	230,000	2.5%	234,400	4,400	1.9%

2.5 TURNING MOVEMENT FORECASTS

Peak hour turning movement forecasts are necessary to support the intersection operational analysis. The forecasted turning movements were estimated based on turning movement counts and base and forecast year model volumes. The analysis utilizes a Fratar process to estimate future turning movements, guarantees that the ins and outs are balanced at each intersection, and ensures that they are consistent with the forecasted approach volumes. Although the intent here is not to fully describe the Fratar process, it is an industry-accepted, iterative process for estimating a unique bi-variate distribution (i.e., matrix of turning movement forecasts) based on established marginals (i.e., approach and departure volume control totals). Essentially, the observed peak hour turning movement counts are “grown” based on the difference between the 2010 and 2035 approach volumes. Then the Fratar process iterates the turning movement matrix until the desired control totals (ins and outs) are matched. This is done separately for both the 2035 No-Build and 2035 Build scenarios.

Appendix D-1
I-76 at Bridge Street Interchange Study
Socioeconomic Data

ZONE ID	Household Population 2010	Household Population 2035	Avg. HHold Size 2010	Avg. Hhold Size 2035	Households - 2010				Households - 2035				Employment - 2010				Employment - 2035			
					Low Income	Medium Income	High Income	Total	Low Income	Medium Income	High Income	Total	Production / Distribution	Retail	Service	Total	Production / Distribution	Retail	Service	Total
876	385	810	2.92	2.85	-	95	37	132	-	205	79	284	-	-	1	1	2	1	5	8
877	122	281	2.84	2.78	8	17	18	43	19	40	42	101	-	-	-	-	-	1	3	4
878	223	548	2.86	2.80	7	42	29	78	17	108	71	196	1	-	3	4	1	-	5	6
879	187	506	3.02	2.96	6	34	22	62	16	95	60	171	15	1	-	16	21	1	-	22
880	407	404	2.91	2.85	12	79	49	140	13	80	49	142	10	1	8	19	12	1	9	22
881	493	663	2.85	2.79	15	95	63	173	21	132	85	238	8	2	17	27	11	3	23	37
882	276	1,129	2.85	2.79	8	52	37	97	36	216	152	404	2	-	-	2	6	-	-	6
883	389	2,149	2.84	2.78	-	98	39	137	-	557	216	773	-	-	-	-	8	7	20	35
884	267	1,460	2.90	2.84	17	36	39	92	98	200	216	514	-	-	-	-	-	-	-	-
885	421	2,421	2.88	2.82	19	77	50	146	117	452	288	857	-	-	-	-	1	2	2	5
886	331	1,810	2.90	2.84	-	65	49	114	-	370	267	637	-	-	-	-	-	2	-	2
887	258	284	2.84	2.78	-	13	78	91	-	16	86	102	-	1	1	2	2	6	3	11
888	912	2,514	2.85	2.79	26	180	114	320	75	512	314	901	3	-	2	5	12	-	6	18
889	74	75	2.85	2.78	2	15	9	26	2	16	9	27	-	-	-	-	1	1	3	5
890	282	1,534	2.94	2.88	-	14	82	96	-	85	448	533	-	20	750	770	-	20	741	761
891	131	376	2.85	2.79	4	25	17	46	11	74	50	135	-	-	-	-	-	-	-	-
892	245	1,303	2.85	2.79	-	49	37	86	-	271	196	467	1	1	1	3	4	10	11	25
893	476	473	2.99	2.94	25	76	58	159	26	77	58	161	4	-	1	5	7	-	2	9
908	1,461	3,784	2.98	2.92	-	280	210	490	-	751	544	1,295	-	1	1	2	3	11	8	22
909	276	1,487	2.94	2.88	17	37	40	94	98	202	217	517	-	-	-	-	-	-	-	-
910	235	235	3.01	2.97	15	58	5	78	16	58	5	79	16	51	2	69	16	50	2	68
911	435	599	3.18	3.10	23	105	9	137	34	146	13	193	192	155	327	674	194	156	330	680
912	679	676	3.25	3.19	14	153	42	209	15	155	42	212	35	-	23	58	35	-	23	58
913	798	1,070	2.99	2.92	16	197	54	267	23	270	73	366	57	-	54	111	63	-	60	123
914	1,725	1,807	3.09	3.02	103	418	38	559	114	444	40	598	44	53	680	777	44	53	676	773
915	1,811	2,159	2.94	2.88	41	470	105	616	51	574	125	750	31	247	220	498	32	251	224	507
916	1,122	4,909	2.98	2.92	19	253	104	376	89	1,133	457	1,679	100	1	65	166	152	1	98	251
917	516	2,854	2.67	2.62	-	110	83	193	-	632	458	1,090	-	-	-	-	2	4	1	7
918	1,009	5,658	2.76	2.71	-	53	312	365	-	334	1,756	2,090	5	1	1	7	26	7	4	37
919	1,706	2,295	2.76	2.71	32	417	168	617	45	576	226	847	7	9	137	153	9	11	170	190
920	386	1,928	2.66	2.61	-	21	124	145	-	119	621	740	-	1	3	4	-	3	14	17
921	538	890	2.66	2.61	-	29	173	202	-	55	286	341	1	-	66	67	1	-	86	87
922	2,963	3,552	2.75	2.69	199	722	156	1,077	251	879	188	1,318	63	80	274	417	65	82	281	428
923	2,235	2,324	2.75	2.70	103	603	106	812	113	639	110	862	1	99	759	859	1	101	776	878
924	2,063	2,194	2.92	2.86	91	509	106	706	102	552	113	767	44	98	823	965	43	96	807	946
925	326	435	2.94	2.88	21	80	10	111	30	108	13	151	184	135	174	493	180	132	170	482
926	1,529	1,885	2.93	2.88	111	370	40	521	144	461	50	655	96	324	62	482	98	332	64	494
927	1,296	1,293	2.98	2.92	93	308	34	435	98	311	34	443	-	-	10	10	-	-	10	10
928	1,409	1,489	2.91	2.85	34	371	80	485	38	400	85	523	24	39	226	289	23	38	218	279
929	2,049	2,498	2.79	2.74	43	455	236	734	55	570	288	913	99	2	195	296	107	2	212	321
930	1,326	2,179	2.79	2.73	11	312	152	475	19	528	250	797	7	2	12	21	11	3	19	33
931	435	544	2.77	2.71	6	104	47	157	8	134	59	201	7	-	-	7	10	-	-	10
932	144	777	2.77	2.72	-	8	44	52	-	46	240	286	-	2	221	223	-	2	256	258
933	356	348	2.87	2.81	9	86	29	124	9	87	28	124	162	10	27	199	207	13	35	255
934	1,221	1,481	2.83	2.77	31	299	102	432	40	370	124	534	67	5	7	79	89	7	9	105
935	407	405	2.83	2.77	10	100	34	144	10	102	34	146	4	-	23	27	4	-	22	26
936	267	265	2.87	2.82	7	64	22	93	7	65	22	94	24	3	24	51	22	3	22	47
937	206	201	2.86	2.79	6	49	17	72	6	49	17	72	-	-	314	314	-	-	287	287
938	361	669	2.80	2.74	17	68	44	129	33	129	82	244	79	158	565	802	133	264	946	1,343
939	464	2,662	2.94	2.88	-	158	-	158	-	925	-	925	-	-	1	1	18	18	34	70
940	329	1,835	2.94	2.88	-	88	24	112	-	504	134	638	-	-	-	-	1	2	1	4

**Appendix D-1
I-76 at Bridge Street Interchange Study
Socioeconomic Data**

ZONE ID	Household Population 2010	Household Population 2035	Avg. HHold Size 2010	Avg. Hhold Size 2035	Households - 2010				Households - 2035				Employment - 2010				Employment - 2035			
					Low Income	Medium Income	High Income	Total	Low Income	Medium Income	High Income	Total	Production / Distribution	Retail	Service	Total	Production / Distribution	Retail	Service	Total
941	158	838	2.77	2.71	-	45	12	57	-	244	65	309	-	-	-	-	1	2	-	3
942	249	1,412	2.74	2.68	-	71	20	91	-	415	111	526	-	-	-	-	-	1	1	2
943	104	526	2.74	2.68	-	27	11	38	-	141	55	196	-	-	-	-	-	-	-	-
944	267	925	2.93	2.87	17	48	26	91	61	171	90	322	-	-	1	1	1	-	5	6
945	401	1,877	2.84	2.78	17	91	33	141	85	432	157	674	-	280	84	364	-	313	94	407
946	23	23	2.88	2.88	-	5	3	8	-	5	3	8	277	5	14	296	297	5	15	317
947	94	404	2.94	2.89	6	17	9	32	27	74	39	140	-	-	-	-	2	1	1	4
948	451	1,960	2.85	2.80	12	110	36	158	53	491	157	701	220	620	40	880	228	643	42	913
949	1,300	1,668	2.91	2.85	44	301	102	447	59	395	131	585	46	40	18	104	59	52	23	134
950	65	174	2.83	2.81	2	16	5	23	6	43	13	62	10	4	10	24	43	15	41	99
951	1,038	5,373	2.88	2.82	38	240	83	361	209	1,267	431	1,907	1	2	4	7	12	14	30	56
952	443	2,462	2.93	2.88	33	92	26	151	195	517	144	856	22	35	38	95	90	145	157	392
953	3	2	3.00	2.00	-	1	-	1	-	1	-	1	-	-	1	1	23	22	47	92
954	361	1,482	2.87	2.81	16	83	27	126	67	352	109	528	11	7	1	19	39	24	5	68
955	175	223	2.87	2.82	8	40	13	61	11	51	17	79	153	2	14	169	164	2	15	181
956	135	343	2.87	2.81	6	32	9	47	16	82	24	122	9	2	1	12	64	15	7	86
957	131	220	2.91	2.86	6	30	9	45	11	50	16	77	123	1	10	134	129	1	10	140
958	718	3,851	2.87	2.81	28	158	64	250	156	868	345	1,369	4	3	7	14	155	106	280	541
959	670	3,700	2.89	2.83	32	163	37	232	186	915	206	1,307	9	4	10	23	99	48	110	257
960	40	39	2.86	2.79	2	9	3	14	2	9	3	14	54	4	3	61	65	5	4	74
961	11	19	2.75	2.71	-	3	1	4	-	5	2	7	-	-	-	-	1	1	3	5
962	55	213	2.75	2.70	-	11	9	20	-	46	33	79	28	24	10	62	72	63	25	160
963	369	1,716	2.91	2.85	10	87	30	127	47	415	140	602	1	1	5	7	3	7	22	32
964	303	1,510	2.89	2.83	10	71	24	105	55	357	122	534	18	-	4	22	37	-	9	46
965	75	76	2.88	2.81	-	22	4	26	-	23	4	27	6	1	2	9	15	3	4	22
966	17	17	2.43	2.43	-	5	2	7	-	5	2	7	-	-	-	-	4	3	8	15
967	5	6	2.50	3.00	-	1	1	2	-	1	1	2	-	-	-	-	-	-	-	-
968	416	1,665	2.91	2.85	10	99	34	143	44	403	137	584	12	8	21	41	452	300	784	1,536
969	1,298	7,288	2.47	2.42	39	366	120	525	229	2,106	674	3,009	19	8	2	29	438	174	44	656
970	3	3	3.00	3.00	-	1	-	1	-	1	-	1	1	1	1	3	43	31	86	160
971	12	11	3.00	2.75	-	3	1	4	-	3	1	4	11	2	2	15	14	2	3	19
972	1,575	8,627	2.91	2.85	54	361	126	541	314	2,018	693	3,025	2	11	6	19	13	74	38	125
973	1,964	9,848	2.91	2.85	29	479	167	675	151	2,466	837	3,454	2	8	37	47	5	21	100	126
974	1,664	3,936	2.91	2.85	70	338	163	571	175	818	386	1,379	-	5	17	22	1	13	41	55
975	3,085	9,591	2.95	2.89	-	790	255	1,045	-	2,520	796	3,316	-	3	1	4	2	22	7	31
976	940	3,623	2.91	2.85	18	223	82	323	72	881	317	1,270	55	29	48	132	144	75	126	345
978	3,979	4,696	2.95	2.89	71	937	340	1,348	88	1,134	402	1,624	19	3	53	75	31	5	88	124
981	446	1,922	2.92	2.85	11	101	41	153	48	449	177	674	8	5	2	15	29	18	8	55
982	262	568	2.91	2.85	4	63	23	90	9	141	49	199	84	5	62	151	93	5	68	166
983	197	195	2.98	2.95	5	44	17	66	5	44	17	66	20	13	100	133	23	15	116	154
2764	559	2,495	2.71	2.66	29	134	43	206	134	608	197	939	5	4	12	21	73	53	183	309
2765	3,724	6,263	2.69	2.64	226	876	280	1,382	388	1,502	482	2,372	29	45	103	177	79	122	280	481
2768	657	1,995	2.42	2.37	36	193	43	272	111	599	133	843	1,538	387	646	2,571	1,675	422	703	2,800
2769	1,233	2,198	3.31	3.24	65	228	80	373	119	414	146	679	67	12	23	102	136	24	46	206
2770	1,235	2,119	3.36	3.29	29	241	98	368	51	422	171	644	353	80	518	951	569	129	834	1,532
2771	820	921	3.00	2.93	21	191	61	273	24	220	70	314	126	3	30	159	155	4	38	197
2772	2,634	2,762	2.91	2.85	76	593	235	904	81	635	252	968	470	191	304	965	487	198	315	1,000
2773	6,095	8,832	3.18	3.11	312	1,325	281	1,918	462	1,959	416	2,837	367	142	227	736	486	188	300	974
2774	2,554	4,639	3.07	3.01	62	575	195	832	115	1,067	361	1,543	183	42	84	309	358	82	165	605
2775	2,106	4,007	2.96	2.90	99	502	110	711	193	974	214	1,381	170	89	114	373	295	155	199	649
2796	3,278	5,810	2.93	2.87	113	695	312	1,120	204	1,258	565	2,027	108	94	199	401	196	171	362	729

**Appendix D-1
I-76 at Bridge Street Interchange Study
Socioeconomic Data**

ZONE ID	Household Population 2010	Household Population 2035	Avg. HHold Size 2010	Avg. Hhold Size 2035	Households - 2010				Households - 2035				Employment - 2010				Employment - 2035			
					Low Income	Medium Income	High Income	Total	Low Income	Medium Income	High Income	Total	Production / Distribution	Retail	Service	Total	Production / Distribution	Retail	Service	Total
2799	102	172	2.68	2.65	6	24	8	38	11	41	13	65	1	1	3	5	2	3	8	13
2800	1,845	2,073	2.99	2.93	48	431	138	617	55	494	158	707	285	7	69	361	350	8	84	442
Total	88,306	203,445	2.91	2.82	2,941	20,009	7,429	30,379	6,228	46,366	19,504	72,098	6,320	3,735	9,041	19,096	9,429	5,502	12,682	27,613



Appendix C

Vehicle Classification Data

C.1 – Daily Traffic Counts

C.2 – Peak-Hour Turning Movements

C.3 – Signal Timings

I-76 & Bridge Street INTERCHANGE



C.1 – Daily Traffic Counts

Location		Baseline Road west of Homestead Avenue					
#1		Eastbound			Westbound		
		EB Cars	EB Trucks	EB % Trucks	WB Cars	WB Trucks	WB % Trucks
12:00 AM	1:00 AM	6	2	25%	8	4	33%
1:00 AM	2:00 AM	3	4	57%	9	0	0%
2:00 AM	3:00 AM	14	0	0%	7	1	13%
3:00 AM	4:00 AM	12	3	20%	6	2	25%
4:00 AM	5:00 AM	32	6	16%	21	4	16%
5:00 AM	6:00 AM	84	8	9%	70	5	7%
6:00 AM	7:00 AM	180	25	12%	141	12	8%
7:00 AM	8:00 AM	208	16	7%	182	9	5%
8:00 AM	9:00 AM	132	12	8%	153	9	6%
9:00 AM	10:00 AM	86	16	16%	110	11	9%
10:00 AM	11:00 AM	107	19	15%	98	19	16%
11:00 AM	12:00 PM	118	20	14%	134	17	11%
12:00 PM	1:00 PM	113	14	11%	108	7	6%
1:00 PM	2:00 PM	113	19	14%	114	15	12%
2:00 PM	3:00 PM	142	15	10%	124	14	10%
3:00 PM	4:00 PM	211	23	10%	193	17	8%
4:00 PM	5:00 PM	188	27	13%	254	12	5%
5:00 PM	6:00 PM	219	28	11%	280	21	7%
6:00 PM	7:00 PM	204	14	6%	178	10	5%
7:00 PM	8:00 PM	133	8	6%	144	14	9%
8:00 PM	9:00 PM	113	7	6%	81	4	5%
9:00 PM	10:00 PM	71	7	9%	76	3	4%
10:00 PM	11:00 PM	37	2	5%	28	2	7%
11:00 PM	12:00 AM	13	1	7%	19	0	0%
		2539	296	10%	2538	212	8%

Location 1: BASELINE RD W/O HOMESTEAD AVE (Eastbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	0	2	4	1	1	0	0	0	0	8	349	43.625
1:00 AM	2:00 AM	0	0	0	0	1	2	3	1	0	0	0	0	0	7	286	40.85714
2:00 AM	3:00 AM	0	0	0	1	0	6	5	2	0	0	0	0	0	14	567	40.5
3:00 AM	4:00 AM	0	0	0	0	1	0	8	4	2	0	0	0	0	15	675	45
4:00 AM	5:00 AM	1	0	0	0	2	10	16	8	1	0	0	0	0	38	1581	41.60526
5:00 AM	6:00 AM	0	0	0	0	3	28	51	9	1	0	0	0	0	92	3841	41.75
6:00 AM	7:00 AM	6	0	0	0	11	35	97	47	8	1	0	0	0	205	8662	42.25366
7:00 AM	8:00 AM	5	0	0	1	11	27	130	46	3	2	0	0	0	225	9540	42.4
8:00 AM	9:00 AM	2	0	0	0	7	38	65	29	2	3	0	0	0	146	6162	42.20548
9:00 AM	10:00 AM	1	0	0	2	6	22	50	17	5	0	0	0	0	103	4331	42.04854
10:00 AM	11:00 AM	1	0	0	3	5	38	62	13	4	1	0	0	0	127	5263	41.44094
11:00 AM	12:00 PM	5	0	0	2	11	33	76	10	1	0	0	0	0	138	5524	40.02899
12:00 PM	1:00 PM	2	0	0	3	9	31	69	9	3	1	0	0	0	127	5195	40.90551
1:00 PM	2:00 PM	5	0	1	3	15	33	67	9	1	0	0	0	0	134	5272	39.34328
2:00 PM	3:00 PM	2	0	0	0	9	46	81	15	4	0	0	1	0	158	6548	41.44304
3:00 PM	4:00 PM	6	0	1	4	13	84	115	13	0	1	0	0	0	237	9443	39.84388
4:00 PM	5:00 PM	3	0	0	4	11	59	108	27	2	1	0	0	0	215	8851	41.16744
5:00 PM	6:00 PM	5	0	1	10	16	69	123	24	3	0	0	0	0	251	10103	40.251
6:00 PM	7:00 PM	8	0	0	6	16	65	110	15	3	1	0	0	0	224	8913	39.79018
7:00 PM	8:00 PM	1	0	0	6	14	49	58	12	1	1	0	0	0	142	5683	40.02113
8:00 PM	9:00 PM	0	0	2	9	19	54	34	2	0	0	0	0	0	120	4535	37.79167
9:00 PM	10:00 PM	0	0	0	2	13	29	28	6	0	0	0	0	0	78	3079	39.47436
10:00 PM	11:00 PM	0	0	0	1	6	11	19	2	1	0	0	0	0	40	1610	40.25
11:00 PM	12:00 AM	0	0	0	0	0	6	6	1	1	0	0	0	0	14	587	41.92857
															2858	116600	40.79776

Location 1: BASELINE RD W/O HOMESTEAD AVE (Westbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	5	0	0	1	11	27	130	46	3	2	0	0	0	225	9540	42.4
1:00 AM	2:00 AM	2	0	0	0	7	38	65	29	2	3	0	0	0	146	6162	42.20548
2:00 AM	3:00 AM	1	0	0	2	6	22	50	17	5	0	0	0	0	103	4331	42.04854
3:00 AM	4:00 AM	1	0	0	3	5	38	62	13	4	1	0	0	0	127	5263	41.44094
4:00 AM	5:00 AM	5	0	0	2	11	33	76	10	1	0	0	0	0	138	5524	40.02899
5:00 AM	6:00 AM	2	0	0	3	9	31	69	9	3	1	0	0	0	127	5195	40.90551
6:00 AM	7:00 AM	5	0	1	3	15	33	67	9	1	0	0	0	0	134	5272	39.34328
7:00 AM	8:00 AM	2	0	0	0	9	46	81	15	4	0	0	1	0	158	6548	41.44304
8:00 AM	9:00 AM	6	0	1	4	13	84	115	13	0	1	0	0	0	237	9443	39.84388
9:00 AM	10:00 AM	3	0	0	4	11	59	108	27	2	1	0	0	0	215	8851	41.16744
10:00 AM	11:00 AM	5	0	1	10	16	69	123	24	3	0	0	0	0	251	10103	40.251
11:00 AM	12:00 PM	8	0	0	6	16	65	110	15	3	1	0	0	0	224	8913	39.79018
12:00 PM	1:00 PM	1	0	0	6	14	49	58	12	1	1	0	0	0	142	5683	40.02113
1:00 PM	2:00 PM	0	0	2	9	19	54	34	2	0	0	0	0	0	120	4535	37.79167
2:00 PM	3:00 PM	0	0	0	2	13	29	28	6	0	0	0	0	0	78	3079	39.47436
3:00 PM	4:00 PM	0	0	0	1	6	11	19	2	1	0	0	0	0	40	1610	40.25
4:00 PM	5:00 PM	0	0	0	0	0	6	6	1	1	0	0	0	0	14	587	41.92857
5:00 PM	6:00 PM	0	0	0	0	0	2	4	1	1	0	0	0	0	8	349	43.625
6:00 PM	7:00 PM	1	0	0	1	4	18	32	15	3	0	0	0	0	74	3109	42.01351
7:00 PM	8:00 PM	13	0	0	1	32	128	343	131	14	6	0	0	0	668	28205	42.22305
8:00 PM	9:00 PM	9	0	0	10	31	124	257	49	13	2	0	0	0	495	20313	41.03636
9:00 PM	10:00 PM	16	0	2	11	48	222	371	64	7	2	0	1	0	744	30114	40.47581
10:00 PM	11:00 PM	14	0	3	31	65	237	325	53	7	2	0	0	0	737	29234	39.66621
11:00 PM	12:00 AM	0	0	0	3	19	46	53	9	2	0	0	0	0	132	5276	39.9697
															5337	217239	40.70433

Location		Baseline Road west of Harvest Road					
#2		Eastbound			Westbound		
		EB Cars	EB Trucks	EB % Trucks	WB Cars	WB Trucks	WB % Trucks
12:00 AM	1:00 AM	3	0	0%	0	1	100%
1:00 AM	2:00 AM	6	0	0%	1	0	0%
2:00 AM	3:00 AM	4	0	0%	4	0	0%
3:00 AM	4:00 AM	0	0	#DIV/0!	2	0	0%
4:00 AM	5:00 AM	3	0	0%	13	1	7%
5:00 AM	6:00 AM	7	2	22%	57	7	11%
6:00 AM	7:00 AM	26	5	16%	113	31	22%
7:00 AM	8:00 AM	24	9	27%	167	24	13%
8:00 AM	9:00 AM	39	0	0%	103	5	5%
9:00 AM	10:00 AM	42	6	13%	50	9	15%
10:00 AM	11:00 AM	34	6	15%	52	12	19%
11:00 AM	12:00 PM	46	3	6%	56	4	7%
12:00 PM	1:00 PM	44	4	8%	37	3	8%
1:00 PM	2:00 PM	57	6	10%	42	6	13%
2:00 PM	3:00 PM	64	9	12%	47	9	16%
3:00 PM	4:00 PM	109	3	3%	70	12	15%
4:00 PM	5:00 PM	133	11	8%	60	4	6%
5:00 PM	6:00 PM	164	12	7%	64	10	14%
6:00 PM	7:00 PM	109	9	8%	41	8	16%
7:00 PM	8:00 PM	90	4	4%	32	6	16%
8:00 PM	9:00 PM	60	3	5%	24	3	11%
9:00 PM	10:00 PM	45	1	2%	17	2	11%
10:00 PM	11:00 PM	29	2	6%	8	2	20%
11:00 PM	12:00 AM	13	0	0%	2	0	0%
		1151	95	8%	1062	159	13%

Location 1: BASELINE RD W/O HARVEST ROAD (Eastbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	1	0	1	0	0	1	0	0	0	0	3	119	39.66667
1:00 AM	2:00 AM	0	0	0	0	0	0	3	1	1	1	0	0	0	6	288	48
2:00 AM	3:00 AM	1	0	0	0	0	1	1	1	0	0	0	0	0	4	139	34.75
3:00 AM	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
4:00 AM	5:00 AM	0	0	0	0	0	0	1	1	0	1	0	0	0	3	149	49.66667
5:00 AM	6:00 AM	1	0	0	0	0	0	6	2	0	0	0	0	0	9	364	40.44444
6:00 AM	7:00 AM	6	0	0	0	1	1	10	8	6	0	0	0	0	32	1263	39.46875
7:00 AM	8:00 AM	0	0	0	0	0	6	10	9	7	1	0	0	0	33	1519	46.0303
8:00 AM	9:00 AM	1	0	0	0	2	2	11	13	8	2	0	0	0	39	1789	45.87179
9:00 AM	10:00 AM	4	3	1	1	0	6	16	5	11	0	0	1	0	48	1952	40.66667
10:00 AM	11:00 AM	2	0	2	0	4	7	10	11	2	2	0	0	0	40	1644	41.1
11:00 AM	12:00 PM	0	1	0	0	1	4	11	21	11	0	0	0	0	49	2267	46.26531
12:00 PM	1:00 PM	3	0	0	1	1	3	18	13	6	2	1	0	0	48	2100	43.75
1:00 PM	2:00 PM	1	0	1	1	3	8	12	19	12	6	0	0	0	63	2876	45.65079
2:00 PM	3:00 PM	5	0	0	0	2	4	19	23	17	2	0	1	0	73	3274	44.84932
3:00 PM	4:00 PM	4	1	0	3	1	8	38	27	25	4	1	0	0	112	5029	44.90179
4:00 PM	5:00 PM	0	1	3	5	7	24	38	32	25	10	0	0	0	145	6445	44.44828
5:00 PM	6:00 PM	2	0	2	1	7	24	67	47	26	2	0	0	0	178	7868	44.20225
6:00 PM	7:00 PM	0	0	0	0	2	9	37	43	26	1	0	0	0	118	5499	46.60169
7:00 PM	8:00 PM	3	0	0	0	1	11	30	30	17	2	1	0	0	95	4291	45.16842
8:00 PM	9:00 PM	3	0	1	0	1	7	21	19	8	4	0	0	0	64	2823	44.10938
9:00 PM	10:00 PM	0	0	0	0	0	4	15	8	16	2	1	0	0	46	2208	48
10:00 PM	11:00 PM	0	0	0	0	1	4	7	11	5	2	1	0	0	31	1458	47.03226
11:00 PM	12:00 AM	2	0	0	0	0	2	2	4	3	0	0	0	0	13	533	41
															1252	55897	44.64617

Location 1: BASELINE RD W/O HARVEST ROAD (Westbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	0	6	10	9	7	1	0	0	0	33	1519	46.0303
1:00 AM	2:00 AM	1	0	0	0	2	2	11	13	8	2	0	0	0	39	1789	45.87179
2:00 AM	3:00 AM	4	3	1	1	0	6	16	5	11	0	0	1	0	48	1952	40.66667
3:00 AM	4:00 AM	2	0	2	0	4	7	10	11	2	2	0	0	0	40	1644	41.1
4:00 AM	5:00 AM	0	1	0	0	1	4	11	21	11	0	0	0	0	49	2267	46.26531
5:00 AM	6:00 AM	3	0	0	1	1	3	18	13	6	2	1	0	0	48	2100	43.75
6:00 AM	7:00 AM	1	0	1	1	3	8	12	19	12	6	0	0	0	63	2876	45.65079
7:00 AM	8:00 AM	5	0	0	0	2	4	19	23	17	2	0	1	0	73	3274	44.84932
8:00 AM	9:00 AM	4	1	0	3	1	8	38	27	25	4	1	0	0	112	5029	44.90179
9:00 AM	10:00 AM	0	1	3	5	7	24	38	32	25	10	0	0	0	145	6445	44.44828
10:00 AM	11:00 AM	2	0	2	1	7	24	67	47	26	2	0	0	0	178	7868	44.20225
11:00 AM	12:00 PM	0	0	0	0	2	9	37	43	26	1	0	0	0	118	5499	46.60169
12:00 PM	1:00 PM	3	0	0	0	1	11	30	30	17	2	1	0	0	95	4291	45.16842
1:00 PM	2:00 PM	3	0	1	0	1	7	21	19	8	4	0	0	0	64	2823	44.10938
2:00 PM	3:00 PM	0	0	0	0	0	4	15	8	16	2	1	0	0	46	2208	48
3:00 PM	4:00 PM	0	0	0	0	1	4	7	11	5	2	1	0	0	31	1458	47.03226
4:00 PM	5:00 PM	2	0	0	0	0	2	2	4	3	0	0	0	0	13	533	41
5:00 PM	6:00 PM	0	0	0	1	0	1	0	0	1	0	0	0	0	3	119	39.66667
6:00 PM	7:00 PM	1	0	0	0	0	1	5	3	1	2	0	0	0	13	576	44.30769
7:00 PM	8:00 PM	8	0	0	0	3	9	37	32	21	3	0	0	0	113	4935	43.67257
8:00 PM	9:00 PM	9	4	3	2	6	20	55	50	30	4	1	1	0	185	7963	43.04324
9:00 PM	10:00 PM	10	2	4	9	13	44	107	101	79	22	1	1	0	393	17624	44.84478
10:00 PM	11:00 PM	8	0	3	1	11	51	155	139	77	9	1	0	0	455	20481	45.01319
11:00 PM	12:00 AM	2	0	0	0	1	10	24	23	24	4	2	0	0	90	4199	46.65556
															2447	109472	44.73723

Location		Bridge Street west of West Frontage Road					
#3		Eastbound			Westbound		
		EB Cars	EB Trucks	EB % Trucks	WB Cars	WB Trucks	WB % Trucks
12:00 AM	1:00 AM	5	0	0%	4	0	0%
1:00 AM	2:00 AM	5	0	0%	6	1	14%
2:00 AM	3:00 AM	4	1	20%	10	0	0%
3:00 AM	4:00 AM	3	0	0%	5	0	0%
4:00 AM	5:00 AM	7	2	22%	17	2	11%
5:00 AM	6:00 AM	30	6	17%	44	3	6%
6:00 AM	7:00 AM	95	11	10%	128	7	5%
7:00 AM	8:00 AM	150	24	14%	165	16	9%
8:00 AM	9:00 AM	169	18	10%	135	9	6%
9:00 AM	10:00 AM	93	21	18%	76	16	17%
10:00 AM	11:00 AM	75	15	17%	74	19	20%
11:00 AM	12:00 PM	87	13	13%	91	13	13%
12:00 PM	1:00 PM	95	17	15%	91	16	15%
1:00 PM	2:00 PM	94	13	12%	88	18	17%
2:00 PM	3:00 PM	90	27	23%	116	22	16%
3:00 PM	4:00 PM	180	27	13%	172	33	16%
4:00 PM	5:00 PM	185	32	15%	159	23	13%
5:00 PM	6:00 PM	212	46	18%	170	27	14%
6:00 PM	7:00 PM	127	19	13%	134	19	12%
7:00 PM	8:00 PM	88	19	18%	118	16	12%
8:00 PM	9:00 PM	59	6	9%	94	12	11%
9:00 PM	10:00 PM	36	6	14%	58	6	9%
10:00 PM	11:00 PM	21	5	19%	26	4	13%
11:00 PM	12:00 AM	17	2	11%	14	0	0%
		1927	330	15%	1995	282	12%

Location 1: Bridge Street west of West Frontage Road (Eastbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	1	4	0	0	0	0	0	0	0	5	185	37
1:00 AM	2:00 AM	0	0	0	0	1	1	0	2	1	0	0	0	0	5	220	44
2:00 AM	3:00 AM	0	0	0	0	0	1	2	2	0	0	0	0	0	5	220	44
3:00 AM	4:00 AM	0	0	0	0	1	0	2	0	0	0	0	0	0	3	119	39.66667
4:00 AM	5:00 AM	0	0	0	1	1	3	3	1	0	0	0	0	0	9	352	39.11111
5:00 AM	6:00 AM	4	0	0	0	4	9	12	2	5	1	0	0	0	37	1449	39.16216
6:00 AM	7:00 AM	5	0	0	1	3	21	31	22	22	4	0	0	0	109	4762	43.68807
7:00 AM	8:00 AM	7	0	0	2	5	19	52	54	28	10	2	0	0	179	8031	44.86592
8:00 AM	9:00 AM	8	0	1	0	2	26	76	55	16	6	1	0	0	191	8324	43.58115
9:00 AM	10:00 AM	4	0	1	0	3	31	28	32	10	5	0	0	0	114	4900	42.98246
10:00 AM	11:00 AM	0	0	0	0	4	19	24	25	15	5	0	0	0	92	4171	45.33696
11:00 AM	12:00 PM	0	0	0	0	2	10	37	24	17	7	2	0	1	100	4695	46.95
12:00 PM	1:00 PM	2	0	1	1	5	10	29	33	23	5	2	1	0	112	5150	45.98214
1:00 PM	2:00 PM	2	0	0	0	3	17	39	27	9	7	3	1	0	108	4878	45.16667
2:00 PM	3:00 PM	0	0	1	0	2	10	31	38	25	10	0	0	0	117	5531	47.2735
3:00 PM	4:00 PM	1	0	0	0	6	42	65	60	29	4	0	1	0	208	9316	44.78846
4:00 PM	5:00 PM	3	0	0	1	3	22	59	75	35	16	2	1	0	217	10107	46.57604
5:00 PM	6:00 PM	3	0	0	2	4	29	85	70	48	15	2	0	0	258	11875	46.02713
6:00 PM	7:00 PM	0	0	0	0	2	26	45	41	22	9	1	0	0	146	6708	45.94521
7:00 PM	8:00 PM	2	0	0	0	1	22	34	30	14	2	2	0	0	107	4775	44.62617
8:00 PM	9:00 PM	0	0	0	0	2	19	25	16	2	1	0	0	0	65	2795	43
9:00 PM	10:00 PM	0	0	1	2	4	14	13	5	3	0	0	0	0	42	1701	40.5
10:00 PM	11:00 PM	1	0	0	0	2	11	5	5	2	0	0	0	0	26	1055	40.57692
11:00 PM	12:00 AM	0	0	0	0	0	10	6	1	2	1	0	0	0	20	850	42.5
															2275	102169	44.90945

Location 1: Bridge Street west of West Frontage Road (Westbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	7	0	0	2	5	19	52	54	28	10	2	0	0	179	8031	44.86592
1:00 AM	2:00 AM	8	0	1	0	2	26	76	55	16	6	1	0	0	191	8324	43.58115
2:00 AM	3:00 AM	4	0	1	0	3	31	28	32	10	5	0	0	0	114	4900	42.98246
3:00 AM	4:00 AM	0	0	0	0	4	19	24	25	15	5	0	0	0	92	4171	45.33696
4:00 AM	5:00 AM	0	0	0	0	2	10	37	24	17	7	2	0	1	100	4695	46.95
5:00 AM	6:00 AM	2	0	1	1	5	10	29	33	23	5	2	1	0	112	5150	45.98214
6:00 AM	7:00 AM	2	0	0	0	3	17	39	27	9	7	3	1	0	108	4878	45.16667
7:00 AM	8:00 AM	0	0	1	0	2	10	31	38	25	10	0	0	0	117	5531	47.2735
8:00 AM	9:00 AM	1	0	0	0	6	42	65	60	29	4	0	1	0	208	9316	44.78846
9:00 AM	10:00 AM	3	0	0	1	3	22	59	75	35	16	2	1	0	217	10107	46.57604
10:00 AM	11:00 AM	3	0	0	2	4	29	85	70	48	15	2	0	0	258	11875	46.02713
11:00 AM	12:00 PM	0	0	0	0	2	26	45	41	22	9	1	0	0	146	6708	45.94521
12:00 PM	1:00 PM	2	0	0	0	1	22	34	30	14	2	2	0	0	107	4775	44.62617
1:00 PM	2:00 PM	0	0	0	0	2	19	25	16	2	1	0	0	0	65	2795	43
2:00 PM	3:00 PM	0	0	1	2	4	14	13	5	3	0	0	0	0	42	1701	40.5
3:00 PM	4:00 PM	1	0	0	0	2	11	5	5	2	0	0	0	0	26	1055	40.57692
4:00 PM	5:00 PM	0	0	0	0	0	10	6	1	2	1	0	0	0	20	850	42.5
5:00 PM	6:00 PM	0	0	0	0	1	4	0	0	0	0	0	0	0	5	185	37
6:00 PM	7:00 PM	0	0	0	1	3	5	7	5	1	0	0	0	0	22	911	41.40909
7:00 PM	8:00 PM	24	0	1	3	14	75	171	133	71	21	3	0	0	516	22566	43.73256
8:00 PM	9:00 PM	6	0	2	1	14	70	118	114	65	22	4	1	1	418	18916	45.25359
9:00 PM	10:00 PM	6	0	1	1	14	91	194	200	98	37	5	3	0	650	29832	45.89538
10:00 PM	11:00 PM	5	0	0	2	9	96	189	157	86	27	5	0	0	576	26153	45.40451
11:00 PM	12:00 AM	1	0	1	2	6	35	24	11	7	1	0	0	0	88	3606	40.97727
															4377	197031	45.01508

Location		Bridge Street over I-76					
#4		Eastbound			Westbound		
		EB Cars	EB Trucks	EB % Trucks	WB Cars	WB Trucks	WB % Trucks
12:00 AM	1:00 AM	0	0	#DIV/0!	1	0	0%
1:00 AM	2:00 AM	4	1	20%	2	0	0%
2:00 AM	3:00 AM	4	0	0%	0	0	#DIV/0!
3:00 AM	4:00 AM	0	0	#DIV/0!	0	0	#DIV/0!
4:00 AM	5:00 AM	6	0	0%	1	2	67%
5:00 AM	6:00 AM	11	0	0%	11	2	15%
6:00 AM	7:00 AM	45	1	2%	53	6	10%
7:00 AM	8:00 AM	92	8	8%	98	15	13%
8:00 AM	9:00 AM	80	1	1%	82	4	5%
9:00 AM	10:00 AM	40	5	11%	43	12	22%
10:00 AM	11:00 AM	42	6	13%	36	7	16%
11:00 AM	12:00 PM	44	0	0%	50	3	6%
12:00 PM	1:00 PM	51	3	6%	52	3	5%
1:00 PM	2:00 PM	51	6	11%	40	6	13%
2:00 PM	3:00 PM	51	7	12%	55	7	11%
3:00 PM	4:00 PM	121	15	11%	74	8	10%
4:00 PM	5:00 PM	96	7	7%	119	8	6%
5:00 PM	6:00 PM	100	7	7%	105	5	5%
6:00 PM	7:00 PM	82	5	6%	59	2	3%
7:00 PM	8:00 PM	69	3	4%	34	5	13%
8:00 PM	9:00 PM	53	4	7%	21	1	5%
9:00 PM	10:00 PM	38	2	5%	12	0	0%
10:00 PM	11:00 PM	14	0	0%	7	0	0%
11:00 PM	12:00 AM	12	0	0%	7	1	13%
		1106	81	7%	962	97	9%

Location 4: Bridge Street over I-76 (Eastbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
1:00 AM	2:00 AM	0	0	0	0	0	1	1	2	1	0	0	0	0	5	230	46
2:00 AM	3:00 AM	0	0	0	0	2	1	1	0	0	0	0	0	0	4	147	36.75
3:00 AM	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
4:00 AM	5:00 AM	0	0	0	0	1	3	2	0	0	0	0	0	0	6	233	38.83333
5:00 AM	6:00 AM	0	0	0	0	1	5	2	3	0	0	0	0	0	11	453	41.18182
6:00 AM	7:00 AM	0	0	0	2	5	13	13	11	2	0	0	0	0	46	1908	41.47826
7:00 AM	8:00 AM	0	0	1	5	16	25	36	15	4	0	0	0	0	102	4121	40.40196
8:00 AM	9:00 AM	3	1	0	8	12	19	31	9	0	0	0	0	0	83	3155	38.01205
9:00 AM	10:00 AM	0	0	0	3	8	16	10	6	2	0	0	0	0	45	1780	39.55556
10:00 AM	11:00 AM	2	0	0	2	6	16	18	7	0	0	0	0	0	51	1992	39.05882
11:00 AM	12:00 PM	1	0	2	0	3	19	13	6	1	0	0	0	0	45	1777	39.48889
12:00 PM	1:00 PM	0	0	3	1	7	15	21	6	1	1	0	0	0	55	2200	40
1:00 PM	2:00 PM	4	0	3	0	7	19	21	3	1	0	0	0	0	58	2162	37.27586
2:00 PM	3:00 PM	0	0	0	4	7	18	23	6	1	0	0	0	0	59	2357	39.94915
3:00 PM	4:00 PM	1	0	5	9	24	39	41	15	2	1	0	0	0	137	5298	38.67153
4:00 PM	5:00 PM	2	0	2	10	12	37	33	7	1	0	0	0	0	104	3956	38.03846
5:00 PM	6:00 PM	0	1	1	3	11	25	45	16	5	1	0	0	0	108	4464	41.33333
6:00 PM	7:00 PM	1	0	2	4	12	34	25	7	2	1	0	0	0	88	3431	38.98864
7:00 PM	8:00 PM	1	0	0	4	9	26	22	10	0	0	0	0	0	72	2833	39.34722
8:00 PM	9:00 PM	0	0	1	2	9	26	17	0	1	1	0	0	0	57	2206	38.70175
9:00 PM	10:00 PM	0	0	0	1	14	16	7	2	0	0	0	0	0	40	1495	37.375
10:00 PM	11:00 PM	0	0	0	0	3	6	4	1	0	0	0	0	0	14	547	39.07143
11:00 PM	12:00 AM	0	0	0	3	2	4	3	0	0	0	0	0	0	12	431	35.91667
															1202	47176	39.24792

Location 4: Bridge Street over I-76 (Westbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	1	5	16	25	36	15	4	0	0	0	0	102	4121	40.40196
1:00 AM	2:00 AM	3	1	0	8	12	19	31	9	0	0	0	0	0	83	3155	38.01205
2:00 AM	3:00 AM	0	0	0	3	8	16	10	6	2	0	0	0	0	45	1780	39.55556
3:00 AM	4:00 AM	2	0	0	2	6	16	18	7	0	0	0	0	0	51	1992	39.05882
4:00 AM	5:00 AM	1	0	2	0	3	19	13	6	1	0	0	0	0	45	1777	39.48889
5:00 AM	6:00 AM	0	0	3	1	7	15	21	6	1	1	0	0	0	55	2200	40
6:00 AM	7:00 AM	4	0	3	0	7	19	21	3	1	0	0	0	0	58	2162	37.27586
7:00 AM	8:00 AM	0	0	0	4	7	18	23	6	1	0	0	0	0	59	2357	39.94915
8:00 AM	9:00 AM	1	0	5	9	24	39	41	15	2	1	0	0	0	137	5298	38.67153
9:00 AM	10:00 AM	2	0	2	10	12	37	33	7	1	0	0	0	0	104	3956	38.03846
10:00 AM	11:00 AM	0	1	1	3	11	25	45	16	5	1	0	0	0	108	4464	41.33333
11:00 AM	12:00 PM	1	0	2	4	12	34	25	7	2	1	0	0	0	88	3431	38.98864
12:00 PM	1:00 PM	1	0	0	4	9	26	22	10	0	0	0	0	0	72	2833	39.34722
1:00 PM	2:00 PM	0	0	1	2	9	26	17	0	1	1	0	0	0	57	2206	38.70175
2:00 PM	3:00 PM	0	0	0	1	14	16	7	2	0	0	0	0	0	40	1495	37.375
3:00 PM	4:00 PM	0	0	0	0	3	6	4	1	0	0	0	0	0	14	547	39.07143
4:00 PM	5:00 PM	0	0	0	3	2	4	3	0	0	0	0	0	0	12	431	35.91667
5:00 PM	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
6:00 PM	7:00 PM	0	0	0	0	3	5	4	2	1	0	0	0	0	15	610	40.66667
7:00 PM	8:00 PM	3	1	1	15	34	62	82	38	6	0	0	0	0	242	9637	39.82231
8:00 PM	9:00 PM	3	0	5	6	24	66	62	25	4	1	0	0	0	196	7749	39.53571
9:00 PM	10:00 PM	7	0	10	23	50	113	118	31	5	1	0	0	0	358	13773	38.47207
10:00 PM	11:00 PM	2	1	4	13	41	111	109	33	8	3	0	0	0	325	12934	39.79692
11:00 PM	12:00 AM	0	0	0	4	19	26	14	3	0	0	0	0	0	66	2473	37.4697
															2332	91381	39.18568

Location		Bridge Street east of East Frontage Road					
#5		Eastbound			Westbound		
		EB Cars	EB Trucks	EB % Trucks	WB Cars	WB Trucks	WB % Trucks
12:00 AM	1:00 AM	0	0	0%	0	0	0%
1:00 AM	2:00 AM	0	0	0%	1	0	0%
2:00 AM	3:00 AM	0	0	0%	3	0	0%
3:00 AM	4:00 AM	0	0	0%	0	0	0%
4:00 AM	5:00 AM	1	1	50%	1	0	0%
5:00 AM	6:00 AM	6	0	0%	2	0	0%
6:00 AM	7:00 AM	40	11	22%	14	1	7%
7:00 AM	8:00 AM	48	7	13%	17	4	19%
8:00 AM	9:00 AM	45	5	10%	33	4	11%
9:00 AM	10:00 AM	20	6	23%	12	4	25%
10:00 AM	11:00 AM	18	4	18%	22	8	27%
11:00 AM	12:00 PM	33	5	13%	19	4	17%
12:00 PM	1:00 PM	22	4	15%	21	9	30%
1:00 PM	2:00 PM	24	3	11%	25	6	19%
2:00 PM	3:00 PM	25	7	22%	31	7	18%
3:00 PM	4:00 PM	42	5	11%	56	18	24%
4:00 PM	5:00 PM	34	4	11%	49	14	22%
5:00 PM	6:00 PM	32	4	11%	61	13	18%
6:00 PM	7:00 PM	37	1	3%	50	12	19%
7:00 PM	8:00 PM	17	3	15%	36	4	10%
8:00 PM	9:00 PM	12	1	8%	24	7	23%
9:00 PM	10:00 PM	5	1	17%	23	3	12%
10:00 PM	11:00 PM	3	1	25%	6	1	14%
11:00 PM	12:00 AM	1	1	50%	6	1	14%
		465	74	14%	512	120	19%

Location 5: Bridge Street east of East Frontage Road (Eastbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
1:00 AM	2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
2:00 AM	3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
3:00 AM	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
4:00 AM	5:00 AM	0	0	0	0	0	0	0	1	1	0	0	0	0	2	101	50.5
5:00 AM	6:00 AM	0	0	0	0	0	1	2	2	0	1	0	0	0	6	278	46.33333
6:00 AM	7:00 AM	0	0	2	0	3	6	10	13	11	5	1	0	0	51	2363	46.33333
7:00 AM	8:00 AM	0	0	1	0	2	3	14	15	14	3	3	0	0	55	2630	47.81818
8:00 AM	9:00 AM	0	0	0	0	1	7	12	17	7	2	4	0	0	50	2370	47.4
9:00 AM	10:00 AM	0	0	0	1	0	4	10	5	0	1	0	0	0	26	1178	45.30769
10:00 AM	11:00 AM	0	1	0	0	1	1	7	12	1	1	1	0	0	25	1140	45.6
11:00 AM	12:00 PM	0	0	0	0	1	6	10	8	10	3	0	0	0	38	1779	46.81579
12:00 PM	1:00 PM	0	0	0	0	0	3	8	6	7	2	1	0	0	27	1296	48
1:00 PM	2:00 PM	0	0	0	0	0	3	6	10	7	1	1	0	0	28	1344	48
2:00 PM	3:00 PM	0	0	0	0	0	2	9	11	7	3	0	0	0	32	1536	48
3:00 PM	4:00 PM	1	0	0	0	1	7	14	8	13	1	2	0	0	47	2168	46.12766
4:00 PM	5:00 PM	0	0	0	0	0	5	12	10	6	4	1	0	0	38	1799	47.34211
5:00 PM	6:00 PM	1	0	0	1	0	4	10	10	10	0	0	0	0	36	1630	45.27778
6:00 PM	7:00 PM	0	0	0	0	3	5	5	13	10	2	0	0	0	38	1774	46.68421
7:00 PM	8:00 PM	0	0	0	1	0	2	4	7	4	2	0	0	0	20	940	47
8:00 PM	9:00 PM	0	0	0	0	1	4	5	2	1	0	0	0	0	13	549	42.23077
9:00 PM	10:00 PM	0	1	0	0	1	1	1	2	0	0	0	0	0	6	228	38
10:00 PM	11:00 PM	0	0	0	0	0	0	2	2	0	0	0	0	0	4	182	45.5
11:00 PM	12:00 AM	0	0	0	1	0	0	1	0	0	0	0	0	0	2	71	35.5
															544	25356	46.61029

Location 5: Bridge Street east of East Frontage Road (Westbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	1	0	2	3	14	15	14	3	3	0	0	55	2630	47.81818
1:00 AM	2:00 AM	0	0	0	0	1	7	12	17	7	2	4	0	0	50	2370	47.4
2:00 AM	3:00 AM	0	0	0	1	0	4	10	5	5	0	1	0	0	26	1178	45.30769
3:00 AM	4:00 AM	0	1	0	0	1	1	7	12	1	1	1	0	0	25	1140	45.6
4:00 AM	5:00 AM	0	0	0	0	1	6	10	8	10	3	0	0	0	38	1779	46.81579
5:00 AM	6:00 AM	0	0	0	0	0	3	8	6	7	2	1	0	0	27	1296	48
6:00 AM	7:00 AM	0	0	0	0	0	3	6	10	7	1	1	0	0	28	1344	48
7:00 AM	8:00 AM	0	0	0	0	0	2	9	11	7	3	0	0	0	32	1536	48
8:00 AM	9:00 AM	1	0	0	0	1	7	14	8	13	1	2	0	0	47	2168	46.12766
9:00 AM	10:00 AM	0	0	0	0	0	5	12	10	6	4	1	0	0	38	1799	47.34211
10:00 AM	11:00 AM	1	0	0	1	0	4	10	10	10	0	0	0	0	36	1630	45.27778
11:00 AM	12:00 PM	0	0	0	0	3	5	5	13	10	2	0	0	0	38	1774	46.68421
12:00 PM	1:00 PM	0	0	0	1	0	2	4	7	4	2	0	0	0	20	940	47
1:00 PM	2:00 PM	0	0	0	0	1	4	5	2	1	0	0	0	0	13	549	42.23077
2:00 PM	3:00 PM	0	1	0	0	1	1	1	2	0	0	0	0	0	6	228	38
3:00 PM	4:00 PM	0	0	0	0	0	0	2	2	0	0	0	0	0	4	182	45.5
4:00 PM	5:00 PM	0	0	0	1	0	0	1	0	0	0	0	0	0	2	71	35.5
5:00 PM	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
6:00 PM	7:00 PM	0	0	0	0	0	0	0	1	1	0	0	0	0	2	101	50.5
7:00 PM	8:00 PM	0	0	3	0	6	17	38	47	32	11	8	0	0	162	7641	47.16667
8:00 PM	9:00 PM	0	1	0	1	2	14	35	31	23	6	3	0	0	116	5393	46.49138
9:00 PM	10:00 PM	1	0	0	0	1	17	41	39	33	9	4	0	0	145	6847	47.22069
10:00 PM	11:00 PM	1	0	0	2	4	15	24	32	25	4	0	0	0	107	4893	45.72897
11:00 PM	12:00 AM	0	1	0	1	1	1	4	4	0	0	0	0	0	12	481	40.08333
															1029	47970	46.61808

Location		Bromley Lane west of West Frontage Road					
#6		Eastbound			Westbound		
		EB Cars	EB Trucks	EB % Trucks	WB Cars	WB Trucks	WB % Trucks
12:00 AM	1:00 AM	23	5	18%	14	0	0%
1:00 AM	2:00 AM	10	3	23%	12	5	29%
2:00 AM	3:00 AM	20	0	0%	20	0	0%
3:00 AM	4:00 AM	17	2	11%	17	1	6%
4:00 AM	5:00 AM	37	6	14%	54	6	10%
5:00 AM	6:00 AM	108	22	17%	130	15	10%
6:00 AM	7:00 AM	197	36	15%	259	37	13%
7:00 AM	8:00 AM	320	30	9%	511	40	7%
8:00 AM	9:00 AM	299	34	10%	586	44	7%
9:00 AM	10:00 AM	296	37	11%	275	33	11%
10:00 AM	11:00 AM	313	30	9%	285	28	9%
11:00 AM	12:00 PM	346	33	9%	315	41	12%
12:00 PM	1:00 PM	380	50	12%	386	31	7%
1:00 PM	2:00 PM	376	35	9%	367	41	10%
2:00 PM	3:00 PM	354	41	10%	334	37	10%
3:00 PM	4:00 PM	545	46	8%	413	59	13%
4:00 PM	5:00 PM	553	55	9%	440	55	11%
5:00 PM	6:00 PM	600	49	8%	420	47	10%
6:00 PM	7:00 PM	422	48	10%	353	37	9%
7:00 PM	8:00 PM	352	28	7%	227	29	11%
8:00 PM	9:00 PM	297	22	7%	170	15	8%
9:00 PM	10:00 PM	168	17	9%	110	7	6%
10:00 PM	11:00 PM	88	3	3%	73	1	1%
11:00 PM	12:00 AM	49	5	9%	36	2	5%
		6170	637	9%	5807	611	10%

Location 6: Bromley Lane west of West Frontage Road (Eastbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	2	12	8	5	1	0	0	0	0	0	0	28	879	31.39286
1:00 AM	2:00 AM	0	0	1	2	7	2	1	0	0	0	0	0	0	13	429	33
2:00 AM	3:00 AM	0	0	1	5	9	4	1	0	0	0	0	0	0	20	655	32.75
3:00 AM	4:00 AM	0	0	2	6	6	4	1	0	0	0	0	0	0	19	607	31.94737
4:00 AM	5:00 AM	1	0	1	21	12	7	1	0	0	0	0	0	0	43	1326	30.83721
5:00 AM	6:00 AM	1	1	11	56	42	18	1	0	0	0	0	0	0	130	3962	30.47692
6:00 AM	7:00 AM	4	4	39	91	76	17	2	0	0	0	0	0	0	233	6797	29.17167
7:00 AM	8:00 AM	5	12	52	127	109	42	3	0	0	0	0	0	0	350	10340	29.54286
8:00 AM	9:00 AM	4	7	48	129	117	27	1	0	0	0	0	0	0	333	9812	29.46547
9:00 AM	10:00 AM	10	18	56	136	95	19	1	0	0	0	0	0	0	335	9420	28.1194
10:00 AM	11:00 AM	11	13	68	141	85	23	2	0	0	0	0	0	0	343	9621	28.04956
11:00 AM	12:00 PM	28	25	58	153	98	16	2	0	0	0	0	0	0	380	10276	27.04211
12:00 PM	1:00 PM	17	23	105	180	92	12	1	0	0	0	0	0	0	430	11574	26.91628
1:00 PM	2:00 PM	18	20	86	187	88	10	3	0	0	0	0	0	0	412	11167	27.10437
2:00 PM	3:00 PM	30	24	91	149	85	16	0	0	0	0	0	0	0	395	10410	26.35443
3:00 PM	4:00 PM	67	58	166	204	79	16	1	0	0	0	0	0	0	591	14502	24.53807
4:00 PM	5:00 PM	90	67	123	223	89	18	2	0	0	0	0	0	0	612	14886	24.32353
5:00 PM	6:00 PM	107	68	168	216	78	14	1	0	0	0	0	0	0	652	15355	23.55061
6:00 PM	7:00 PM	19	19	110	212	94	15	1	0	0	0	0	0	0	470	12713	27.04894
7:00 PM	8:00 PM	5	21	89	154	86	22	2	1	0	0	0	0	0	380	10595	27.88158
8:00 PM	9:00 PM	4	7	62	147	81	17	1	0	0	0	0	0	0	319	9070	28.4326
9:00 PM	10:00 PM	1	1	29	72	64	17	1	0	0	0	0	0	0	185	5512	29.79459
10:00 PM	11:00 PM	0	0	13	35	34	9	0	0	0	0	0	0	0	91	2743	30.14286
11:00 PM	12:00 AM	0	1	10	17	19	7	0	0	0	0	0	0	0	54	1617	29.94444
															6818	184268	27.02669

Location 6: Bromley Lane west of West Frontage Road (Westbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	5	12	52	127	109	42	3	0	0	0	0	0	0	350	10340	29.54286
1:00 AM	2:00 AM	4	7	48	129	117	27	1	0	0	0	0	0	0	333	9812	29.46547
2:00 AM	3:00 AM	10	18	56	136	95	19	1	0	0	0	0	0	0	335	9420	28.1194
3:00 AM	4:00 AM	11	13	68	141	85	23	2	0	0	0	0	0	0	343	9621	28.04956
4:00 AM	5:00 AM	28	25	58	153	98	16	2	0	0	0	0	0	0	380	10276	27.04211
5:00 AM	6:00 AM	17	23	105	180	92	12	1	0	0	0	0	0	0	430	11574	26.91628
6:00 AM	7:00 AM	18	20	86	187	88	10	3	0	0	0	0	0	0	412	11167	27.10437
7:00 AM	8:00 AM	30	24	91	149	85	16	0	0	0	0	0	0	0	395	10410	26.35443
8:00 AM	9:00 AM	67	58	166	204	79	16	1	0	0	0	0	0	0	591	14502	24.53807
9:00 AM	10:00 AM	90	67	123	223	89	18	2	0	0	0	0	0	0	612	14886	24.32353
10:00 AM	11:00 AM	107	68	168	216	78	14	1	0	0	0	0	0	0	652	15355	23.55061
11:00 AM	12:00 PM	19	19	110	212	94	15	1	0	0	0	0	0	0	470	12713	27.04894
12:00 PM	1:00 PM	5	21	89	154	86	22	2	1	0	0	0	0	0	380	10595	27.88158
1:00 PM	2:00 PM	4	7	62	147	81	17	1	0	0	0	0	0	0	319	9070	28.4326
2:00 PM	3:00 PM	1	1	29	72	64	17	1	0	0	0	0	0	0	185	5512	29.79459
3:00 PM	4:00 PM	0	0	13	35	34	9	0	0	0	0	0	0	0	91	2743	30.14286
4:00 PM	5:00 PM	0	1	10	17	19	7	0	0	0	0	0	0	0	54	1617	29.94444
5:00 PM	6:00 PM	0	0	2	12	8	5	1	0	0	0	0	0	0	28	879	31.39286
6:00 PM	7:00 PM	1	0	5	34	34	17	4	0	0	0	0	0	0	95	3017	31.75789
7:00 PM	8:00 PM	14	24	150	403	344	104	7	0	0	0	0	0	0	1046	30911	29.55163
8:00 PM	9:00 PM	66	79	287	610	370	70	6	0	0	0	0	0	0	1488	40891	27.48051
9:00 PM	10:00 PM	205	169	466	763	341	60	6	0	0	0	0	0	0	2010	50965	25.35572
10:00 PM	11:00 PM	135	115	429	729	339	68	5	1	0	0	0	0	0	1821	47733	26.21252
11:00 PM	12:00 AM	1	2	52	124	117	33	1	0	0	0	0	0	0	330	9872	29.91515
															13150	353881	26.9111

Location		Bromley Lane east of East Frontage Road					
#7		Eastbound			Westbound		
		EB Cars	EB Trucks	EB % Trucks	WB Cars	WB Trucks	WB % Trucks
12:00 AM	1:00 AM	11	1	8%	8	0	0%
1:00 AM	2:00 AM	6	0	0%	2	0	0%
2:00 AM	3:00 AM	2	0	0%	3	0	0%
3:00 AM	4:00 AM	9	1	10%	9	1	10%
4:00 AM	5:00 AM	7	0	0%	26	7	21%
5:00 AM	6:00 AM	25	3	11%	105	21	17%
6:00 AM	7:00 AM	106	5	5%	231	42	15%
7:00 AM	8:00 AM	129	12	9%	288	49	15%
8:00 AM	9:00 AM	128	18	12%	219	28	11%
9:00 AM	10:00 AM	110	12	10%	146	29	17%
10:00 AM	11:00 AM	124	10	7%	137	19	12%
11:00 AM	12:00 PM	126	14	10%	147	36	20%
12:00 PM	1:00 PM	186	10	5%	173	26	13%
1:00 PM	2:00 PM	159	15	9%	129	35	21%
2:00 PM	3:00 PM	151	14	8%	141	18	11%
3:00 PM	4:00 PM	216	22	9%	169	34	17%
4:00 PM	5:00 PM	292	30	9%	197	35	15%
5:00 PM	6:00 PM	312	17	5%	218	30	12%
6:00 PM	7:00 PM	228	14	6%	120	16	12%
7:00 PM	8:00 PM	167	4	2%	86	13	13%
8:00 PM	9:00 PM	145	4	3%	59	8	12%
9:00 PM	10:00 PM	83	7	8%	49	4	8%
10:00 PM	11:00 PM	41	2	5%	28	0	0%
11:00 PM	12:00 AM	18	1	5%	10	1	9%
		2781	216	7%	2700	452	14%

Location 7: Bromley Lane east of East Frontage Road (Eastbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	1	0	3	4	3	0	1	0	0	0	12	516	43
1:00 AM	2:00 AM	0	0	0	0	0	1	2	2	1	0	0	0	0	6	273	45.5
2:00 AM	3:00 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	2	96	48
3:00 AM	4:00 AM	0	0	0	0	0	0	5	3	2	0	0	0	0	10	465	46.5
4:00 AM	5:00 AM	0	0	0	0	1	1	1	2	2	0	0	0	0	7	316	45.14286
5:00 AM	6:00 AM	2	0	0	0	1	6	9	9	2	0	0	0	0	29	1206	41.58621
6:00 AM	7:00 AM	2	0	0	0	6	18	46	27	12	0	0	0	0	111	4812	43.35135
7:00 AM	8:00 AM	6	0	0	0	6	30	64	32	5	1	0	0	0	144	6009	41.72917
8:00 AM	9:00 AM	7	0	0	0	5	44	60	27	6	0	0	0	0	149	6101	40.94631
9:00 AM	10:00 AM	2	0	0	4	7	35	48	23	4	0	0	0	0	123	5073	41.2439
10:00 AM	11:00 AM	0	0	0	0	6	35	53	33	7	0	0	0	0	134	5762	43
11:00 AM	12:00 PM	2	0	0	2	7	55	48	25	4	0	0	0	0	143	5873	41.06993
12:00 PM	1:00 PM	6	0	0	0	16	43	87	40	6	0	1	0	0	199	8264	41.52764
1:00 PM	2:00 PM	5	0	2	0	6	51	65	37	6	2	0	0	0	174	7237	41.59195
2:00 PM	3:00 PM	6	0	0	1	6	47	62	36	7	2	0	0	0	167	6953	41.63473
3:00 PM	4:00 PM	3	0	0	1	11	49	97	65	13	0	0	0	0	239	10263	42.94142
4:00 PM	5:00 PM	10	0	0	0	6	63	149	76	19	1	0	0	0	324	13812	42.62963
5:00 PM	6:00 PM	8	0	0	0	15	33	139	111	21	4	0	0	0	331	14479	43.7432
6:00 PM	7:00 PM	3	0	0	0	13	49	107	54	15	2	0	0	0	243	10425	42.90123
7:00 PM	8:00 PM	1	0	0	0	3	35	63	64	7	1	0	0	0	174	7649	43.95977
8:00 PM	9:00 PM	2	0	0	0	5	45	57	32	8	0	0	0	0	149	6306	42.32215
9:00 PM	10:00 PM	0	0	0	0	5	16	35	26	5	1	2	0	0	90	3975	44.16667
10:00 PM	11:00 PM	0	0	0	0	2	10	13	11	6	1	0	0	0	43	1909	44.39535
11:00 PM	12:00 AM	1	0	0	0	0	4	7	5	2	0	0	0	0	19	809	42.57895
															3022	128583	42.54897

Location 7: Bromley Lane east of East Frontage Road (Westbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	6	0	0	0	6	30	64	32	5	1	0	0	0	144	6009	41.72917
1:00 AM	2:00 AM	7	0	0	0	5	44	60	27	6	0	0	0	0	149	6101	40.94631
2:00 AM	3:00 AM	2	0	0	4	7	35	48	23	4	0	0	0	0	123	5073	41.2439
3:00 AM	4:00 AM	0	0	0	0	6	35	53	33	7	0	0	0	0	134	5762	43
4:00 AM	5:00 AM	2	0	0	2	7	55	48	25	4	0	0	0	0	143	5873	41.06993
5:00 AM	6:00 AM	6	0	0	0	16	43	87	40	6	0	1	0	0	199	8264	41.52764
6:00 AM	7:00 AM	5	0	2	0	6	51	65	37	6	2	0	0	0	174	7237	41.59195
7:00 AM	8:00 AM	6	0	0	1	6	47	62	36	7	2	0	0	0	167	6953	41.63473
8:00 AM	9:00 AM	3	0	0	1	11	49	97	65	13	0	0	0	0	239	10263	42.94142
9:00 AM	10:00 AM	10	0	0	0	6	63	149	76	19	1	0	0	0	324	13812	42.62963
10:00 AM	11:00 AM	8	0	0	0	15	33	139	111	21	4	0	0	0	331	14479	43.7432
11:00 AM	12:00 PM	3	0	0	0	13	49	107	54	15	2	0	0	0	243	10425	42.90123
12:00 PM	1:00 PM	1	0	0	0	3	35	63	64	7	1	0	0	0	174	7649	43.95977
1:00 PM	2:00 PM	2	0	0	0	5	45	57	32	8	0	0	0	0	149	6306	42.32215
2:00 PM	3:00 PM	0	0	0	0	5	16	35	26	5	1	2	0	0	90	3975	44.16667
3:00 PM	4:00 PM	0	0	0	0	2	10	13	11	6	1	0	0	0	43	1909	44.39535
4:00 PM	5:00 PM	1	0	0	0	0	4	7	5	2	0	0	0	0	19	809	42.57895
5:00 PM	6:00 PM	0	0	0	1	0	3	4	3	0	1	0	0	0	12	516	43
6:00 PM	7:00 PM	0	0	0	0	1	2	9	7	6	0	0	0	0	25	1150	46
7:00 PM	8:00 PM	17	0	0	0	18	98	179	95	25	1	0	0	0	433	18128	41.86605
8:00 PM	9:00 PM	10	0	0	6	36	168	236	121	21	0	1	0	0	599	24972	41.68948
9:00 PM	10:00 PM	24	0	2	2	29	210	373	214	45	5	0	0	0	904	38265	42.32854
10:00 PM	11:00 PM	14	0	0	0	36	162	366	261	51	7	0	0	0	897	38859	43.32107
11:00 PM	12:00 AM	1	0	0	0	7	30	55	42	13	2	2	0	0	152	6693	44.03289
															5867	249482	42.52292

Location		West Frontage Road south of Baseline Road					
#8		Northbound			Southbound		
		NB Cars	NB Trucks	NB % Trucks	SB Cars	SB Trucks	SB % Trucks
12:00 AM	1:00 AM	3	0	0%	4	0	0%
1:00 AM	2:00 AM	2	0	0%	3	0	0%
2:00 AM	3:00 AM	5	0	0%	2	0	0%
3:00 AM	4:00 AM	2	0	0%	3	0	0%
4:00 AM	5:00 AM	3	0	0%	6	0	0%
5:00 AM	6:00 AM	17	2	11%	20	2	9%
6:00 AM	7:00 AM	41	1	2%	33	5	13%
7:00 AM	8:00 AM	46	2	4%	78	8	9%
8:00 AM	9:00 AM	52	5	9%	100	9	8%
9:00 AM	10:00 AM	29	7	19%	63	6	9%
10:00 AM	11:00 AM	35	4	10%	53	7	12%
11:00 AM	12:00 PM	56	1	2%	44	3	6%
12:00 PM	1:00 PM	45	2	4%	50	4	7%
1:00 PM	2:00 PM	50	3	6%	56	5	8%
2:00 PM	3:00 PM	52	3	5%	63	9	13%
3:00 PM	4:00 PM	91	1	1%	101	10	9%
4:00 PM	5:00 PM	87	4	4%	68	4	6%
5:00 PM	6:00 PM	81	4	5%	97	19	16%
6:00 PM	7:00 PM	72	2	3%	74	5	6%
7:00 PM	8:00 PM	58	1	2%	53	4	7%
8:00 PM	9:00 PM	49	1	2%	25	2	7%
9:00 PM	10:00 PM	40	1	2%	22	4	15%
10:00 PM	11:00 PM	16	2	11%	9	1	10%
11:00 PM	12:00 AM	5	1	17%	11	0	0%
		937	47	5%	1038	107	9%

Location 8: West Frontage Road south of Baseline Road (Northbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	1	1	0	0	1	0	0	0	0	3	124	41.33333
1:00 AM	2:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	2	66	33
2:00 AM	3:00 AM	0	0	0	0	0	1	3	1	0	0	0	0	0	5	215	43
3:00 AM	4:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	2	91	45.5
4:00 AM	5:00 AM	0	0	0	0	1	0	1	0	1	0	0	0	0	3	129	43
5:00 AM	6:00 AM	1	0	0	0	0	4	8	5	1	0	0	0	0	19	799	42.05263
6:00 AM	7:00 AM	0	0	0	1	3	14	10	13	1	0	0	0	0	42	1766	42.04762
7:00 AM	8:00 AM	0	0	0	0	1	7	19	11	10	0	0	0	0	48	2174	45.29167
8:00 AM	9:00 AM	1	0	0	0	1	13	32	9	1	0	0	0	0	57	2398	42.07018
9:00 AM	10:00 AM	0	0	0	0	4	9	9	12	0	2	0	0	0	36	1553	43.13889
10:00 AM	11:00 AM	2	0	0	0	1	8	16	10	2	0	0	0	0	39	1631	41.82051
11:00 AM	12:00 PM	2	0	0	0	4	7	26	14	2	2	0	0	0	57	2430	42.63158
12:00 PM	1:00 PM	1	0	0	0	2	11	16	14	3	0	0	0	0	47	2013	42.82979
1:00 PM	2:00 PM	3	0	0	0	1	12	22	10	3	0	2	0	0	53	2230	42.07547
2:00 PM	3:00 PM	0	0	0	0	2	9	24	16	4	0	0	0	0	55	2420	44
3:00 PM	4:00 PM	2	0	0	0	6	16	39	21	8	2	0	0	0	94	4051	43.09574
4:00 PM	5:00 PM	3	0	0	1	7	10	39	23	8	0	0	0	0	91	3874	42.57143
5:00 PM	6:00 PM	4	0	0	0	5	21	28	21	6	1	0	0	0	86	3591	41.75581
6:00 PM	7:00 PM	0	0	0	1	4	16	29	21	4	0	0	0	0	75	3235	43.13333
7:00 PM	8:00 PM	0	0	0	1	4	18	21	12	2	0	0	0	0	58	2429	41.87931
8:00 PM	9:00 PM	0	0	0	0	5	11	24	9	1	0	0	0	0	50	2100	42
9:00 PM	10:00 PM	0	0	0	0	6	13	12	8	2	0	0	0	0	41	1698	41.41463
10:00 PM	11:00 PM	0	0	0	0	1	8	5	2	0	0	2	0	0	18	774	43
11:00 PM	12:00 AM	0	0	0	0	0	1	1	4	0	0	0	0	0	6	273	45.5
															987	42064	42.61803

Location 8: West Frontage Road south of Baseline Road (Southbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	1	7	19	11	10	0	0	0	0	48	2174	45.29167
1:00 AM	2:00 AM	1	0	0	0	1	13	32	9	1	0	0	0	0	57	2398	42.07018
2:00 AM	3:00 AM	0	0	0	0	4	9	9	12	0	2	0	0	0	36	1553	43.13889
3:00 AM	4:00 AM	2	0	0	0	1	8	16	10	2	0	0	0	0	39	1631	41.82051
4:00 AM	5:00 AM	2	0	0	0	4	7	26	14	2	2	0	0	0	57	2430	42.63158
5:00 AM	6:00 AM	1	0	0	0	2	11	16	14	3	0	0	0	0	47	2013	42.82979
6:00 AM	7:00 AM	3	0	0	0	1	12	22	10	3	0	2	0	0	53	2230	42.07547
7:00 AM	8:00 AM	0	0	0	0	2	9	24	16	4	0	0	0	0	55	2420	44
8:00 AM	9:00 AM	2	0	0	0	6	16	39	21	8	2	0	0	0	94	4051	43.09574
9:00 AM	10:00 AM	3	0	0	1	7	10	39	23	8	0	0	0	0	91	3874	42.57143
10:00 AM	11:00 AM	4	0	0	0	5	21	28	21	6	1	0	0	0	86	3591	41.75581
11:00 AM	12:00 PM	0	0	0	1	4	16	29	21	4	0	0	0	0	75	3235	43.13333
12:00 PM	1:00 PM	0	0	0	1	4	18	21	12	2	0	0	0	0	58	2429	41.87931
1:00 PM	2:00 PM	0	0	0	0	5	11	24	9	1	0	0	0	0	50	2100	42
2:00 PM	3:00 PM	0	0	0	0	6	13	12	8	2	0	0	0	0	41	1698	41.41463
3:00 PM	4:00 PM	0	0	0	0	1	8	5	2	0	0	2	0	0	18	774	43
4:00 PM	5:00 PM	0	0	0	0	0	1	1	4	0	0	0	0	0	6	273	45.5
5:00 PM	6:00 PM	0	0	0	0	1	1	0	0	1	0	0	0	0	3	124	41.33333
6:00 PM	7:00 PM	0	0	0	1	1	2	5	2	1	0	0	0	0	12	501	41.75
7:00 PM	8:00 PM	2	0	0	1	5	38	69	38	13	0	0	0	0	166	7137	42.99398
8:00 PM	9:00 PM	5	0	0	0	11	35	67	50	7	4	0	0	0	179	7627	42.60894
9:00 PM	10:00 PM	8	0	0	1	16	47	124	70	23	2	2	0	0	293	12575	42.91809
10:00 PM	11:00 PM	4	0	0	2	18	66	102	63	13	1	0	0	0	269	11355	42.2119
11:00 PM	12:00 AM	0	0	0	0	7	22	18	14	2	0	2	0	0	65	2745	42.23077
															1898	80938	42.64384

Location		West Frontage Road south of Bridge Street					
#9		Northbound			Southbound		
		NB Cars	NB Trucks	NB % Trucks	SB Cars	SB Trucks	SB % Trucks
12:00 AM	1:00 AM	4	0	0%	2	0	0%
1:00 AM	2:00 AM	1	1	50%	2	0	0%
2:00 AM	3:00 AM	4	0	0%	0	0	#DIV/0!
3:00 AM	4:00 AM	2	0	0%	6	0	0%
4:00 AM	5:00 AM	1	0	0%	14	0	0%
5:00 AM	6:00 AM	7	3	30%	57	0	0%
6:00 AM	7:00 AM	13	2	13%	85	1	1%
7:00 AM	8:00 AM	64	4	6%	85	1	1%
8:00 AM	9:00 AM	105	4	4%	121	1	1%
9:00 AM	10:00 AM	24	3	11%	60	3	5%
10:00 AM	11:00 AM	27	2	7%	42	1	2%
11:00 AM	12:00 PM	43	3	7%	47	0	0%
12:00 PM	1:00 PM	54	3	5%	55	0	0%
1:00 PM	2:00 PM	49	1	2%	46	0	0%
2:00 PM	3:00 PM	48	5	9%	70	0	0%
3:00 PM	4:00 PM	174	7	4%	91	0	0%
4:00 PM	5:00 PM	129	3	2%	65	0	0%
5:00 PM	6:00 PM	140	4	3%	65	0	0%
6:00 PM	7:00 PM	94	4	4%	52	0	0%
7:00 PM	8:00 PM	76	4	5%	53	0	0%
8:00 PM	9:00 PM	55	2	4%	29	0	0%
9:00 PM	10:00 PM	44	3	6%	19	0	0%
10:00 PM	11:00 PM	17	2	11%	5	1	17%
11:00 PM	12:00 AM	5	0	0%	2	0	0%
		1180	60	5%	1073	8	1%

Location 9: West Frontage Road south of Bridge Street (Northbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	0	1	1	1	1	0	0	0	0	4	182	45.5
1:00 AM	2:00 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	2	86	43
2:00 AM	3:00 AM	0	0	0	0	0	1	0	1	1	0	1	0	0	4	202	50.5
3:00 AM	4:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	116	58
4:00 AM	5:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	53	53
5:00 AM	6:00 AM	1	0	0	0	0	1	2	4	1	0	1	0	0	10	442	44.2
6:00 AM	7:00 AM	1	0	0	0	0	2	3	4	5	0	0	0	0	15	672	44.8
7:00 AM	8:00 AM	3	0	0	3	10	9	9	18	12	2	0	2	0	68	2925	43.01471
8:00 AM	9:00 AM	2	0	0	2	29	22	14	21	14	5	0	0	0	109	4511	41.38532
9:00 AM	10:00 AM	0	0	0	0	1	3	3	7	10	3	0	0	0	27	1316	48.74074
10:00 AM	11:00 AM	1	0	0	1	1	2	9	10	5	0	0	0	0	29	1279	44.10345
11:00 AM	12:00 PM	2	0	0	2	4	5	5	12	13	4	0	0	0	47	2110	44.89362
12:00 PM	1:00 PM	0	0	0	1	4	6	11	19	11	4	1	0	0	57	2651	46.50877
1:00 PM	2:00 PM	2	0	0	0	1	2	15	16	9	3	2	0	0	50	2319	46.38
2:00 PM	3:00 PM	6	0	0	0	2	5	5	17	15	3	2	0	1	56	2515	44.91071
3:00 PM	4:00 PM	5	0	1	9	27	36	31	44	22	5	4	0	0	184	7737	42.04891
4:00 PM	5:00 PM	3	0	0	3	15	21	20	33	27	5	3	0	1	131	5834	44.53435
5:00 PM	6:00 PM	2	0	0	0	14	16	15	44	39	14	2	0	0	146	6852	46.93151
6:00 PM	7:00 PM	1	0	0	2	5	2	10	40	24	11	3	0	0	98	4756	48.53061
7:00 PM	8:00 PM	1	0	0	1	5	9	14	27	21	4	0	0	0	82	3788	46.19512
8:00 PM	9:00 PM	0	0	0	0	1	7	16	18	10	5	0	0	0	57	2671	46.85965
9:00 PM	10:00 PM	1	0	0	0	4	7	11	15	6	3	0	0	0	47	2093	44.53191
10:00 PM	11:00 PM	0	0	0	0	0	2	7	6	3	1	0	0	0	19	882	46.42105
11:00 PM	12:00 AM	0	0	0	0	0	0	1	2	2	0	0	0	0	5	245	49
															1250	56237	44.9896

Location 9: West Frontage Road south of Bridge Street (Southbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	3	0	0	3	10	9	9	18	12	2	0	2	0	68	2925	43.01471
1:00 AM	2:00 AM	2	0	0	2	29	22	14	21	14	5	0	0	0	109	4511	41.38532
2:00 AM	3:00 AM	0	0	0	0	1	3	3	7	10	3	0	0	0	27	1316	48.74074
3:00 AM	4:00 AM	1	0	0	1	1	2	9	10	5	0	0	0	0	29	1279	44.10345
4:00 AM	5:00 AM	2	0	0	2	4	5	5	12	13	4	0	0	0	47	2110	44.89362
5:00 AM	6:00 AM	0	0	0	1	4	6	11	19	11	4	1	0	0	57	2651	46.50877
6:00 AM	7:00 AM	2	0	0	0	1	2	15	16	9	3	2	0	0	50	2319	46.38
7:00 AM	8:00 AM	6	0	0	0	2	5	5	17	15	3	2	0	1	56	2515	44.91071
8:00 AM	9:00 AM	5	0	1	9	27	36	31	44	22	5	4	0	0	184	7737	42.04891
9:00 AM	10:00 AM	3	0	0	3	15	21	20	33	27	5	3	0	1	131	5834	44.53435
10:00 AM	11:00 AM	2	0	0	0	14	16	15	44	39	14	2	0	0	146	6852	46.93151
11:00 AM	12:00 PM	1	0	0	2	5	2	10	40	24	11	3	0	0	98	4756	48.53061
12:00 PM	1:00 PM	1	0	0	1	5	9	14	27	21	4	0	0	0	82	3788	46.19512
1:00 PM	2:00 PM	0	0	0	0	1	7	16	18	10	5	0	0	0	57	2671	46.85965
2:00 PM	3:00 PM	1	0	0	0	4	7	11	15	6	3	0	0	0	47	2093	44.53191
3:00 PM	4:00 PM	0	0	0	0	0	2	7	6	3	1	0	0	0	19	882	46.42105
4:00 PM	5:00 PM	0	0	0	0	0	0	1	2	2	0	0	0	0	5	245	49
5:00 PM	6:00 PM	0	0	0	0	0	1	1	1	1	0	0	0	0	4	182	45.5
6:00 PM	7:00 PM	0	0	0	0	0	1	2	1	2	2	1	0	0	9	457	50.77778
7:00 PM	8:00 PM	7	0	0	5	39	34	28	47	32	7	1	2	0	202	8550	42.32673
8:00 PM	9:00 PM	3	0	0	4	10	16	28	48	39	11	1	0	0	160	7356	45.975
9:00 PM	10:00 PM	16	0	1	12	45	64	71	110	73	16	11	0	2	421	18405	43.71734
10:00 PM	11:00 PM	4	0	0	3	25	34	55	129	94	34	5	0	0	383	18067	47.17232
11:00 PM	12:00 AM	1	0	0	0	4	9	19	23	11	4	0	0	0	71	3220	45.35211
															2462	110721	44.97197

Location		Eastt Frontage Road south of Baseline Road					
#10		Northbound			Southbound		
		NB Cars	NB Trucks	NB % Trucks	SB Cars	SB Trucks	SB % Trucks
12:00 AM	1:00 AM	0	1	100%	0	0	#DIV/0!
1:00 AM	2:00 AM	1	0	0%	1	0	0%
2:00 AM	3:00 AM	0	0	#DIV/0!	0	0	#DIV/0!
3:00 AM	4:00 AM	0	0	#DIV/0!	2	0	0%
4:00 AM	5:00 AM	2	0	0%	1	0	0%
5:00 AM	6:00 AM	5	0	0%	3	0	0%
6:00 AM	7:00 AM	5	5	50%	18	1	5%
7:00 AM	8:00 AM	14	2	13%	53	1	2%
8:00 AM	9:00 AM	30	4	12%	27	0	0%
9:00 AM	10:00 AM	19	6	24%	14	0	0%
10:00 AM	11:00 AM	17	5	23%	17	2	11%
11:00 AM	12:00 PM	19	5	21%	9	2	18%
12:00 PM	1:00 PM	16	4	20%	16	1	6%
1:00 PM	2:00 PM	19	8	30%	9	2	18%
2:00 PM	3:00 PM	19	2	10%	21	0	0%
3:00 PM	4:00 PM	47	6	11%	27	4	13%
4:00 PM	5:00 PM	43	9	17%	14	0	0%
5:00 PM	6:00 PM	37	1	3%	9	0	0%
6:00 PM	7:00 PM	24	4	14%	5	0	0%
7:00 PM	8:00 PM	26	3	10%	2	1	33%
8:00 PM	9:00 PM	16	5	24%	1	0	0%
9:00 PM	10:00 PM	15	2	12%	1	0	0%
10:00 PM	11:00 PM	8	0	0%	0	0	#DIV/0!
11:00 PM	12:00 AM	4	1	20%	1	0	0%
		386	73	16%	251	14	5%

Location 10: East Frontage Road south of Baseline Road (Northbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	38	38
1:00 AM	2:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	38	38
2:00 AM	3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
3:00 AM	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
4:00 AM	5:00 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	2	76	38
5:00 AM	6:00 AM	0	0	0	0	0	2	1	0	2	0	0	0	0	5	225	45
6:00 AM	7:00 AM	1	0	0	0	2	2	1	0	2	1	0	1	0	10	427	42.7
7:00 AM	8:00 AM	0	0	0	0	1	2	5	4	3	1	0	0	0	16	733	45.8125
8:00 AM	9:00 AM	0	0	0	0	2	11	13	6	2	0	0	0	0	34	1437	42.26471
9:00 AM	10:00 AM	1	1	0	0	0	8	9	5	1	1	0	0	0	26	1070	41.15385
10:00 AM	11:00 AM	3	0	0	1	1	6	7	3	2	0	0	0	0	23	870	37.82609
11:00 AM	12:00 PM	0	0	0	0	1	4	13	6	0	0	0	0	0	24	1032	43
12:00 PM	1:00 PM	2	0	0	0	1	4	5	7	1	1	0	0	0	21	867	41.28571
1:00 PM	2:00 PM	0	1	1	3	3	5	9	4	1	0	0	0	0	27	1046	38.74074
2:00 PM	3:00 PM	0	0	0	0	1	5	11	1	2	1	0	0	0	21	908	43.2381
3:00 PM	4:00 PM	2	0	2	0	1	11	21	12	3	2	0	0	0	54	2271	42.05556
4:00 PM	5:00 PM	1	0	0	0	1	10	20	14	5	1	0	0	0	52	2278	43.80769
5:00 PM	6:00 PM	1	0	1	1	4	6	11	8	6	1	0	0	0	39	1654	42.41026
6:00 PM	7:00 PM	0	0	0	0	2	2	14	6	4	0	0	0	0	28	1244	44.42857
7:00 PM	8:00 PM	0	0	0	1	1	7	18	1	1	0	0	0	0	29	1202	41.44828
8:00 PM	9:00 PM	0	0	1	0	3	7	6	3	1	0	0	0	0	21	843	40.14286
9:00 PM	10:00 PM	0	0	0	0	2	7	5	3	0	0	0	0	0	17	691	40.64706
10:00 PM	11:00 PM	0	0	0	0	0	0	4	2	2	0	0	0	0	8	374	46.75
11:00 PM	12:00 AM	0	0	0	0	0	1	3	1	0	0	0	0	0	5	215	43
															464	19539	42.10991

Location 10: East Frontage Road south of Baseline Road (Southbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	1	2	5	4	3	1	0	0	0	16	733	45.8125
1:00 AM	2:00 AM	0	0	0	0	2	11	13	6	2	0	0	0	0	34	1437	42.26471
2:00 AM	3:00 AM	1	1	0	0	0	8	9	5	1	1	0	0	0	26	1070	41.15385
3:00 AM	4:00 AM	3	0	0	1	1	6	7	3	2	0	0	0	0	23	870	37.82609
4:00 AM	5:00 AM	0	0	0	0	1	4	13	6	0	0	0	0	0	24	1032	43
5:00 AM	6:00 AM	2	0	0	0	1	4	5	7	1	1	0	0	0	21	867	41.28571
6:00 AM	7:00 AM	0	1	1	3	3	5	9	4	1	0	0	0	0	27	1046	38.74074
7:00 AM	8:00 AM	0	0	0	0	1	5	11	1	2	1	0	0	0	21	908	43.2381
8:00 AM	9:00 AM	2	0	2	0	1	11	21	12	3	2	0	0	0	54	2271	42.05556
9:00 AM	10:00 AM	1	0	0	0	1	10	20	14	5	1	0	0	0	52	2278	43.80769
10:00 AM	11:00 AM	1	0	1	1	4	6	11	8	6	1	0	0	0	39	1654	42.41026
11:00 AM	12:00 PM	0	0	0	0	2	2	14	6	4	0	0	0	0	28	1244	44.42857
12:00 PM	1:00 PM	0	0	0	1	1	7	18	1	1	0	0	0	0	29	1202	41.44828
1:00 PM	2:00 PM	0	0	1	0	3	7	6	3	1	0	0	0	0	21	843	40.14286
2:00 PM	3:00 PM	0	0	0	0	2	7	5	3	0	0	0	0	0	17	691	40.64706
3:00 PM	4:00 PM	0	0	0	0	0	0	4	2	2	0	0	0	0	8	374	46.75
4:00 PM	5:00 PM	0	0	0	0	0	1	3	1	0	0	0	0	0	5	215	43
5:00 PM	6:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	38	38
6:00 PM	7:00 PM	0	0	0	0	1	1	1	0	0	0	0	0	0	3	114	38
7:00 PM	8:00 PM	1	0	0	0	5	17	20	10	9	2	0	1	0	65	2822	43.41538
8:00 PM	9:00 PM	6	1	0	1	3	22	34	21	4	2	0	0	0	94	3839	40.84043
9:00 PM	10:00 PM	3	1	3	3	6	31	61	31	11	4	0	0	0	154	6503	42.22727
10:00 PM	11:00 PM	1	0	2	2	10	22	49	18	12	1	0	0	0	117	4943	42.24786
11:00 PM	12:00 AM	0	0	0	0	2	8	12	6	2	0	0	0	0	30	1280	42.66667
															909	38274	42.10561

Location		Easst Frontage Road south of Bridge Street					
#11		Northbound			Southbound		
		NB Cars	NB Trucks	NB % Trucks	SB Cars	SB Trucks	SB % Trucks
12:00 AM	1:00 AM	1	0	0%	0	0	#DIV/0!
1:00 AM	2:00 AM	4	0	0%	5	0	0%
2:00 AM	3:00 AM	1	0	0%	2	0	0%
3:00 AM	4:00 AM	0	0	#DIV/0!	2	0	0%
4:00 AM	5:00 AM	0	0	#DIV/0!	2	0	0%
5:00 AM	6:00 AM	5	0	0%	6	0	0%
6:00 AM	7:00 AM	18	1	5%	24	0	0%
7:00 AM	8:00 AM	24	4	14%	85	2	2%
8:00 AM	9:00 AM	39	6	13%	33	4	11%
9:00 AM	10:00 AM	30	12	29%	18	1	5%
10:00 AM	11:00 AM	33	3	8%	30	1	3%
11:00 AM	12:00 PM	29	4	12%	21	2	9%
12:00 PM	1:00 PM	29	6	17%	47	1	2%
1:00 PM	2:00 PM	26	5	16%	24	4	14%
2:00 PM	3:00 PM	37	4	10%	26	3	10%
3:00 PM	4:00 PM	35	3	8%	36	9	20%
4:00 PM	5:00 PM	93	1	1%	37	1	3%
5:00 PM	6:00 PM	85	0	0%	15	3	17%
6:00 PM	7:00 PM	30	2	6%	14	0	0%
7:00 PM	8:00 PM	19	2	10%	5	0	0%
8:00 PM	9:00 PM	6	0	0%	6	0	0%
9:00 PM	10:00 PM	10	0	0%	5	1	17%
10:00 PM	11:00 PM	8	0	0%	2	0	0%
11:00 PM	12:00 AM	8	1	11%	5	0	0%
		570	54	9%	450	32	7%

Location 11: East Frontage Road south of Bridge Street (Northbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	33	33
1:00 AM	2:00 AM	0	0	0	0	0	1	2	0	1	0	0	0	0	4	177	44.25
2:00 AM	3:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	43	43
3:00 AM	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
4:00 AM	5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!
5:00 AM	6:00 AM	0	0	0	0	0	0	1	4	0	0	0	0	0	5	235	47
6:00 AM	7:00 AM	0	0	0	0	0	1	7	6	5	0	0	0	0	19	892	46.94737
7:00 AM	8:00 AM	1	0	0	0	3	3	7	8	5	1	0	0	0	28	1231	43.96429
8:00 AM	9:00 AM	1	0	0	0	1	18	14	8	3	0	0	0	0	45	1872	41.6
9:00 AM	10:00 AM	0	1	0	3	4	10	13	7	4	0	0	0	0	42	1721	40.97619
10:00 AM	11:00 AM	0	0	0	0	2	10	12	6	6	0	0	0	0	36	1568	43.55556
11:00 AM	12:00 PM	0	0	0	2	0	8	5	16	1	0	1	0	0	33	1459	44.21212
12:00 PM	1:00 PM	0	0	0	1	1	9	10	10	3	1	0	0	0	35	1530	43.71429
1:00 PM	2:00 PM	0	0	0	3	2	9	9	7	1	0	0	0	0	31	1268	40.90323
2:00 PM	3:00 PM	0	0	0	0	4	10	13	9	3	2	0	0	0	41	1778	43.36585
3:00 PM	4:00 PM	0	2	0	1	0	7	13	10	5	0	0	0	0	38	1634	43
4:00 PM	5:00 PM	0	0	0	1	3	14	41	24	10	3	0	0	0	96	4278	44.5625
5:00 PM	6:00 PM	0	0	1	0	0	5	22	40	14	2	1	0	0	85	4000	47.05882
6:00 PM	7:00 PM	0	0	0	0	0	7	6	17	0	2	0	0	0	32	1456	45.5
7:00 PM	8:00 PM	0	0	0	0	2	5	4	8	1	1	0	0	0	21	923	43.95238
8:00 PM	9:00 PM	0	0	0	0	0	1	4	1	0	0	0	0	0	6	258	43
9:00 PM	10:00 PM	0	0	0	0	2	2	4	2	0	0	0	0	0	10	410	41
10:00 PM	11:00 PM	0	0	0	0	2	0	5	1	0	0	0	0	0	8	329	41.125
11:00 PM	12:00 AM	0	0	0	0	0	0	6	1	2	0	0	0	0	9	412	45.77778
															626	27507	43.94089

Location 11: East Frontage Road south of Bridge Street(Southbound)																	
Time		1-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	Total Veh	Total Speed	Est Avg
12:00 AM	1:00 AM	1	0	0	0	3	3	7	8	5	1	0	0	0	28	1231	43.96429
1:00 AM	2:00 AM	1	0	0	0	1	18	14	8	3	0	0	0	0	45	1872	41.6
2:00 AM	3:00 AM	0	1	0	3	4	10	13	7	4	0	0	0	0	42	1721	40.97619
3:00 AM	4:00 AM	0	0	0	0	2	10	12	6	6	0	0	0	0	36	1568	43.55556
4:00 AM	5:00 AM	0	0	0	2	0	8	5	16	1	0	1	0	0	33	1459	44.21212
5:00 AM	6:00 AM	0	0	0	1	1	9	10	10	3	1	0	0	0	35	1530	43.71429
6:00 AM	7:00 AM	0	0	0	3	2	9	9	7	1	0	0	0	0	31	1268	40.90323
7:00 AM	8:00 AM	0	0	0	0	4	10	13	9	3	2	0	0	0	41	1778	43.36585
8:00 AM	9:00 AM	0	2	0	1	0	7	13	10	5	0	0	0	0	38	1634	43
9:00 AM	10:00 AM	0	0	0	1	3	14	41	24	10	3	0	0	0	96	4278	44.5625
10:00 AM	11:00 AM	0	0	1	0	0	5	22	40	14	2	1	0	0	85	4000	47.05882
11:00 AM	12:00 PM	0	0	0	0	0	7	6	17	0	2	0	0	0	32	1456	45.5
12:00 PM	1:00 PM	0	0	0	0	2	5	4	8	1	1	0	0	0	21	923	43.95238
1:00 PM	2:00 PM	0	0	0	0	0	1	4	1	0	0	0	0	0	6	258	43
2:00 PM	3:00 PM	0	0	0	0	2	2	4	2	0	0	0	0	0	10	410	41
3:00 PM	4:00 PM	0	0	0	0	2	0	5	1	0	0	0	0	0	8	329	41.125
4:00 PM	5:00 PM	0	0	0	0	0	0	6	1	2	0	0	0	0	9	412	45.77778
5:00 PM	6:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	33	33
6:00 PM	7:00 PM	0	0	0	0	0	1	3	0	1	0	0	0	0	5	220	44
7:00 PM	8:00 PM	2	0	0	0	4	22	29	26	13	1	0	0	0	97	4230	43.60825
8:00 PM	9:00 PM	0	1	0	6	7	37	40	39	14	1	1	0	0	146	6278	43
9:00 PM	10:00 PM	0	2	0	5	9	40	76	50	19	5	0	0	0	206	8958	43.48544
10:00 PM	11:00 PM	0	0	1	0	2	18	36	66	15	5	1	0	0	144	6637	46.09028
11:00 PM	12:00 AM	0	0	0	0	4	2	15	4	2	0	0	0	0	27	1151	42.62963
															1222	53634	43.89034

Volume
 Start Date: 4/25/2013
 Start Time: 12:00:00 AM
 Station ID: 1
 Location 1: I-76 SB OFF RAMP NO BASELIN

Date	Time	SB
4/25/2013	12:00 AM	4
4/25/2013	12:15 AM	4
4/25/2013	12:30 AM	1
4/25/2013	12:45 AM	2
4/25/2013	01:00 AM	2
4/25/2013	01:15 AM	0
4/25/2013	01:30 AM	1
4/25/2013	01:45 AM	0
4/25/2013	02:00 AM	0
4/25/2013	02:15 AM	3
4/25/2013	02:30 AM	2
4/25/2013	02:45 AM	0
4/25/2013	03:00 AM	2
4/25/2013	03:15 AM	1
4/25/2013	03:30 AM	1
4/25/2013	03:45 AM	4
4/25/2013	04:00 AM	0
4/25/2013	04:15 AM	1
4/25/2013	04:30 AM	14
4/25/2013	04:45 AM	5
4/25/2013	05:00 AM	2
4/25/2013	05:15 AM	8
4/25/2013	05:30 AM	8
4/25/2013	05:45 AM	12
4/25/2013	06:00 AM	16
4/25/2013	06:15 AM	18
4/25/2013	06:30 AM	21
4/25/2013	06:45 AM	25
4/25/2013	07:00 AM	18
4/25/2013	07:15 AM	26
4/25/2013	07:30 AM	28
4/25/2013	07:45 AM	29
4/25/2013	08:00 AM	27
4/25/2013	08:15 AM	26
4/25/2013	08:30 AM	24
4/25/2013	08:45 AM	16
4/25/2013	09:00 AM	20
4/25/2013	09:15 AM	17
4/25/2013	09:30 AM	24
4/25/2013	09:45 AM	12
4/25/2013	10:00 AM	30
4/25/2013	10:15 AM	26
4/25/2013	10:30 AM	7
4/25/2013	10:45 AM	20
4/25/2013	11:00 AM	21
4/25/2013	11:15 AM	24
4/25/2013	11:30 AM	20

101

4/25/2013	11:45 AM	8
4/25/2013	12:00 PM	18
4/25/2013	12:15 PM	22
4/25/2013	12:30 PM	12
4/25/2013	12:45 PM	11
4/25/2013	01:00 PM	13
4/25/2013	01:15 PM	17
4/25/2013	01:30 PM	21
4/25/2013	01:45 PM	29
4/25/2013	02:00 PM	14
4/25/2013	02:15 PM	23
4/25/2013	02:30 PM	17
4/25/2013	02:45 PM	21
4/25/2013	03:00 PM	19
4/25/2013	03:15 PM	26
4/25/2013	03:30 PM	31
4/25/2013	03:45 PM	37
4/25/2013	04:00 PM	34
4/25/2013	04:15 PM	30
4/25/2013	04:30 PM	36
4/25/2013	04:45 PM	32
4/25/2013	05:00 PM	29
4/25/2013	05:15 PM	43
4/25/2013	05:30 PM	55
4/25/2013	05:45 PM	38
4/25/2013	06:00 PM	30
4/25/2013	06:15 PM	25
4/25/2013	06:30 PM	20
4/25/2013	06:45 PM	21
4/25/2013	07:00 PM	20
4/25/2013	07:15 PM	21
4/25/2013	07:30 PM	27
4/25/2013	07:45 PM	16
4/25/2013	08:00 PM	19
4/25/2013	08:15 PM	8
4/25/2013	08:30 PM	5
4/25/2013	08:45 PM	3
4/25/2013	09:00 PM	12
4/25/2013	09:15 PM	8
4/25/2013	09:30 PM	4
4/25/2013	09:45 PM	3
4/25/2013	10:00 PM	2
4/25/2013	10:15 PM	7
4/25/2013	10:30 PM	7
4/25/2013	10:45 PM	3
4/25/2013	11:00 PM	4
4/25/2013	11:15 PM	5
4/25/2013	11:30 PM	10
4/25/2013	11:45 PM	3

165

Volume

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 2

Location 1: I-76 SB ON RAMP S/O BASELINI

Date	Time	SB
4/25/2013	12:00 AM	0
4/25/2013	12:15 AM	2
4/25/2013	12:30 AM	0
4/25/2013	12:45 AM	2
4/25/2013	01:00 AM	1
4/25/2013	01:15 AM	2
4/25/2013	01:30 AM	2
4/25/2013	01:45 AM	2
4/25/2013	02:00 AM	2
4/25/2013	02:15 AM	8
4/25/2013	02:30 AM	6
4/25/2013	02:45 AM	4
4/25/2013	03:00 AM	5
4/25/2013	03:15 AM	6
4/25/2013	03:30 AM	13
4/25/2013	03:45 AM	8
4/25/2013	04:00 AM	11
4/25/2013	04:15 AM	18
4/25/2013	04:30 AM	21
4/25/2013	04:45 AM	35
4/25/2013	05:00 AM	50
4/25/2013	05:15 AM	70
4/25/2013	05:30 AM	92
4/25/2013	05:45 AM	77
4/25/2013	06:00 AM	132
4/25/2013	06:15 AM	123
4/25/2013	06:30 AM	140
4/25/2013	06:45 AM	127
4/25/2013	07:00 AM	135
4/25/2013	07:15 AM	134
4/25/2013	07:30 AM	121
4/25/2013	07:45 AM	92
4/25/2013	08:00 AM	98
4/25/2013	08:15 AM	69
4/25/2013	08:30 AM	52
4/25/2013	08:45 AM	59
4/25/2013	09:00 AM	41
4/25/2013	09:15 AM	52
4/25/2013	09:30 AM	40
4/25/2013	09:45 AM	46
4/25/2013	10:00 AM	50
4/25/2013	10:15 AM	39
4/25/2013	10:30 AM	34
4/25/2013	10:45 AM	40
4/25/2013	11:00 AM	45
4/25/2013	11:15 AM	44
4/25/2013	11:30 AM	41

4/25/2013	11:45 AM	44
4/25/2013	12:00 PM	46
4/25/2013	12:15 PM	53
4/25/2013	12:30 PM	44
4/25/2013	12:45 PM	52
4/25/2013	01:00 PM	28
4/25/2013	01:15 PM	44
4/25/2013	01:30 PM	34
4/25/2013	01:45 PM	44
4/25/2013	02:00 PM	48
4/25/2013	02:15 PM	44
4/25/2013	02:30 PM	28
4/25/2013	02:45 PM	40
4/25/2013	03:00 PM	41
4/25/2013	03:15 PM	34
4/25/2013	03:30 PM	40
4/25/2013	03:45 PM	42
4/25/2013	04:00 PM	32
4/25/2013	04:15 PM	49
4/25/2013	04:30 PM	36
4/25/2013	04:45 PM	33
4/25/2013	05:00 PM	44
4/25/2013	05:15 PM	35
4/25/2013	05:30 PM	52
4/25/2013	05:45 PM	36
4/25/2013	06:00 PM	37
4/25/2013	06:15 PM	48
4/25/2013	06:30 PM	28
4/25/2013	06:45 PM	25
4/25/2013	07:00 PM	19
4/25/2013	07:15 PM	27
4/25/2013	07:30 PM	28
4/25/2013	07:45 PM	30
4/25/2013	08:00 PM	28
4/25/2013	08:15 PM	28
4/25/2013	08:30 PM	20
4/25/2013	08:45 PM	15
4/25/2013	09:00 PM	12
4/25/2013	09:15 PM	12
4/25/2013	09:30 PM	12
4/25/2013	09:45 PM	19
4/25/2013	10:00 PM	16
4/25/2013	10:15 PM	10
4/25/2013	10:30 PM	6
4/25/2013	10:45 PM	4
4/25/2013	11:00 PM	4
4/25/2013	11:15 PM	2
4/25/2013	11:30 PM	2
4/25/2013	11:45 PM	4

Volume

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 3

Location 1: I-76 NB OFF RAMP S/O BASELIN

Date	Time	NB
4/25/2013	12:00 AM	10
4/25/2013	12:15 AM	8
4/25/2013	12:30 AM	8
4/25/2013	12:45 AM	3
4/25/2013	01:00 AM	8
4/25/2013	01:15 AM	4
4/25/2013	01:30 AM	3
4/25/2013	01:45 AM	8
4/25/2013	02:00 AM	5
4/25/2013	02:15 AM	1
4/25/2013	02:30 AM	2
4/25/2013	02:45 AM	6
4/25/2013	03:00 AM	2
4/25/2013	03:15 AM	4
4/25/2013	03:30 AM	2
4/25/2013	03:45 AM	2
4/25/2013	04:00 AM	1
4/25/2013	04:15 AM	4
4/25/2013	04:30 AM	6
4/25/2013	04:45 AM	6
4/25/2013	05:00 AM	5
4/25/2013	05:15 AM	6
4/25/2013	05:30 AM	4
4/25/2013	05:45 AM	10
4/25/2013	06:00 AM	10
4/25/2013	06:15 AM	18
4/25/2013	06:30 AM	24
4/25/2013	06:45 AM	30
4/25/2013	07:00 AM	17
4/25/2013	07:15 AM	33
4/25/2013	07:30 AM	34
4/25/2013	07:45 AM	30
4/25/2013	08:00 AM	26
4/25/2013	08:15 AM	26
4/25/2013	08:30 AM	18
4/25/2013	08:45 AM	28
4/25/2013	09:00 AM	28
4/25/2013	09:15 AM	30
4/25/2013	09:30 AM	26
4/25/2013	09:45 AM	31
4/25/2013	10:00 AM	28
4/25/2013	10:15 AM	22
4/25/2013	10:30 AM	26
4/25/2013	10:45 AM	22
4/25/2013	11:00 AM	32
4/25/2013	11:15 AM	30
4/25/2013	11:30 AM	28

4/25/2013	11:45 AM	45	
4/25/2013	12:00 PM	38	
4/25/2013	12:15 PM	36	
4/25/2013	12:30 PM	39	
4/25/2013	12:45 PM	35	
4/25/2013	01:00 PM	41	
4/25/2013	01:15 PM	36	
4/25/2013	01:30 PM	46	
4/25/2013	01:45 PM	52	
4/25/2013	02:00 PM	47	
4/25/2013	02:15 PM	44	
4/25/2013	02:30 PM	48	
4/25/2013	02:45 PM	68	
4/25/2013	03:00 PM	65	
4/25/2013	03:15 PM	74	
4/25/2013	03:30 PM	68	
4/25/2013	03:45 PM	96	
4/25/2013	04:00 PM	96	
4/25/2013	04:15 PM	113	
4/25/2013	04:30 PM	90	
4/25/2013	04:45 PM	144	
4/25/2013	05:00 PM	117	
4/25/2013	05:15 PM	138	
4/25/2013	05:30 PM	118	
4/25/2013	05:45 PM	126	499
4/25/2013	06:00 PM	82	
4/25/2013	06:15 PM	79	
4/25/2013	06:30 PM	61	
4/25/2013	06:45 PM	70	
4/25/2013	07:00 PM	63	
4/25/2013	07:15 PM	50	
4/25/2013	07:30 PM	66	
4/25/2013	07:45 PM	58	
4/25/2013	08:00 PM	48	
4/25/2013	08:15 PM	53	
4/25/2013	08:30 PM	48	
4/25/2013	08:45 PM	42	
4/25/2013	09:00 PM	42	
4/25/2013	09:15 PM	33	
4/25/2013	09:30 PM	34	
4/25/2013	09:45 PM	26	
4/25/2013	10:00 PM	21	
4/25/2013	10:15 PM	26	
4/25/2013	10:30 PM	22	
4/25/2013	10:45 PM	18	
4/25/2013	11:00 PM	23	
4/25/2013	11:15 PM	15	
4/25/2013	11:30 PM	10	
4/25/2013	11:45 PM	10	

Volume

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 4

Location 1: I-76 NB ON RAMP N/O BASELIN

Date	Time	NB
4/25/2013	12:00 AM	1
4/25/2013	12:15 AM	1
4/25/2013	12:30 AM	4
4/25/2013	12:45 AM	6
4/25/2013	01:00 AM	6
4/25/2013	01:15 AM	0
4/25/2013	01:30 AM	2
4/25/2013	01:45 AM	2
4/25/2013	02:00 AM	2
4/25/2013	02:15 AM	0
4/25/2013	02:30 AM	1
4/25/2013	02:45 AM	1
4/25/2013	03:00 AM	0
4/25/2013	03:15 AM	1
4/25/2013	03:30 AM	3
4/25/2013	03:45 AM	3
4/25/2013	04:00 AM	3
4/25/2013	04:15 AM	6
4/25/2013	04:30 AM	3
4/25/2013	04:45 AM	8
4/25/2013	05:00 AM	15
4/25/2013	05:15 AM	13
4/25/2013	05:30 AM	18
4/25/2013	05:45 AM	12
4/25/2013	06:00 AM	22
4/25/2013	06:15 AM	30
4/25/2013	06:30 AM	33
4/25/2013	06:45 AM	27
4/25/2013	07:00 AM	20
4/25/2013	07:15 AM	24
4/25/2013	07:30 AM	38
4/25/2013	07:45 AM	44
4/25/2013	08:00 AM	14
4/25/2013	08:15 AM	20
4/25/2013	08:30 AM	19
4/25/2013	08:45 AM	13
4/25/2013	09:00 AM	20
4/25/2013	09:15 AM	15
4/25/2013	09:30 AM	14
4/25/2013	09:45 AM	17
4/25/2013	10:00 AM	22
4/25/2013	10:15 AM	27
4/25/2013	10:30 AM	18
4/25/2013	10:45 AM	25
4/25/2013	11:00 AM	26
4/25/2013	11:15 AM	17
4/25/2013	11:30 AM	16

4/25/2013	11:45 AM	16
4/25/2013	12:00 PM	16
4/25/2013	12:15 PM	12
4/25/2013	12:30 PM	28
4/25/2013	12:45 PM	12
4/25/2013	01:00 PM	16
4/25/2013	01:15 PM	11
4/25/2013	01:30 PM	28
4/25/2013	01:45 PM	22
4/25/2013	02:00 PM	19
4/25/2013	02:15 PM	18
4/25/2013	02:30 PM	16
4/25/2013	02:45 PM	24
4/25/2013	03:00 PM	30
4/25/2013	03:15 PM	22
4/25/2013	03:30 PM	42
4/25/2013	03:45 PM	36
4/25/2013	04:00 PM	23
4/25/2013	04:15 PM	33
4/25/2013	04:30 PM	22
4/25/2013	04:45 PM	36
4/25/2013	05:00 PM	31
4/25/2013	05:15 PM	33
4/25/2013	05:30 PM	44
4/25/2013	05:45 PM	26
4/25/2013	06:00 PM	20
4/25/2013	06:15 PM	20
4/25/2013	06:30 PM	24
4/25/2013	06:45 PM	16
4/25/2013	07:00 PM	14
4/25/2013	07:15 PM	13
4/25/2013	07:30 PM	14
4/25/2013	07:45 PM	18
4/25/2013	08:00 PM	11
4/25/2013	08:15 PM	16
4/25/2013	08:30 PM	10
4/25/2013	08:45 PM	14
4/25/2013	09:00 PM	14
4/25/2013	09:15 PM	13
4/25/2013	09:30 PM	9
4/25/2013	09:45 PM	10
4/25/2013	10:00 PM	14
4/25/2013	10:15 PM	8
4/25/2013	10:30 PM	8
4/25/2013	10:45 PM	4
4/25/2013	11:00 PM	5
4/25/2013	11:15 PM	1
4/25/2013	11:30 PM	4
4/25/2013	11:45 PM	0

Volume

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 5

Location 1: I-76 SB OFF RAMP N/O BROMLE

Date	Time	SB
4/25/2013	12:00 AM	1
4/25/2013	12:15 AM	1
4/25/2013	12:30 AM	0
4/25/2013	12:45 AM	2
4/25/2013	01:00 AM	2
4/25/2013	01:15 AM	3
4/25/2013	01:30 AM	2
4/25/2013	01:45 AM	1
4/25/2013	02:00 AM	1
4/25/2013	02:15 AM	6
4/25/2013	02:30 AM	3
4/25/2013	02:45 AM	3
4/25/2013	03:00 AM	0
4/25/2013	03:15 AM	1
4/25/2013	03:30 AM	3
4/25/2013	03:45 AM	2
4/25/2013	04:00 AM	2
4/25/2013	04:15 AM	3
4/25/2013	04:30 AM	8
4/25/2013	04:45 AM	10
4/25/2013	05:00 AM	10
4/25/2013	05:15 AM	9
4/25/2013	05:30 AM	10
4/25/2013	05:45 AM	17
4/25/2013	06:00 AM	12
4/25/2013	06:15 AM	26
4/25/2013	06:30 AM	22
4/25/2013	06:45 AM	21
4/25/2013	07:00 AM	15
4/25/2013	07:15 AM	30
4/25/2013	07:30 AM	32
4/25/2013	07:45 AM	36
4/25/2013	08:00 AM	30
4/25/2013	08:15 AM	30
4/25/2013	08:30 AM	22
4/25/2013	08:45 AM	20
4/25/2013	09:00 AM	19
4/25/2013	09:15 AM	24
4/25/2013	09:30 AM	23
4/25/2013	09:45 AM	16
4/25/2013	10:00 AM	25
4/25/2013	10:15 AM	14
4/25/2013	10:30 AM	12
4/25/2013	10:45 AM	27
4/25/2013	11:00 AM	33
4/25/2013	11:15 AM	18
4/25/2013	11:30 AM	19

4/25/2013	11:45 AM	28
4/25/2013	12:00 PM	22
4/25/2013	12:15 PM	23
4/25/2013	12:30 PM	30
4/25/2013	12:45 PM	28
4/25/2013	01:00 PM	26
4/25/2013	01:15 PM	28
4/25/2013	01:30 PM	20
4/25/2013	01:45 PM	16
4/25/2013	02:00 PM	23
4/25/2013	02:15 PM	22
4/25/2013	02:30 PM	23
4/25/2013	02:45 PM	24
4/25/2013	03:00 PM	25
4/25/2013	03:15 PM	12
4/25/2013	03:30 PM	26
4/25/2013	03:45 PM	19
4/25/2013	04:00 PM	24
4/25/2013	04:15 PM	21
4/25/2013	04:30 PM	28
4/25/2013	04:45 PM	20
4/25/2013	05:00 PM	22
4/25/2013	05:15 PM	22
4/25/2013	05:30 PM	19
4/25/2013	05:45 PM	28
4/25/2013	06:00 PM	22
4/25/2013	06:15 PM	25
4/25/2013	06:30 PM	18
4/25/2013	06:45 PM	19
4/25/2013	07:00 PM	14
4/25/2013	07:15 PM	24
4/25/2013	07:30 PM	17
4/25/2013	07:45 PM	23
4/25/2013	08:00 PM	17
4/25/2013	08:15 PM	9
4/25/2013	08:30 PM	8
4/25/2013	08:45 PM	4
4/25/2013	09:00 PM	1
4/25/2013	09:15 PM	11
4/25/2013	09:30 PM	7
4/25/2013	09:45 PM	4
4/25/2013	10:00 PM	4
4/25/2013	10:15 PM	6
4/25/2013	10:30 PM	6
4/25/2013	10:45 PM	3
4/25/2013	11:00 PM	4
4/25/2013	11:15 PM	4
4/25/2013	11:30 PM	4
4/25/2013	11:45 PM	4

Volume

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 6

Location 1: I-76 SB ON RAMPS S/O BROMLI

Date	Time	SB
4/25/2013	12:00 AM	9
4/25/2013	12:15 AM	10
4/25/2013	12:30 AM	2
4/25/2013	12:45 AM	3
4/25/2013	01:00 AM	0
4/25/2013	01:15 AM	1
4/25/2013	01:30 AM	4
4/25/2013	01:45 AM	6
4/25/2013	02:00 AM	4
4/25/2013	02:15 AM	8
4/25/2013	02:30 AM	7
4/25/2013	02:45 AM	8
4/25/2013	03:00 AM	8
4/25/2013	03:15 AM	10
4/25/2013	03:30 AM	9
4/25/2013	03:45 AM	13
4/25/2013	04:00 AM	14
4/25/2013	04:15 AM	26
4/25/2013	04:30 AM	28
4/25/2013	04:45 AM	39
4/25/2013	05:00 AM	68
4/25/2013	05:15 AM	92
4/25/2013	05:30 AM	111
4/25/2013	05:45 AM	126
4/25/2013	06:00 AM	160
4/25/2013	06:15 AM	202
4/25/2013	06:30 AM	192
4/25/2013	06:45 AM	176
4/25/2013	07:00 AM	192
4/25/2013	07:15 AM	174
4/25/2013	07:30 AM	172
4/25/2013	07:45 AM	164 702
4/25/2013	08:00 AM	156
4/25/2013	08:15 AM	150
4/25/2013	08:30 AM	108
4/25/2013	08:45 AM	102
4/25/2013	09:00 AM	78
4/25/2013	09:15 AM	97
4/25/2013	09:30 AM	106
4/25/2013	09:45 AM	86
4/25/2013	10:00 AM	91
4/25/2013	10:15 AM	92
4/25/2013	10:30 AM	68
4/25/2013	10:45 AM	84
4/25/2013	11:00 AM	74
4/25/2013	11:15 AM	74
4/25/2013	11:30 AM	81

4/25/2013	11:45 AM	92	
4/25/2013	12:00 PM	90	
4/25/2013	12:15 PM	81	
4/25/2013	12:30 PM	76	
4/25/2013	12:45 PM	62	
4/25/2013	01:00 PM	74	
4/25/2013	01:15 PM	70	
4/25/2013	01:30 PM	70	
4/25/2013	01:45 PM	64	
4/25/2013	02:00 PM	80	
4/25/2013	02:15 PM	78	
4/25/2013	02:30 PM	86	
4/25/2013	02:45 PM	84	
4/25/2013	03:00 PM	82	
4/25/2013	03:15 PM	93	
4/25/2013	03:30 PM	124	
4/25/2013	03:45 PM	98	
4/25/2013	04:00 PM	102	
4/25/2013	04:15 PM	94	
4/25/2013	04:30 PM	112	
4/25/2013	04:45 PM	119	
4/25/2013	05:00 PM	149	
4/25/2013	05:15 PM	94	
4/25/2013	05:30 PM	104	
4/25/2013	05:45 PM	94	441
4/25/2013	06:00 PM	62	
4/25/2013	06:15 PM	76	
4/25/2013	06:30 PM	50	
4/25/2013	06:45 PM	42	
4/25/2013	07:00 PM	55	
4/25/2013	07:15 PM	38	
4/25/2013	07:30 PM	58	
4/25/2013	07:45 PM	34	
4/25/2013	08:00 PM	48	
4/25/2013	08:15 PM	37	
4/25/2013	08:30 PM	30	
4/25/2013	08:45 PM	28	
4/25/2013	09:00 PM	45	
4/25/2013	09:15 PM	24	
4/25/2013	09:30 PM	30	
4/25/2013	09:45 PM	14	
4/25/2013	10:00 PM	31	
4/25/2013	10:15 PM	14	
4/25/2013	10:30 PM	9	
4/25/2013	10:45 PM	12	
4/25/2013	11:00 PM	6	
4/25/2013	11:15 PM	3	
4/25/2013	11:30 PM	10	
4/25/2013	11:45 PM	12	

Volume

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 7

Location 1: I-76 NB OFF RAMP S/O BROMLE

Date	Time	NB
4/25/2013	12:00 AM	7
4/25/2013	12:15 AM	7
4/25/2013	12:30 AM	7
4/25/2013	12:45 AM	3
4/25/2013	01:00 AM	4
4/25/2013	01:15 AM	5
4/25/2013	01:30 AM	1
4/25/2013	01:45 AM	8
4/25/2013	02:00 AM	3
4/25/2013	02:15 AM	11
4/25/2013	02:30 AM	6
4/25/2013	02:45 AM	10
4/25/2013	03:00 AM	5
4/25/2013	03:15 AM	3
4/25/2013	03:30 AM	5
4/25/2013	03:45 AM	6
4/25/2013	04:00 AM	8
4/25/2013	04:15 AM	9
4/25/2013	04:30 AM	1
4/25/2013	04:45 AM	9
4/25/2013	05:00 AM	8
4/25/2013	05:15 AM	13
4/25/2013	05:30 AM	12
4/25/2013	05:45 AM	22
4/25/2013	06:00 AM	25
4/25/2013	06:15 AM	33
4/25/2013	06:30 AM	62
4/25/2013	06:45 AM	74
4/25/2013	07:00 AM	52
4/25/2013	07:15 AM	76
4/25/2013	07:30 AM	115
4/25/2013	07:45 AM	131
4/25/2013	08:00 AM	114
4/25/2013	08:15 AM	106
4/25/2013	08:30 AM	74
4/25/2013	08:45 AM	83
4/25/2013	09:00 AM	50
4/25/2013	09:15 AM	62
4/25/2013	09:30 AM	71
4/25/2013	09:45 AM	64
4/25/2013	10:00 AM	58
4/25/2013	10:15 AM	55
4/25/2013	10:30 AM	62
4/25/2013	10:45 AM	61
4/25/2013	11:00 AM	48
4/25/2013	11:15 AM	72
4/25/2013	11:30 AM	68

4/25/2013	11:45 AM	51
4/25/2013	12:00 PM	52
4/25/2013	12:15 PM	69
4/25/2013	12:30 PM	90
4/25/2013	12:45 PM	92
4/25/2013	01:00 PM	86
4/25/2013	01:15 PM	90
4/25/2013	01:30 PM	70
4/25/2013	01:45 PM	66
4/25/2013	02:00 PM	68
4/25/2013	02:15 PM	70
4/25/2013	02:30 PM	90
4/25/2013	02:45 PM	98
4/25/2013	03:00 PM	120
4/25/2013	03:15 PM	130
4/25/2013	03:30 PM	118
4/25/2013	03:45 PM	150
4/25/2013	04:00 PM	156
4/25/2013	04:15 PM	126
4/25/2013	04:30 PM	177
4/25/2013	04:45 PM	162
4/25/2013	05:00 PM	164
4/25/2013	05:15 PM	175
4/25/2013	05:30 PM	140
4/25/2013	05:45 PM	172
4/25/2013	06:00 PM	130
4/25/2013	06:15 PM	122
4/25/2013	06:30 PM	119
4/25/2013	06:45 PM	100
4/25/2013	07:00 PM	83
4/25/2013	07:15 PM	74
4/25/2013	07:30 PM	70
4/25/2013	07:45 PM	55
4/25/2013	08:00 PM	60
4/25/2013	08:15 PM	60
4/25/2013	08:30 PM	49
4/25/2013	08:45 PM	64
4/25/2013	09:00 PM	50
4/25/2013	09:15 PM	50
4/25/2013	09:30 PM	39
4/25/2013	09:45 PM	44
4/25/2013	10:00 PM	36
4/25/2013	10:15 PM	28
4/25/2013	10:30 PM	28
4/25/2013	10:45 PM	22
4/25/2013	11:00 PM	20
4/25/2013	11:15 PM	24
4/25/2013	11:30 PM	9
4/25/2013	11:45 PM	10

Volume

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 8

Location 1: I-76 NB ON RAMP N/O BROMLE

Date	Time	NB
4/25/2013	12:00 AM	8
4/25/2013	12:15 AM	0
4/25/2013	12:30 AM	0
4/25/2013	12:45 AM	2
4/25/2013	01:00 AM	0
4/25/2013	01:15 AM	0
4/25/2013	01:30 AM	1
4/25/2013	01:45 AM	2
4/25/2013	02:00 AM	0
4/25/2013	02:15 AM	1
4/25/2013	02:30 AM	1
4/25/2013	02:45 AM	1
4/25/2013	03:00 AM	2
4/25/2013	03:15 AM	2
4/25/2013	03:30 AM	3
4/25/2013	03:45 AM	2
4/25/2013	04:00 AM	0
4/25/2013	04:15 AM	4
4/25/2013	04:30 AM	4
4/25/2013	04:45 AM	10
4/25/2013	05:00 AM	10
4/25/2013	05:15 AM	11
4/25/2013	05:30 AM	8
4/25/2013	05:45 AM	4
4/25/2013	06:00 AM	16
4/25/2013	06:15 AM	8
4/25/2013	06:30 AM	10
4/25/2013	06:45 AM	20
4/25/2013	07:00 AM	15
4/25/2013	07:15 AM	16
4/25/2013	07:30 AM	13
4/25/2013	07:45 AM	19
4/25/2013	08:00 AM	14
4/25/2013	08:15 AM	9
4/25/2013	08:30 AM	23
4/25/2013	08:45 AM	14
4/25/2013	09:00 AM	10
4/25/2013	09:15 AM	16
4/25/2013	09:30 AM	19
4/25/2013	09:45 AM	23
4/25/2013	10:00 AM	10
4/25/2013	10:15 AM	16
4/25/2013	10:30 AM	17
4/25/2013	10:45 AM	24
4/25/2013	11:00 AM	18
4/25/2013	11:15 AM	26
4/25/2013	11:30 AM	20

4/25/2013	11:45 AM	32
4/25/2013	12:00 PM	26
4/25/2013	12:15 PM	20
4/25/2013	12:30 PM	32
4/25/2013	12:45 PM	24
4/25/2013	01:00 PM	27
4/25/2013	01:15 PM	20
4/25/2013	01:30 PM	24
4/25/2013	01:45 PM	27
4/25/2013	02:00 PM	24
4/25/2013	02:15 PM	38
4/25/2013	02:30 PM	28
4/25/2013	02:45 PM	30
4/25/2013	03:00 PM	38
4/25/2013	03:15 PM	46
4/25/2013	03:30 PM	28
4/25/2013	03:45 PM	34
4/25/2013	04:00 PM	40
4/25/2013	04:15 PM	51
4/25/2013	04:30 PM	34
4/25/2013	04:45 PM	40
4/25/2013	05:00 PM	49
4/25/2013	05:15 PM	34
4/25/2013	05:30 PM	40
4/25/2013	05:45 PM	39
4/25/2013	06:00 PM	45
4/25/2013	06:15 PM	36
4/25/2013	06:30 PM	28
4/25/2013	06:45 PM	28
4/25/2013	07:00 PM	25
4/25/2013	07:15 PM	36
4/25/2013	07:30 PM	29
4/25/2013	07:45 PM	22
4/25/2013	08:00 PM	14
4/25/2013	08:15 PM	17
4/25/2013	08:30 PM	18
4/25/2013	08:45 PM	17
4/25/2013	09:00 PM	16
4/25/2013	09:15 PM	14
4/25/2013	09:30 PM	20
4/25/2013	09:45 PM	11
4/25/2013	10:00 PM	7
4/25/2013	10:15 PM	13
4/25/2013	10:30 PM	8
4/25/2013	10:45 PM	2
4/25/2013	11:00 PM	6
4/25/2013	11:15 PM	6
4/25/2013	11:30 PM	7
4/25/2013	11:45 PM	1

EB

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 9

Location 1: I-76 E/O BASELINE

Date	Time	SMALL	MEDIUM	LARGE
4/25/2013	12:00 AM	31	4	2
4/25/2013	12:15 AM	19	2	1
4/25/2013	12:30 AM	46	4	3
4/25/2013	12:45 AM	29	3	2
4/25/2013	01:00 AM	36	4	2
4/25/2013	01:15 AM	16	2	1
4/25/2013	01:30 AM	22	2	1
4/25/2013	01:45 AM	14	2	1
4/25/2013	02:00 AM	20	2	1
4/25/2013	02:15 AM	22	3	1
4/25/2013	02:30 AM	16	2	1
4/25/2013	02:45 AM	25	3	1
4/25/2013	03:00 AM	23	3	1
4/25/2013	03:15 AM	27	3	2
4/25/2013	03:30 AM	29	3	2
4/25/2013	03:45 AM	22	3	1
4/25/2013	04:00 AM	41	4	2
4/25/2013	04:15 AM	31	4	2
4/25/2013	04:30 AM	40	4	2
4/25/2013	04:45 AM	44	4	3
4/25/2013	05:00 AM	72	7	4
4/25/2013	05:15 AM	93	9	5
4/25/2013	05:30 AM	96	10	6
4/25/2013	05:45 AM	80	8	5
4/25/2013	06:00 AM	115	12	7
4/25/2013	06:15 AM	142	14	8
4/25/2013	06:30 AM	137	13	8
4/25/2013	06:45 AM	130	13	7
4/25/2013	07:00 AM	139	13	8
4/25/2013	07:15 AM	139	14	8
4/25/2013	07:30 AM	153	15	9
4/25/2013	07:45 AM	145	14	8
4/25/2013	08:00 AM	145	14	8
4/25/2013	08:15 AM	142	14	8
4/25/2013	08:30 AM	136	13	8
4/25/2013	08:45 AM	128	13	7
4/25/2013	09:00 AM	134	13	8
4/25/2013	09:15 AM	126	13	7
4/25/2013	09:30 AM	148	15	9
4/25/2013	09:45 AM	143	14	8
4/25/2013	10:00 AM	145	14	8
4/25/2013	10:15 AM	156	15	9
4/25/2013	10:30 AM	136	13	8
4/25/2013	10:45 AM	164	16	9
4/25/2013	11:00 AM	155	15	9
4/25/2013	11:15 AM	126	13	7
4/25/2013	11:30 AM	117	12	7

4/25/2013 11:45 AM	115	12	7
4/25/2013 12:00 PM	132	13	8
4/25/2013 12:15 PM	113	12	6
4/25/2013 12:30 PM	123	13	7
4/25/2013 12:45 PM	126	13	7
4/25/2013 01:00 PM	110	11	6
4/25/2013 01:15 PM	142	14	8
4/25/2013 01:30 PM	126	13	7
4/25/2013 01:45 PM	136	13	8
4/25/2013 02:00 PM	132	13	8
4/25/2013 02:15 PM	175	17	10
4/25/2013 02:30 PM	133	13	8
4/25/2013 02:45 PM	139	13	8
4/25/2013 03:00 PM	148	15	8
4/25/2013 03:15 PM	151	15	9
4/25/2013 03:30 PM	175	18	10
4/25/2013 03:45 PM	166	16	9
4/25/2013 04:00 PM	174	17	10
4/25/2013 04:15 PM	181	18	10
4/25/2013 04:30 PM	170	17	10
4/25/2013 04:45 PM	181	18	10
4/25/2013 05:00 PM	153	15	9
4/25/2013 05:15 PM	160	16	9
4/25/2013 05:30 PM	148	15	8
4/25/2013 05:45 PM	152	15	9
4/25/2013 06:00 PM	155	15	9
4/25/2013 06:15 PM	115	12	7
4/25/2013 06:30 PM	132	13	8
4/25/2013 06:45 PM	85	9	5
4/25/2013 07:00 PM	103	10	6
4/25/2013 07:15 PM	87	9	5
4/25/2013 07:30 PM	92	9	5
4/25/2013 07:45 PM	84	8	5
4/25/2013 08:00 PM	76	7	4
4/25/2013 08:15 PM	58	6	3
4/25/2013 08:30 PM	60	6	3
4/25/2013 08:45 PM	74	7	4
4/25/2013 09:00 PM	65	6	4
4/25/2013 09:15 PM	67	7	4
4/25/2013 09:30 PM	61	6	4
4/25/2013 09:45 PM	36	4	2
4/25/2013 10:00 PM	49	4	3
4/25/2013 10:15 PM	65	6	4
4/25/2013 10:30 PM	41	4	2
4/25/2013 10:45 PM	25	3	1
4/25/2013 11:00 PM	37	4	2
4/25/2013 11:15 PM	30	3	2
4/25/2013 11:30 PM	40	4	2
4/25/2013 11:45 PM	22	3	1

709

WB

Start Date: 4/25/2013

Start Time: 12:00:00 AM

Station ID: 9.5

Location 1: I-76 E/O BASELINE

Date	Time	SMALL	MEDIUM	LARGE
4/25/2013	12:00 AM	29	4	2
4/25/2013	12:15 AM	24	3	2
4/25/2013	12:30 AM	14	2	1
4/25/2013	12:45 AM	13	2	1
4/25/2013	01:00 AM	30	4	2
4/25/2013	01:15 AM	20	3	1
4/25/2013	01:30 AM	24	3	2
4/25/2013	01:45 AM	28	4	2
4/25/2013	02:00 AM	16	2	1
4/25/2013	02:15 AM	24	3	2
4/25/2013	02:30 AM	29	4	2
4/25/2013	02:45 AM	25	4	2
4/25/2013	03:00 AM	32	5	2
4/25/2013	03:15 AM	17	2	1
4/25/2013	03:30 AM	25	4	2
4/25/2013	03:45 AM	40	6	3
4/25/2013	04:00 AM	67	10	5
4/25/2013	04:15 AM	42	6	3
4/25/2013	04:30 AM	55	8	4
4/25/2013	04:45 AM	55	8	4
4/25/2013	05:00 AM	59	8	4
4/25/2013	05:15 AM	86	12	6
4/25/2013	05:30 AM	114	16	8
4/25/2013	05:45 AM	146	21	10
4/25/2013	06:00 AM	132	19	9
4/25/2013	06:15 AM	129	19	9
4/25/2013	06:30 AM	166	24	12
4/25/2013	06:45 AM	134	19	10
4/25/2013	07:00 AM	128	18	9
4/25/2013	07:15 AM	155	22	11
4/25/2013	07:30 AM	144	21	10
4/25/2013	07:45 AM	156	23	11
4/25/2013	08:00 AM	150	22	11
4/25/2013	08:15 AM	133	19	9
4/25/2013	08:30 AM	146	21	10
4/25/2013	08:45 AM	132	19	9
4/25/2013	09:00 AM	158	23	11
4/25/2013	09:15 AM	126	18	9
4/25/2013	09:30 AM	138	20	10
4/25/2013	09:45 AM	139	20	10
4/25/2013	10:00 AM	155	22	11
4/25/2013	10:15 AM	126	18	9
4/25/2013	10:30 AM	130	19	9
4/25/2013	10:45 AM	139	20	10
4/25/2013	11:00 AM	124	18	9
4/25/2013	11:15 AM	136	20	10
4/25/2013	11:30 AM	131	19	9

4/25/2013 11:45 AM	124	18	9
4/25/2013 12:00 PM	133	19	9
4/25/2013 12:15 PM	121	17	9
4/25/2013 12:30 PM	135	19	10
4/25/2013 12:45 PM	109	16	8
4/25/2013 01:00 PM	139	20	10
4/25/2013 01:15 PM	144	21	10
4/25/2013 01:30 PM	153	22	11
4/25/2013 01:45 PM	124	18	9
4/25/2013 02:00 PM	144	21	10
4/25/2013 02:15 PM	132	19	9
4/25/2013 02:30 PM	129	19	9
4/25/2013 02:45 PM	138	20	10
4/25/2013 03:00 PM	129	19	9
4/25/2013 03:15 PM	114	16	8
4/25/2013 03:30 PM	155	22	11
4/25/2013 03:45 PM	144	21	10
4/25/2013 04:00 PM	170	24	12
4/25/2013 04:15 PM	161	23	12
4/25/2013 04:30 PM	152	22	11
4/25/2013 04:45 PM	175	25	12
4/25/2013 05:00 PM	165	24	12
4/25/2013 05:15 PM	197	28	14
4/25/2013 05:30 PM	187	27	13
4/25/2013 05:45 PM	150	22	11
4/25/2013 06:00 PM	151	22	11
4/25/2013 06:15 PM	119	17	9
4/25/2013 06:30 PM	114	16	8
4/25/2013 06:45 PM	99	14	7
4/25/2013 07:00 PM	103	15	7
4/25/2013 07:15 PM	121	17	9
4/25/2013 07:30 PM	89	13	6
4/25/2013 07:45 PM	97	14	7
4/25/2013 08:00 PM	71	10	5
4/25/2013 08:15 PM	66	9	5
4/25/2013 08:30 PM	57	8	4
4/25/2013 08:45 PM	49	7	3
4/25/2013 09:00 PM	55	8	4
4/25/2013 09:15 PM	71	10	5
4/25/2013 09:30 PM	57	8	4
4/25/2013 09:45 PM	45	7	3
4/25/2013 10:00 PM	59	8	4
4/25/2013 10:15 PM	45	7	3
4/25/2013 10:30 PM	46	7	3
4/25/2013 10:45 PM	43	6	3
4/25/2013 11:00 PM	32	5	2
4/25/2013 11:15 PM	46	7	3
4/25/2013 11:30 PM	45	7	3
4/25/2013 11:45 PM	40	6	3

850

I-76 & Bridge Street INTERCHANGE



C.2 – Peak-Hour Turning Movements

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	TOWER RD - PRARIE CENTER Southbound				BROMLEY LN Westbound				TOWER RD - PRARIE CENTER Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	1	1	0	0	66	5	0	2	0	9	0	11	64	0	0
07:15 AM	0	0	0	0	0	47	8	0	10	0	9	0	26	84	0	0
07:30 AM	0	1	0	0	0	76	11	0	15	0	8	0	23	111	0	0
07:45 AM	0	0	0	0	0	84	21	0	24	0	13	0	40	141	1	0
Peak Hour	0	2	1	0	0	273	45	0	51	0	39	0	100	400	1	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	TOWER RD - PRARIE CENTER Southbound				BROMLEY LN Westbound				TOWER RD - PRARIE CENTER Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	1	0	0	155	22	0	14	2	37	0	13	98	0	0
05:15 PM	0	1	0	0	1	87	13	0	21	0	29	0	14	107	2	0
05:30 PM	0	0	1	0	0	102	17	0	26	0	34	1	21	99	2	0
05:45 PM	1	1	0	0	0	93	11	0	22	0	35	0	17	89	1	0
Peak Hour	1	2	2	0	1	437	63	0	83	2	135	1	65	393	5	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	KMART ACCESS Southbound				BROMLEY LN Westbound				KMART ACCESS Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	1	0	2	0	4	67	0	0	0	0	0	0	0	59	3	0
07:15 AM	2	0	0	0	3	53	0	0	0	0	0	0	0	89	5	0
07:30 AM	1	0	0	0	1	75	0	0	0	0	0	0	0	122	0	0
07:45 AM	0	0	1	0	2	102	0	0	0	0	0	0	0	172	2	0
Peak Hour	4	0	3	0	10	297	0	0	0	0	0	0	0	442	10	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	KMART ACCESS Southbound				BROMLEY LN Westbound				KMART ACCESS Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	1	0	0	171	0	0	0	0	0	0	0	122	1	0
05:15 PM	0	0	0	0	0	108	0	0	0	0	0	0	0	122	0	0
05:30 PM	1	0	0	0	1	119	0	0	0	0	0	0	0	116	0	0
05:45 PM	0	0	2	0	1	104	0	0	0	0	0	0	0	105	1	0
Peak Hour	1	0	3	0	2	502	0	0	0	0	0	0	0	465	2	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	JUDICIAL CENTER DR Southbound				BROMLEY LN Westbound				JUDICIAL CENTER DR Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	0	0	0	0	70	7	0	0	0	0	0	6	54	0	0
07:15 AM	0	0	0	0	0	53	19	0	2	0	1	0	14	70	0	0
07:30 AM	0	0	0	0	0	74	36	0	3	0	4	0	37	77	0	0
07:45 AM	0	0	0	0	0	104	60	0	4	0	2	0	76	102	0	0
Peak Hour	0	0	0	0	0	301	122	0	9	0	7	0	133	303	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	JUDICIAL CENTER DR Southbound				BROMLEY LN Westbound				JUDICIAL CENTER DR Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	0	111	3	0	53	0	69	0	3	124	0	0
05:15 PM	0	0	0	0	0	77	8	0	34	0	27	1	6	120	0	0
05:30 PM	0	0	0	0	0	99	4	0	15	0	19	0	5	109	0	0
05:45 PM	0	0	0	0	0	100	2	0	7	0	6	0	10	95	0	0
Peak Hour	0	0	0	0	0	387	17	0	109	0	121	1	24	448	0	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	LOWE'S ACCESS Southbound				BROMLEY LN Westbound				LOWE'S ACCESS Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	0	0	0	0	69	37	0	20	0	8	0	1	54	0	0
07:15 AM	0	0	0	0	0	73	21	0	22	0	7	0	1	65	0	0
07:30 AM	0	0	0	0	0	124	27	0	24	0	7	0	8	69	0	0
07:45 AM	0	0	0	0	0	175	35	0	20	0	6	0	10	77	0	0
Peak Hour	0	0	0	0	0	441	120	0	86	0	28	0	20	265	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	LOWE'S ACCESS Southbound				BROMLEY LN Westbound				LOWE'S ACCESS Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	0	86	36	0	46	0	26	0	12	190	0	0
05:15 PM	0	0	0	0	0	66	43	0	37	0	19	0	9	149	0	0
05:30 PM	0	0	0	0	0	97	43	0	30	0	13	0	14	111	0	0
05:45 PM	0	0	0	0	0	81	46	0	58	0	23	0	10	101	0	0
Peak Hour	0	0	0	0	0	330	168	0	171	0	81	0	45	551	0	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	WEST FRONTAGE RD Southbound				BROMLEY LN Westbound				WEST FRONTAGE RD Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	41	4	105	0	23	65	2	1	1	4	0	0	0	70	2	0
07:15 AM	25	7	94	0	22	64	1	0	2	1	0	0	1	67	19	0
07:30 AM	37	5	104	0	54	99	2	0	4	6	1	0	3	68	18	0
07:45 AM	68	9	109	0	46	135	2	0	1	3	1	0	1	92	30	0
Peak Hour	171	25	412	0	145	363	7	1	8	14	2	0	5	297	69	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	WEST FRONTAGE RD Southbound				BROMLEY LN Westbound				WEST FRONTAGE RD Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	48	12	31	0	86	67	3	0	8	22	2	0	0	145	70	0
05:15 PM	43	17	39	0	90	67	2	0	6	13	2	0	0	135	51	0
05:30 PM	41	18	30	0	101	94	2	0	8	20	2	0	0	106	46	0
05:45 PM	47	20	32	0	108	77	1	0	5	20	1	0	0	104	59	0
Peak Hour	179	67	132	0	385	305	8	0	27	75	7	0	0	490	226	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	I-76 SB RAMPS Southbound				BROMLEY LN Westbound				I-76 SB RAMPS Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	12	0	2	0	0	74	44	0	0	0	0	0	143	26	0	0
07:15 AM	21	0	5	0	0	76	43	0	0	0	0	0	131	30	0	0
07:30 AM	26	0	5	0	0	154	29	0	0	0	0	0	133	40	0	0
07:45 AM	31	0	3	0	0	158	27	0	0	0	0	0	140	31	0	0
Peak Hour	90	0	15	0	0	462	143	0	0	0	0	0	547	127	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	I-76 SB RAMPS Southbound				BROMLEY LN Westbound				I-76 SB RAMPS Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	19	0	0	0	0	146	24	0	0	0	0	0	107	87	0	0
05:15 PM	16	0	2	0	0	146	18	0	0	0	0	0	85	90	0	0
05:30 PM	33	0	3	0	0	166	17	0	0	0	0	0	67	70	0	0
05:45 PM	23	0	2	0	0	156	23	0	0	0	0	0	76	56	0	0
Peak Hour	91	0	7	0	0	614	82	0	0	0	0	0	335	303	0	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	I-76 NB RAMPS Southbound				BROMLEY LN Westbound				I-76 NB RAMPS Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	0	0	0	4	87	0	0	11	0	39	0	0	19	11	0
07:15 AM	0	0	0	0	4	70	0	0	22	0	44	0	0	23	12	0
07:30 AM	0	0	0	0	4	85	0	0	14	0	94	0	0	34	10	0
07:45 AM	0	0	0	0	4	82	0	0	21	1	96	0	0	21	10	0
Peak Hour	0	0	0	0	16	324	0	0	68	1	273	0	0	97	43	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	I-76 NB RAMPS Southbound				BROMLEY LN Westbound				I-76 NB RAMPS Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	8	55	0	0	60	0	115	0	0	53	32	0
05:15 PM	0	0	0	0	11	45	0	0	52	0	116	0	0	58	37	0
05:30 PM	0	0	0	0	9	61	0	0	47	0	126	0	0	46	24	0
05:45 PM	0	0	0	0	8	51	0	0	43	0	129	0	0	35	33	0
Peak Hour	0	0	0	0	36	212	0	0	202	0	486	0	0	192	126	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	EAST FRONTAGE RD Southbound				BROMLEY LN Westbound				EAST FRONTAGE RD Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	1	0	2	0	4	85	0	0	0	0	0	0	0	22	8	0
07:15 AM	4	0	4	0	8	63	0	0	0	0	0	0	0	29	16	0
07:30 AM	6	0	5	0	5	75	0	0	0	0	0	0	0	41	3	0
07:45 AM	4	0	7	0	1	83	0	0	0	0	0	0	0	35	9	0
Peak Hour	15	0	18	0	18	306	0	0	0	0	0	0	0	127	36	0

Start Date: 4/24/2013
 Start Time: 5:00:00 PM
 Site Code: 00000000

Comment 1:
 Comment 2:
 Comment 3:
 Comment 4:

Start Time	EAST FRONTAGE RD Southbound				BROMLEY LN Westbound				EAST FRONTAGE RD Northbound				BROMLEY LN Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	6	0	6	0	0	56	0	0	0	0	0	0	0	93	13	0
05:15 PM	1	0	2	0	4	54	0	0	0	0	0	0	0	104	14	0
05:30 PM	13	0	1	0	3	57	0	0	0	0	0	0	0	80	12	0
05:45 PM	5	0	3	0	5	49	0	0	0	0	0	0	0	62	15	0
Peak Hour	25	0	12	0	12	216	0	0	0	0	0	0	0	339	54	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	PICADILLY RD Southbound				BROMLEY LN - 152ND AVE Westbound				PICADILLY RD Northbound				BROMLEY LN - 152ND AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	0	0	0	0	67	5	0	1	0	18	0	7	13	0	0
07:15 AM	0	0	0	0	0	54	8	0	2	0	14	0	16	16	0	1
07:30 AM	0	0	0	0	0	83	7	0	1	0	14	0	29	16	0	0
07:45 AM	0	0	0	0	0	47	11	0	1	0	12	0	16	20	0	0
Peak Hour	0	0	0	0	0	251	31	0	5	0	58	0	68	65	0	1

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	PICADILLY RD Southbound				BROMLEY LN - 152ND AVE Westbound				PICADILLY RD Northbound				BROMLEY LN - 152ND AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	0	26	6	0	2	0	22	0	9	76	0	0
05:15 PM	0	0	0	0	0	29	2	0	3	0	21	0	14	69	0	0
05:30 PM	0	0	0	0	0	37	1	0	5	0	15	0	9	68	0	0
05:45 PM	0	0	0	0	0	40	3	0	4	0	17	0	9	49	0	0
Peak Hour	0	0	0	0	0	132	12	0	14	0	75	0	41	262	0	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	50TH ST Southbound				WEST FRONTAGE RD Westbound				50TH ST Northbound				WEST FRONTAGE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	115	0	0	0	0	35	0	0	0	0	0	0	0	11	22	0
07:15 AM	88	0	0	0	1	39	0	0	0	0	0	0	0	17	30	0
07:30 AM	123	0	0	0	0	30	0	0	0	0	0	0	0	21	64	0
07:45 AM	141	0	0	0	0	39	0	0	0	0	0	0	0	26	65	0
Peak Hour	467	0	0	0	1	143	0	0	0	0	0	0	0	75	181	0

File Name: W:\NATHAN TMCS\2013\BRIGHTON TMCS 4-2013\1 HOUR\#10 50TH&WESTFRONTAGEPM.ppd

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	50TH ST Southbound				WEST FRONTAGE RD Westbound				50TH ST Northbound				WEST FRONTAGE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	65	0	0	0	2	31	0	0	0	0	0	0	0	57	137	0
05:15 PM	71	0	0	1	0	23	0	0	0	0	0	0	0	38	124	0
05:30 PM	68	0	0	0	1	30	0	0	0	0	0	0	0	46	117	0
05:45 PM	75	0	0	0	1	26	0	0	0	0	0	0	0	49	140	0
Peak Hour	279	0	0	1	4	110	0	0	0	0	0	0	0	190	518	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	SOUTH LONSPUR DR Southbound				WEST FRONTAGE RD Westbound				SOUTH LONSPUR DR Northbound				WEST FRONTAGE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	35	0	0	0	0	0	0	0	7	5	0	13	0	1	0
07:15 AM	0	19	0	0	0	0	0	0	0	8	5	0	7	0	3	0
07:30 AM	4	13	0	0	0	0	0	0	0	15	9	0	16	0	3	0
07:45 AM	4	19	0	0	0	0	0	0	0	13	8	0	23	0	9	0
Peak Hour	8	86	0	0	0	0	0	0	0	43	27	0	59	0	16	0

Start Date: 4/24/2013
 Start Time: 5:00:00 PM
 Site Code: 00000000

Comment 1:
 Comment 2:
 Comment 3:
 Comment 4:

Start Time	WEST FRONTAGE RD Southbound				SOUTH LONSPUR DR Westbound				WEST FRONTAGE RD Northbound				SOUTH LONSPUR DR Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	13	0	0	0	0	0	0	0	34	13	0	8	0	13	1
05:15 PM	2	15	0	1	0	0	0	0	0	24	21	0	17	0	10	1
05:30 PM	1	19	0	1	0	0	0	0	0	31	18	0	14	0	8	0
05:45 PM	4	14	0	2	0	0	0	0	0	18	8	0	13	0	6	2
Peak Hour	7	61	0	4	0	0	0	0	0	107	60	0	52	0	37	4

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	NORTH LONSPUR DR Southbound				WEST FRONTAGE RD Westbound				NORTH LONSPUR DR Northbound				WEST FRONTAGE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	2	16	0	0	0	0	0	0	0	2	7	0	14	0	1	0
07:15 AM	0	14	0	0	0	0	0	0	0	8	3	0	7	0	1	0
07:30 AM	4	17	0	0	0	0	0	0	0	6	13	0	2	0	0	0
07:45 AM	17	14	0	0	0	0	0	0	0	17	6	0	8	0	4	0
Peak Hour	23	61	0	0	0	0	0	0	0	33	29	0	31	0	6	0

Start Date: 4/24/2013
 Start Time: 5:00:00 PM
 Site Code: 00000000

- Comment 1: Default Comments
- Comment 2: Change These in The Preferences Window
- Comment 3: Select File/Preference in the Main Scree
- Comment 4: Then Click the Comments Tab

Start Time	NORTH LONSPUR DR Southbound				WEST FRONTAGE RD Westbound				NORTH LONSPUR DR Northbound				WEST FRONTAGE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	2	10	0	0	0	0	0	0	0	25	20	0	2	0	0	0
05:15 PM	2	17	0	0	0	0	0	0	0	25	15	0	2	0	1	0
05:30 PM	1	11	0	0	0	0	0	0	0	23	15	0	6	0	0	0
05:45 PM	3	13	0	0	0	0	0	0	0	17	6	0	5	0	0	0
Peak Hour	8	51	0	0	0	0	0	0	0	90	56	0	15	0	1	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	50TH ST Southbound				160TH AVE Westbound				50TH ST Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	17	22	2	0	4	70	6	0	4	19	27	1	37	32	6	0
07:15 AM	20	32	9	0	4	46	4	0	2	16	26	0	30	45	13	0
07:30 AM	25	39	3	0	2	72	6	0	4	20	23	0	41	35	13	0
07:45 AM	21	26	3	0	1	83	4	0	2	25	33	0	27	54	18	0
Peak Hour	83	119	17	0	11	271	20	0	12	80	109	1	135	166	50	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	50TH ST Southbound				160TH AVE Westbound				50TH ST Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	20	26	3	0	4	57	7	0	3	25	41	0	27	57	26	0
05:15 PM	14	22	2	0	6	65	7	0	3	27	42	0	31	72	26	0
05:30 PM	17	11	0	1	4	62	5	0	2	29	46	0	35	66	28	0
05:45 PM	20	20	5	0	2	52	1	0	4	36	44	0	35	45	25	0
Peak Hour	71	79	10	1	16	236	20	0	12	117	173	0	128	240	105	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	PRARIE FALCON PKWY Southbound				160TH AVE Westbound				PRARIE FALCON PKWY Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	12	2	15	1	0	38	0	0	2	3	13	0	5	30	4	0
07:15 AM	5	4	12	1	3	31	0	0	0	0	13	0	15	38	5	0
07:30 AM	5	0	9	0	7	49	0	0	1	0	13	0	6	29	8	0
07:45 AM	13	8	3	0	1	55	1	0	2	2	13	1	28	32	6	0
Peak Hour	35	14	39	2	11	173	1	0	5	5	52	1	54	129	23	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	PRARIE FALCON PKWY Southbound				160TH AVE Westbound				PRARIE FALCON PKWY Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	5	1	4	0	10	51	2	0	2	1	15	0	10	40	12	0
05:15 PM	11	0	5	0	12	48	1	0	0	1	10	0	13	54	11	0
05:30 PM	5	3	4	0	15	67	3	0	0	2	4	1	10	43	8	0
05:45 PM	3	0	8	0	5	46	3	1	0	0	4	0	7	45	10	0
Peak Hour	24	4	21	0	42	212	9	1	2	4	33	1	40	182	41	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	GOLDEN EAGLE PKWY Southbound				160TH AVE Westbound				GOLDEN EAGLE PKWY Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	0	0	0	0	0	0	0	1	0	3	0	3	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	1	0	4	0	1	0	1	0	0	0
Peak Hour	0	0	0	0	0	0	1	0	7	0	6	0	5	0	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	GOLDEN EAGLE PKWY Southbound				160TH AVE Westbound				GOLDEN EAGLE PKWY Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	0	0	0	0	1	0	1	0	3	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
05:30 PM	0	0	0	0	0	0	1	0	2	0	2	0	6	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	1	0	4	0	4	0	10	0	0	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	WEST FRONTAGE RD Southbound				160TH AVE Westbound				WEST FRONTAGE RD Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	15	2	0	0	0	22	0	0	2	0	2	0	16	12	11	0
07:15 AM	20	4	1	0	1	9	0	0	3	1	3	0	12	31	8	0
07:30 AM	20	1	1	0	0	30	3	0	0	2	3	0	10	22	8	0
07:45 AM	23	10	0	0	0	25	10	0	0	5	11	0	10	23	9	0
Peak Hour	78	17	2	0	1	86	13	0	5	8	19	0	48	88	36	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	WEST FRONTAGE RD Southbound				160TH AVE Westbound				WEST FRONTAGE RD Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	20	4	0	0	0	27	1	0	1	2	15	0	10	18	15	0
05:15 PM	22	6	0	0	1	18	2	0	2	7	18	0	9	30	12	0
05:30 PM	30	4	0	0	0	36	2	0	2	9	17	0	6	28	17	0
05:45 PM	25	2	1	0	0	23	2	0	1	8	7	0	11	25	16	0
Peak Hour	97	16	1	0	1	104	7	0	6	26	57	0	36	101	60	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	EAST FRONTAGE RD Southbound				160TH AVE Westbound				EAST FRONTAGE RD Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	5	3	0	0	0	11	1	0	0	0	1	0	12	2	5	0
07:15 AM	2	5	0	0	1	8	1	0	0	1	3	0	24	6	5	0
07:30 AM	10	0	0	0	0	17	1	0	0	0	8	0	6	6	7	0
07:45 AM	9	3	1	0	1	17	0	0	1	1	5	0	14	5	4	0
Peak Hour	26	11	1	0	2	53	3	0	1	2	17	0	56	19	21	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	EAST FRONTAGE RD Southbound				160TH AVE Westbound				EAST FRONTAGE RD Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	1	1	1	0	0	6	0	0	1	2	19	0	3	10	5	0
05:15 PM	1	0	0	0	0	9	0	0	3	2	14	0	5	21	8	0
05:30 PM	1	2	0	0	0	10	0	0	1	2	27	0	3	17	8	0
05:45 PM	0	1	1	0	0	10	0	0	0	2	10	0	2	16	8	0
Peak Hour	3	4	2	0	0	35	0	0	5	8	70	0	13	64	29	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	EAST FRONTAGE RD Southbound				BROMLEY BUSINESS PKWY Westbound				EAST FRONTAGE RD Northbound				BROMLEY BUSINESS PKWY Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	15	1	0	0	0	0	0	1	1	0	0	0	0	0	0
07:15 AM	0	27	1	0	2	0	0	0	1	2	0	0	0	0	0	0
07:30 AM	0	6	2	0	0	0	2	0	1	10	0	0	0	0	0	0
07:45 AM	0	16	1	0	1	0	2	0	0	4	0	0	0	0	0	0
Peak Hour	0	64	5	0	3	0	4	0	3	17	0	0	0	0	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	EAST FRONTAGE RD Southbound				BROMLEY BUSINESS PKWY Westbound				EAST FRONTAGE RD Northbound				BROMLEY BUSINESS PKWY Eastbound			
	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left	Other
05:00 PM	0	5	0	0	2	0	2	0	1	21	0	0	0	0	0	0
05:15 PM	0	5	0	0	0	0	0	0	0	18	0	0	0	0	0	0
05:30 PM	0	5	0	0	0	0	0	0	0	30	0	0	0	0	0	0
05:45 PM	0	3	1	0	0	0	2	0	0	12	0	0	0	0	0	0
Peak Hour	0	18	1	0	2	0	4	0	1	81	0	0	0	0	0	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	GUN CLUB RD Southbound				160TH AVE Westbound				GUN CLUB RD Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	1	0	0	0	9	1	0	0	0	4	0	1	1	0	0
07:15 AM	0	0	0	0	0	7	1	0	0	0	2	0	2	3	0	0
07:30 AM	0	0	0	0	0	13	0	0	0	0	4	0	1	5	0	0
07:45 AM	0	0	0	0	0	18	1	0	2	0	3	0	0	6	0	0
Peak Hour	0	1	0	0	0	47	3	0	2	0	13	0	4	15	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	GUN CLUB RD Southbound				160TH AVE Westbound				GUN CLUB RD Northbound				160TH AVE Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	0	5	0	0	0	0	1	0	3	11	1	0
05:15 PM	0	0	0	0	0	5	0	0	1	0	6	0	8	13	0	0
05:30 PM	0	0	0	0	0	7	0	0	2	0	1	0	5	13	1	0
05:45 PM	0	0	0	0	0	7	1	0	1	0	2	0	7	14	0	0
Peak Hour	0	0	0	0	0	24	1	0	4	0	10	0	23	51	2	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	HARVEST RD Southbound				BASELINE RD Westbound				HARVEST RD Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	6	0	1	0	0	25	1	0	0	1	1	0	2	11	3	0
07:15 AM	2	0	0	0	0	26	0	0	0	1	0	0	0	15	5	0
07:30 AM	10	1	0	0	0	52	0	0	0	2	1	0	0	3	0	0
07:45 AM	7	0	1	0	1	22	0	0	1	0	0	0	0	4	2	0
Peak Hour	25	1	2	0	1	125	1	0	1	4	2	0	2	33	10	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	HARVEST RD Southbound				BASELINE RD Westbound				HARVEST RD Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	1	0	1	0	0	16	0	0	2	3	3	0	0	41	8	0
05:15 PM	3	1	0	0	1	14	0	1	0	3	3	0	3	40	6	0
05:30 PM	5	1	0	0	0	15	0	0	0	0	1	0	3	40	6	0
05:45 PM	2	0	1	0	0	14	0	0	3	1	3	0	1	24	8	0
Peak Hour	11	2	2	0	1	59	0	1	5	7	10	0	7	145	28	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	EAST FRONTAGE RD Southbound				BASELINE RD Westbound				EAST FRONTAGE RD Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	0	0	0	0	27	5	0	1	0	3	0	3	15	0	0
07:15 AM	0	0	0	0	0	28	3	0	5	0	3	0	3	15	0	0
07:30 AM	0	0	0	0	0	48	11	0	1	0	6	0	0	2	0	0
07:45 AM	0	0	0	0	0	30	8	0	1	0	4	0	4	6	0	0
Peak Hour	0	0	0	0	0	133	27	0	8	0	16	0	10	38	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	EAST FRONTAGE RD Southbound				BASELINE RD Westbound				EAST FRONTAGE RD Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	0	15	1	0	2	0	5	0	2	45	0	0
05:15 PM	0	0	0	0	0	22	0	0	1	0	9	0	1	49	0	0
05:30 PM	0	0	0	0	0	18	2	0	3	0	6	0	1	46	0	0
05:45 PM	0	0	0	0	0	22	0	0	3	0	5	0	2	30	0	0
Peak Hour	0	0	0	0	0	77	3	0	9	0	25	0	6	170	0	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	I-76 NB RAMPS Southbound				BASELINE RD Westbound				I-76 NB RAMPS Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	0	0	0	3	30	0	0	4	0	16	0	0	14	12	0
07:15 AM	0	0	0	0	1	30	0	0	4	1	29	0	0	15	27	0
07:30 AM	0	0	0	0	6	45	0	0	1	0	29	0	0	1	32	0
07:45 AM	0	0	0	0	2	27	0	0	3	0	21	0	0	8	27	0
Peak Hour	0	0	0	0	12	132	0	0	12	1	95	0	0	38	98	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	I-76 NB RAMPS Southbound				BASELINE RD Westbound				I-76 NB RAMPS Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	2	16	0	0	36	0	81	0	0	16	26	0
05:15 PM	0	0	0	0	5	22	0	1	32	1	104	0	0	14	28	0
05:30 PM	0	0	0	0	7	18	0	0	27	0	90	0	0	17	28	0
05:45 PM	0	0	0	0	5	23	0	0	21	1	102	0	0	14	15	0
Peak Hour	0	0	0	0	19	79	0	1	116	2	377	0	0	61	97	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	I-76 SB RAMPS Southbound				BASELINE RD Westbound				I-76 SB RAMPS Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	14	0	1	0	0	33	20	0	0	0	0	0	102	29	0	0
07:15 AM	21	0	2	0	0	37	15	0	0	0	0	0	96	44	0	0
07:30 AM	28	0	1	0	0	48	27	0	0	0	0	0	83	35	0	0
07:45 AM	28	0	4	0	0	31	19	0	0	0	0	0	75	25	0	0
Peak Hour	91	0	8	0	0	149	81	0	0	0	0	0	356	133	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	I-76 SB RAMPS Southbound				BASELINE RD Westbound				I-76 SB RAMPS Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	29	0	2	0	0	94	10	0	0	0	0	0	40	41	0	0
05:15 PM	36	2	1	0	0	113	5	0	0	0	0	0	30	42	0	0
05:30 PM	42	0	2	0	0	108	8	0	0	0	0	0	40	36	0	0
05:45 PM	29	0	2	0	0	116	5	0	0	0	0	0	25	33	0	0
Peak Hour	136	2	7	0	0	431	28	0	0	0	0	0	135	152	0	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	WEST FRONTAGE RD Southbound				BASELINE RD Westbound				WEST FRONTAGE RD Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	7	11	47	0	10	27	7	0	3	5	1	0	0	84	8	0
07:15 AM	13	11	41	0	17	33	9	0	6	3	2	0	2	88	7	0
07:30 AM	4	8	42	0	23	36	15	0	3	6	1	0	0	78	7	0
07:45 AM	13	15	30	0	17	27	15	0	7	4	3	0	9	68	6	0
Peak Hour	37	45	160	0	67	123	46	0	19	18	7	0	11	318	28	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	WEST FRONTAGE RD Southbound				BASELINE RD Westbound				WEST FRONTAGE RD Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	12	14	20	0	39	74	5	0	9	12	1	0	4	52	15	0
05:15 PM	7	18	17	1	54	86	10	0	6	11	3	0	4	45	9	0
05:30 PM	13	9	26	0	35	90	11	0	9	11	5	0	0	44	11	0
05:45 PM	16	7	20	0	67	76	16	0	6	11	2	0	1	39	6	0
Peak Hour	48	48	83	1	195	326	42	0	30	45	11	0	9	180	41	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	BONANZA BLVD Southbound				BASELINE RD Westbound				BONANZA BLVD Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	12	0	21	0	13	24	0	0	0	0	0	0	0	68	8	0
07:15 AM	13	0	43	0	14	32	0	0	0	0	0	0	0	58	11	0
07:30 AM	17	0	22	0	8	32	0	0	0	0	0	0	0	58	8	0
07:45 AM	10	0	25	0	11	30	0	0	0	0	0	0	0	58	17	0
Peak Hour	52	0	111	0	46	118	0	0	0	0	0	0	0	242	44	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	BONANZA BLVD Southbound				BASELINE RD Westbound				BONANZA BLVD Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	17	0	14	0	14	68	0	0	0	0	0	0	0	53	13	0
05:15 PM	13	0	9	0	23	72	0	0	0	0	0	0	0	51	22	0
05:30 PM	14	0	7	0	25	82	0	0	0	0	0	0	0	50	11	0
05:45 PM	12	0	9	0	22	72	0	0	0	0	0	0	0	34	24	0
Peak Hour	56	0	39	0	84	294	0	0	0	0	0	0	0	188	70	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	WAGON TRAIL AVE Southbound				BASELINE RD Westbound				WAGON TRAIL AVE Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	2	0	23	0	2	35	0	0	0	0	0	0	0	53	3	0
07:15 AM	4	0	14	0	2	44	0	0	0	0	0	0	0	57	2	0
07:30 AM	6	0	9	0	2	43	0	0	0	0	0	0	0	56	0	0
07:45 AM	2	0	21	0	2	41	0	0	0	0	0	0	0	54	3	0
Peak Hour	14	0	67	0	8	163	0	0	0	0	0	0	0	220	8	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	WAGON TRAIL AVE Southbound				BASELINE RD Westbound				WAGON TRAIL AVE Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	5	0	16	72	0	0	0	0	0	0	0	63	2	0
05:15 PM	3	0	7	0	15	72	0	0	0	0	0	0	0	64	6	0
05:30 PM	1	0	9	0	15	83	0	0	0	0	0	0	0	52	8	0
05:45 PM	2	0	7	0	11	73	0	0	0	0	0	0	0	52	7	0
Peak Hour	6	0	28	0	57	300	0	0	0	0	0	0	0	231	23	0

Start Date: 4/24/2013

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	50TH AVE Southbound				BASELINE RD Westbound				50TH AVE Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
07:00 AM	0	0	0	0	0	48	18	0	6	0	16	0	9	39	0	0
07:15 AM	0	0	0	0	0	48	23	0	10	0	17	0	15	35	0	0
07:30 AM	0	0	0	0	0	56	23	0	9	0	10	0	7	33	0	0
07:45 AM	0	0	0	0	0	50	15	0	13	0	11	0	7	25	0	0
Peak Hour	0	0	0	0	0	202	79	0	38	0	54	0	38	132	0	0

Start Date: 4/24/2013

Start Time: 5:00:00 PM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	50TH AVE Southbound				BASELINE RD Westbound				50TH AVE Northbound				BASELINE RD Eastbound			
	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other	Rght	Thru	Left	Other
05:00 PM	0	0	0	0	0	60	16	0	26	0	8	0	18	73	0	0
05:15 PM	0	0	0	0	0	59	15	0	21	0	7	0	18	77	0	0
05:30 PM	0	0	0	0	0	68	14	0	27	0	8	0	11	57	0	0
05:45 PM	0	0	0	0	0	62	21	0	33	0	10	0	16	69	0	0
Peak Hour	0	0	0	0	0	249	66	0	107	0	33	0	63	276	0	0

I-76 & Bridge Street INTERCHANGE



C.3 – Signal Timings

9 + Key			C + F + Key		
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Short Power Down	0	4	Page ID	0	0
Long Power Down	1	4	Reserved	1	0
EVA Delay Type	2	0	Reserved	2	0
EVB Delay Type	3	0	Reserved	3	0
EVC Delay Type	4	0	OLA Red	4	0.0
EVD Delay Type	5	0	OLB Red	5	0.0
RR Delay Type	6	0	OLC Red	6	0.0
Ped Inhibit	7	0	OLD Red	7	0.0
OLA Green	8	0.0			12345678
OLA Yellow	9	0.0	Overlap E	8	
OLB Green	A	0.0	Overlap F	9	
OLB Yellow	B	0.0	Red Rest	A	
OLC Green	C	0.0	Max Recall	B	
OLC Yellow	D	0.0	Flash Green	C	
OLD Green	E	0.0	Flash Walk	D	
OLD Yellow	F	0.0	Advance Walk	E	
			Restrictive Phase	F	

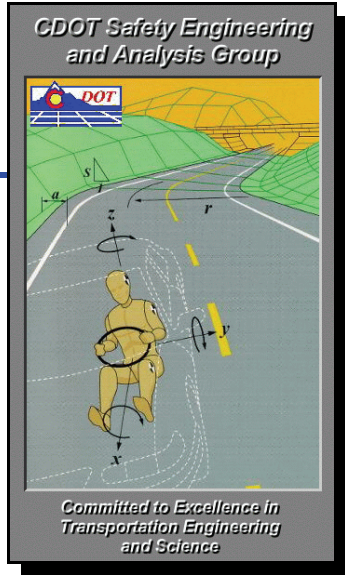
61 - Bridge @ 50th Ave
 Table 3 - Preempts
 3/28/2012
 4:40 PM

C + Key			E + Key					
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Year	0		EVA Delay	0		EVE Delay		0
Month	1		EVA Minimum	1		EVE Minimum		0
Day of Month	2		EVB Delay	2		EVF Delay		0
		1234567	EVB Minimum	3		EVF Minimum		0
Day of Week	3		EVC Delay	4		EVG Delay		0
		VALUE	EVC Minimum	5		EVG Minimum		0
Hour	4		EVD Delay	6		EVH Delay		0
Minute	5		EVD Minimum	7		EVH Minimum		0
Second	6		OL Red Revert	8	5.0			
Reserved	7		RR Delay	9	0			
Triggers On In Flash	8		RR Clear	A	0			
		123456789ABCDEFG			123456789ABCDEFG			123456789ABCDEFG
Startup Yellow	9		RR Clear Phases	B		EVE Phases		
EVA Phases	A	2 5 2 6	RR Permit	C		EVF Phases		
EVB Phases	B	8	RR OL Permit	D		EVG Phases		
EVC Phases	C	4 6 4 8	NEMA Hold Phases	E		EVH Phases		
EVD Phases	D	4	Reserved	F		Reserved		
Handicap Ped	E							
Reserved	F							

61 - Bridge @ 50th Ave
 Table 6 - Coordination Functions
 3/28/2012 4:40 PM

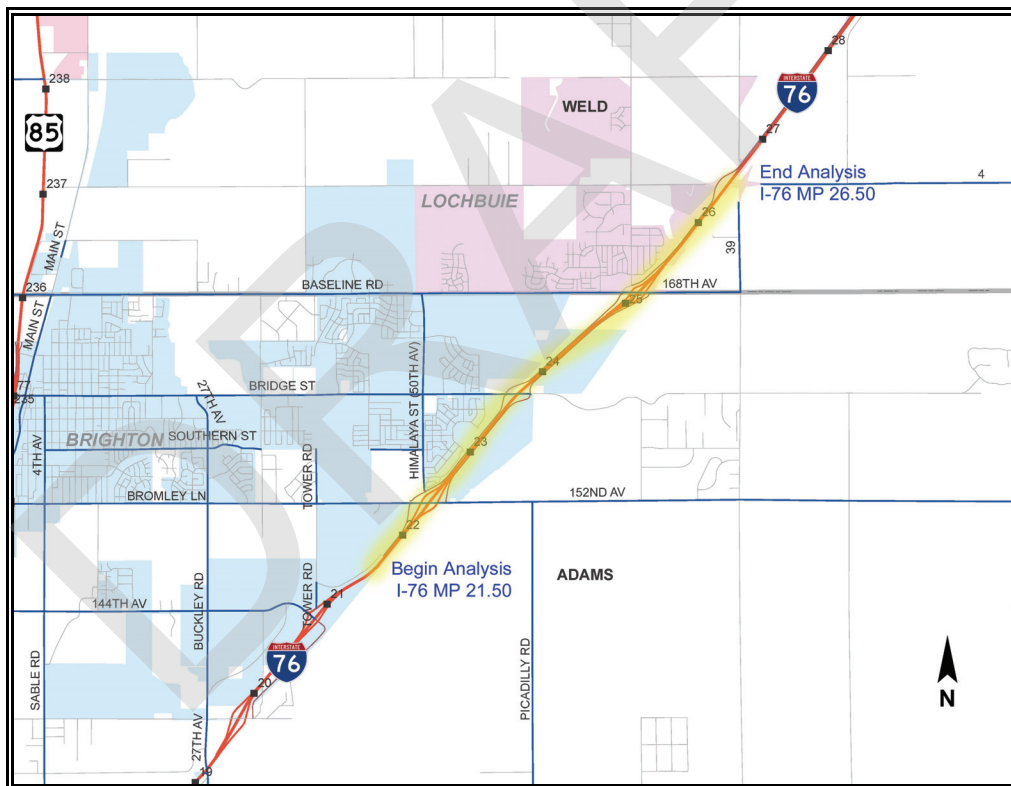
B + 0 + Key			D + Key		
FUNCTION	KEY	VALUE	FUNCTION	KEY	VALUE
Present Plan	0		0 Floating Ped	2E	0
TOD/DOW Plan	1		0 ID Number	2F	61
Hardwire Plan	2		0 No Coord Ped Recall	3E	0
Modem Plan	3		0 Rest In Walk	3F	0
Mode (0-4)	4		0 Adv Warning EOG	4E	0
Master (0 = Off)	5		0 Adv Warning SOG	4F	0
Master Clock	6		0 RR Red Clear	5E	0
Local Clock	7		0 RR Clear Color	5F	0
Dwell Clock	8		0 Bus Delay	6D	0.0
Reserved	9		0 Bus Free T1	6E	0
Reserved	A		0 Bus Free T3	6F	0
Reserved	B		0 EV Min After Clear	7E	0
		123456789ABCDEFG	EV Indicators	7F	0
Reserved	C		NEMA Inputs	66	0
NEMA CNA Phase	D		Reserved		0
Adv Warning Phase	E		Reserved		0
MRI Phase	F				

SAFETY ASSESSMENT REPORT



I-76: MP 21.50 to MP 26.50
Environmental Assessment (EA)

Bridge St Interchange
August 2013



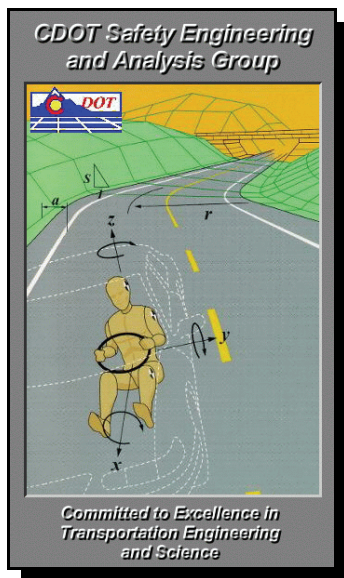
Prepared by: **The Colorado Department of Transportation**
Safety and Traffic Engineering Branch
Safety Engineering and Analysis Group
4201 E. Arkansas Ave.
Denver, CO 80222

*Reproduction of any Portion of this Document is Prohibited Without Expressed
Written Authority from the CDOT Safety Engineering and Analysis Group*

This report is prepared solely for the purpose of identifying, evaluating and planning safety improvements on public roads. It is subject to the provisions of 23 U.S.C.A. 409, and therefore is not subject to discovery and is excluded from evidence. Applicable provisions of 23 U.S.C.A. 409 are cited below:

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 152 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists or data.

Any intentional or inadvertent release of this report, or any data derived from its use shall not constitute a waiver of privilege pursuant to 23 U.S.C.A. 409.



A Statement of Philosophy

The efficient and responsible investment of resources in addressing safety problems is a difficult task. Since crashes occur on all highways in use, it is inappropriate to say of any highway that it is safe. However, it is correct to say that highways can be built to be safer or less safe. Road safety is a matter of degree. When making decisions effecting road safety it is critical to understand that expenditure of limited available funds on improvements in places where it prevents few injuries and saves few lives can mean that injuries will occur and lives will be lost by not spending them in places where more accidents could have been prevented¹. It is CDOT's objective to maximize accident reduction within the limitations of available budgets by making road safety improvements at locations where it does the most good or prevents the most accidents.

Introduction

The Transportation Equity Act for the 21st Century (TEA-21) of 1998 requires explicit consideration of safety in the transportation planning process. While this government mandate is well intentioned, little is known about how to accomplish it. In order to meet this requirement, we have employed a recently developed concept of the Level of Service of Safety² (LOSS). The LOSS concept makes it possible to accomplish the following:

- Qualitatively describe the degree of safety or un-safety of a roadway segment.
- Effectively communicate the magnitude of the safety problem to other professionals or elected officials.
- Bring perception of roadway safety in line with reality of safety performance reflecting a specific facility.
- Provide a frame of reference from a safety perspective for planning major corridor improvements.

The scope of the safety chapter of the Environmental Assessment (EA) is as follows:

- Assess the magnitude and nature of the safety problem within the project limits.
- Relate accident causality to roadway geometrics, roadside features, traffic control devices, traffic operations, driver behavior and vehicle type.
- Suggest counter measures to address identified problems.
- Provide guidance on how to identify the preferred alternative from a safety standpoint.

The safety chapter of the EA will prepare a framework for the evaluation of alternatives from a safety standpoint.

¹ Hauer, E. (1999) *Safety Review of Highway 407: Confronting Two Myths*. TRB

² Kononov, J. & Allery, B. (2003) *Level of Service of Safety-Conceptual Blueprint and Analytical Framework*. Presented at the TRB Annual Meeting, Washington D.C. (January 2003)

Site Location and Conditions

This study addresses I-76 in both Adams and Weld counties including the city of Brighton and the town of Lochbuie. The I-76 study segment starts at milepoint (MP) 21.50 and ends at MP 26.50. The included distance is approximately 5 miles. This segment includes an interchange with Bromley Lane at MP 22.41 and with Baseline Rd / 168th Ave at MP 25.15. Bridge St / 160th Ave crosses I-76 at MP 23.71.

I-76 is classified as an “Urban Interstate” in a flat and rolling environment from the beginning of the study segment to the Baseline Rd interchange. The section of I-76 northeast of the Baseline interchange is considered “Rural Interstate”. The interstate is a four lane divided facility with a depressed median. There are frontage roads along both sides of I-76. The average annual daily traffic (AADT) for 2011 starts at 31,000 ADT at MP 21.50 and steadily decreases to 17,000 ADT by MP 26.50 (see CORIS Listing in **Appendix**). Truck traffic ranges from 15 to 17 percent of total traffic throughout the study segment. The posted speed limit along mainline I-76 is 75 miles per hour (mph).

Accident History and Problem Analysis

The accident history for the period of January 1, 2008 through December 31, 2012 (a total of five years) was examined to locate accident clusters and identify accident causes. In the study period, 198 crashes were reported along I-76 between MP 21.50 and MP 26.50. This total includes all the crashes that occurred within the interchange area as well as the frontage roads. There were 24 collisions that caused injuries and two that resulted in fatalities. **Table 1A** summarizes the accident totals for I-76 over the five year period while **Table 1B** breaks down the I-76 accident totals by section. Totals attributed to the interchanges include all crashes occurring on the ramps and the cross street but do not include crashes occurring along mainline I-76.

Table 1A: Accident Totals for I-76 (MP 21.50 to MP 26.50)

Year	Number of Accidents			
	Property Damage Only	Evident Injury	Fatal	Total
2008	38	5	0	43
2009	38	4	0	42
2010	39	4	2	45
2011	31	3	0	34
2012	26	8	0	34
Total	172	24	2	198
Average/Year	34.4	4.8	0.4	39.6

Table 1B: I-76 Accident Totals by Section (MP 21.50 to MP 26.50)

Section	Number of Accidents			
	Property Damage Only	Evident Injury	Fatal	Total
I-76 Mainline Only	67	14	2	83
Bromley Lane Interchange	49	4	0	53
Baseline Rd / 168th Ave Interchange	3	1	0	4
I-76 North Frontage Rd	50	4	0	54
I-76 South Frontage Rd	3	1	0	4
Total	172	24	2	198

Fatal Crash History

There were two fatal crashes within the study segment over the five year study period. The first crash occurred at 8:40 AM on January 11, 2010 at MP 25.53 along westbound I-76 where a large truck (tractor and semi-trailer) rear ended a sedan which locked the two vehicles, forcing them both off the road to the right into a fence. Although not killed initially, the driver of the second people did die nine days later as a result of this crash. There were no apparent roadway conditions or driver impairments factoring in this crash.

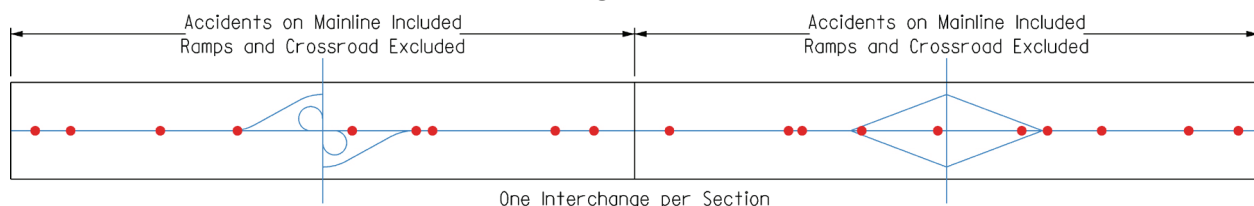
The second and most recent fatal crash occurred at 5:08 PM on December 14, 2010 at MP 22.80 along I-76 where an eastbound pickup truck lost control and crossed over the median into the opposing lanes and colliding head on with a westbound truck with trailer. After the collision the pickup truck overturned in the median. The driver of the pickup was airlifted to a hospital but was pronounced dead soon thereafter. There were no apparent roadway conditions or driver impairments factoring in this crash.

I-76 Highway Segment Analysis

We have refined the assessment of the magnitude of safety problems on highway segments through the use of Safety Performance Functions (SPF). The SPF reflects the complex relationship between traffic exposure measured in ADT, and accident count for a unit of road section measured in accidents per mile per year. The SPF models provide an estimate of the normal or expected accident frequency for a range of ADT among similar facilities.

All of the dataset preparation was performed using the Colorado Department of Transportation (CDOT) accident databases. Accident history for each facility was prepared using the most recent 10 years of available accident data. Average Daily Traffic (ADT) for each roadway segment for each of the 10 years was entered into the same dataset. **Figure 1A** illustrates how the dataset was prepared for urban and rural freeway facilities.

Figure 1A



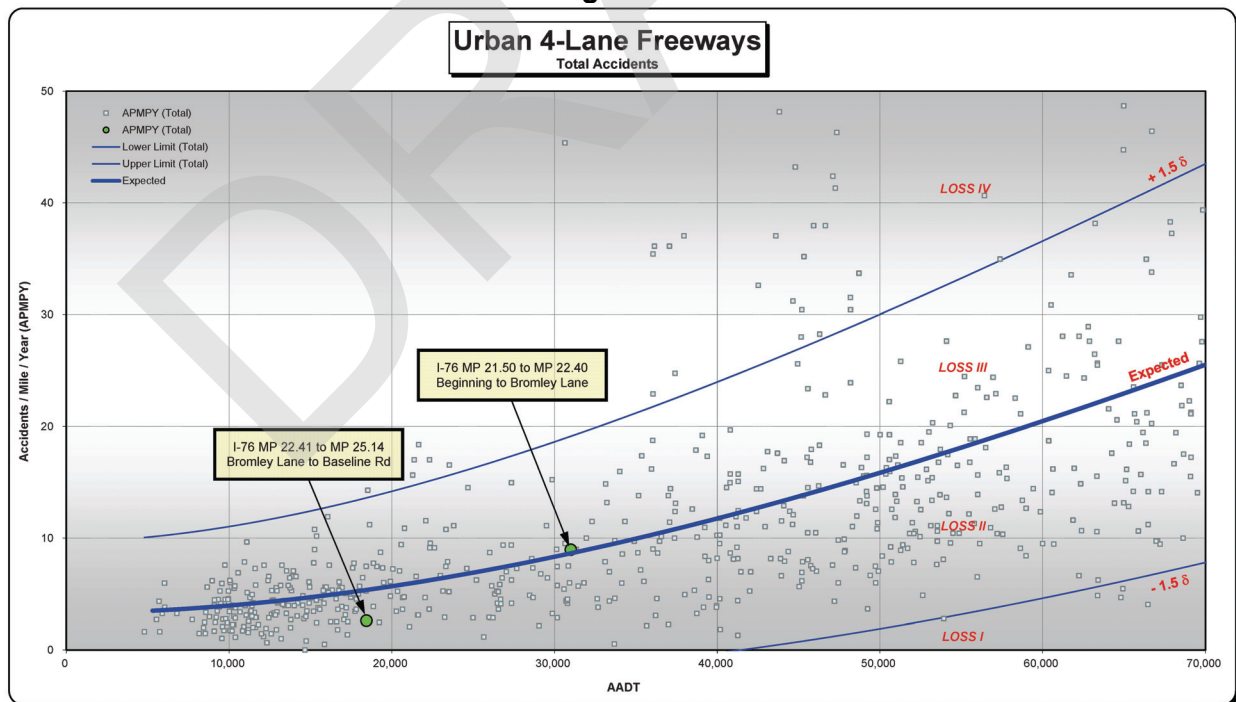
Development of the SPF lends itself well to the conceptual formulation of the Level of Service of Safety (LOSS). The concept of level of service uses qualitative measures that characterize safety of a roadway segment in reference to its expected performance and severity. If the level of safety predicted by the SPF will represent a normal or expected number of accidents at a specific level of ADT, then the degree of deviation from the norm can be stratified to represent specific levels of safety.

- LOSS I - Indicates a Low Potential for Accident Reduction
- LOSS II - Indicates a Better than Expected Safety Performance
- LOSS III - Indicates a Less than Expected Safety Performance
- LOSS IV - Indicates a High Potential for Accident Reduction

Gradual change in the degree of deviation of the LOSS boundary line from the fitted model mean reflects the observed increase of variability in accidents/mile as ADT increases. LOSS reflects how the roadway segment is performing in regard to its expected accident frequency at a specific level of ADT. It only provides an accident frequency comparison with the expected norm. It does not, however, provide any information related to the nature of the safety problem itself. If a safety problem is present, LOSS will only describe its magnitude from a frequency standpoint. The nature of the problem is determined through diagnostic analysis using direct diagnostics and pattern recognition techniques.

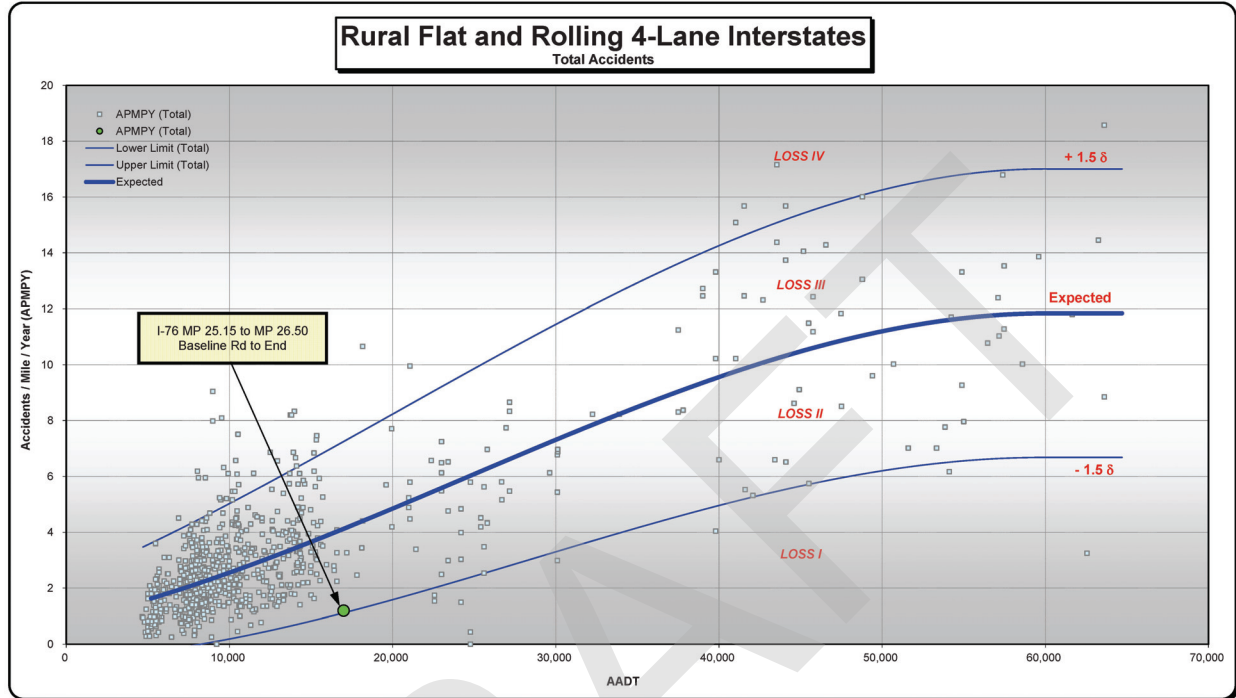
Accident history within the study period for I-76 covering the study segment has been plotted for evaluation. Accidents occurring on the cross streets and ramps at the interchanges have been omitted from this SPF analysis and will be addressed later in the interchange analysis section of this report. **Figure 1B** addresses the total number of accidents for the urban sections of I-76 while **Figure 1C** looks at the section that is considered rural.

Figure 1B



The SPF analysis for total accidents shown in **Figure 1B** shows that the I-76 segment between MP 21.50 and Bromley Lane had an accident frequency that was near expected safety performance (LOSS II / LOSS III) when compared to other 4-lane urban freeways within Colorado. The I-76 segment between Bromley Lane and Baseline Rd had an accident frequency that was better than expected (LOSS II).

Figure 1C



The SPF analysis for total accidents shown in **Figure 1C** shows that the I-76 segment between Baseline Rd and MP 26.50 had a better than expected safety performance and a low potential for accident reduction (LOSS I / LOSS II) when compared to other 4-lane rural interstates within Colorado.

Pattern Recognition Analysis

The roadways within the project limits were tested for the presence of patterns related to accident type, severity, direction of travel, road conditions, spatial distribution of accidents, time of day and behavioral attributes. Pattern recognition analysis for mainline I-76 was performed using normative percentages for diagnostics of safety problems for a 4-lane rural freeway. These diagnostic norms are developed using the same data points as those graphed in the SPF analysis. This section covers notable accident types and conditions over the study period for mainline I-76 from MP 21.50 to MP 26.50.

Figure 2A shows the accident distribution by accident type for mainline I-76. Collisions with fixed object was the most common accident type (33 percent). Other common accident types along this corridor include overturning vehicles (21 percent) and same direction sideswipes (18 percent).

Figure 2A

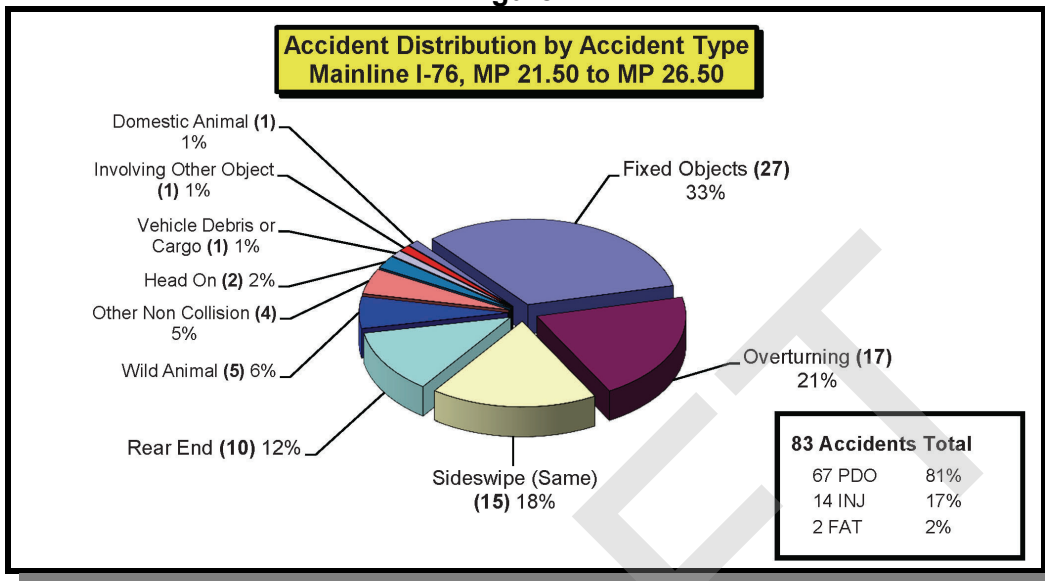
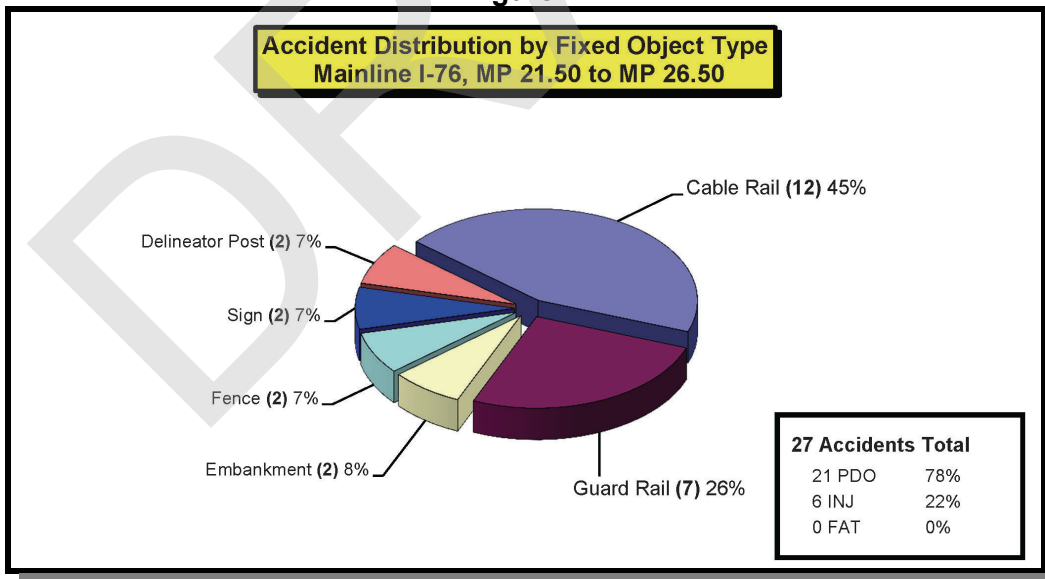


Figure 2B shows the breakdown of the fixed object accidents. Cable rail collisions accounted for the highest amount of fixed object accidents (45 percent). Another common fixed object collision type was guardrail (26 percent).

Figure 2B



There were 19 collisions with either cable rail or guard rail with four of these causing injuries (21 percent). All but two collisions were off the left side of the traveled way (89 percent) and seven collisions had taken place during nighttime hours (32 percent). The most notable contributing factor was icy or snowy road conditions which were present in eight of the crashes (42 percent). There were also three instances where the crash was caused by a driver asleep at the wheel (16 percent). Although there were a few injuries caused by these crashes, there was only one person who was considered seriously injured (incapacitated).

It is likely that the presence of cable rail and guard rail along this corridor are preventing vehicles from crossing the median which would result in a more serious crash like a head-on or sideswipe opposite direction. Additional cable rail was installed between Bromley Ln and Baseline Rd in early 2013 for a safety improvement project. This area covers where the fatal head-on crossover collision occurred in 2010. The entire stretch of I-76 within the study segment now has median cable rail. Similarly, rumble strips were installed between Bromley Ln and Baseline Rd in early 2013. Shoulder strips (inside/outside) are now present along I-76 north of Bromley Ln. This should help reduce crashes caused by drivers asleep at the wheel as well as any potential drivers that are fatigued or driving under the influence of alcohol or drugs.

Overtaking vehicles accounted for 17 crashes with five of these causing injuries (29 percent). There were not any notable patterns attached to this crash type other than seven of these occurring during nighttime hours (41 percent). The additional cable rail and rumble strips from the recent safety improvement project may serve to prevent or mitigate these crashes as well.

Although there were 15 sideswipe same direction collisions over the five year study period, no definitive patterns were detected among these crashes. Only one of these crashes resulted in an injury (7 percent). There are no suggestions for improvement at this time for this crash type.

I-76 and Bromley Lane Interchange Analysis

As seen in **Figure 3A**, the I-76 and Bromley Lane interchange is a standard diamond interchange. There were 53 accidents along the ramps and cross streets within this interchange area over the five year study period. **Table 2** breaks it down by section. The largest concentrations of crashes at the interchange occurred at each ramp termini, there were no accident patterns identified along the ramps or at the Bromley lane overpass.

Figure 3A
I-76 and Bromley Lane Interchange

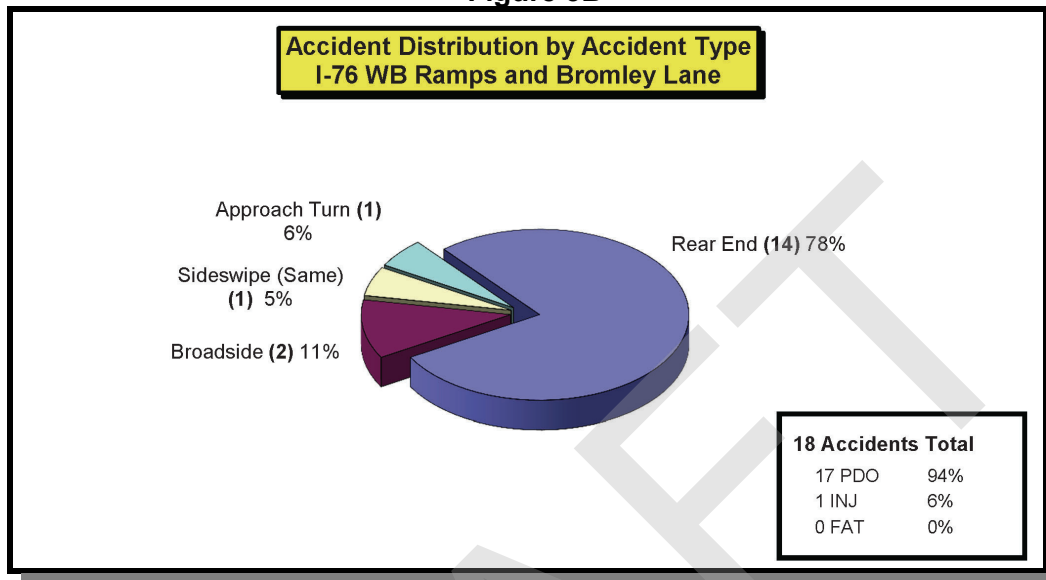


Table 2: I-76 and Bromley Lane Interchange Accident Totals by Section

Section	Number of Accidents			
	Property Damage Only	Evident Injury	Fatal	Total
I-76 WB Ramps / Bromley Lane	17	1	0	18
I-76 EB Ramps / Bromley Lane	20	2	0	22
I-76 EB Off Ramp	1	1	0	2
I-76 EB On Ramp	1	0	0	1
I-76 WB Off Ramp	2	0	0	2
I-76 WB On Ramp	4	0	0	4
Bromley Lane Crossing	4	0	0	4
Total	49	4	0	53

The I-76 westbound ramp termini with Bromley Lane is four leg intersection which is stop controlled for the off ramp traffic only. There were 18 crashes over the five year study period which is higher than expected for this type of ramp intersection (unsignalized 2-lane mainline, LOSS IV). **Figure 3B** shows the accident distribution by accident type for the I-76 westbound ramp termini with Bromley Lane. The majority of crashes were rear end collisions (78 percent).

Figure 3B



The most common type of rear end collisions were from I-76 westbound off ramp vehicles attempting to make a right turn onto Bromley Lane (six occurrences). The intersection area is very wide to allow for large truck turning movements and also surrounded by guardrail on all sides which may pose a slight sight distance hindrance (**Figures 3C** and **3D**). The ramp intersection is also slightly skewed in a way that makes it more difficult to right turning drivers from the off ramp to see westbound oncoming traffic on Bromley Lane and the vehicle in front of them at the same time.

Figure 3C

I-76 WB Off Ramp at Bromley Lane (Aerial View)

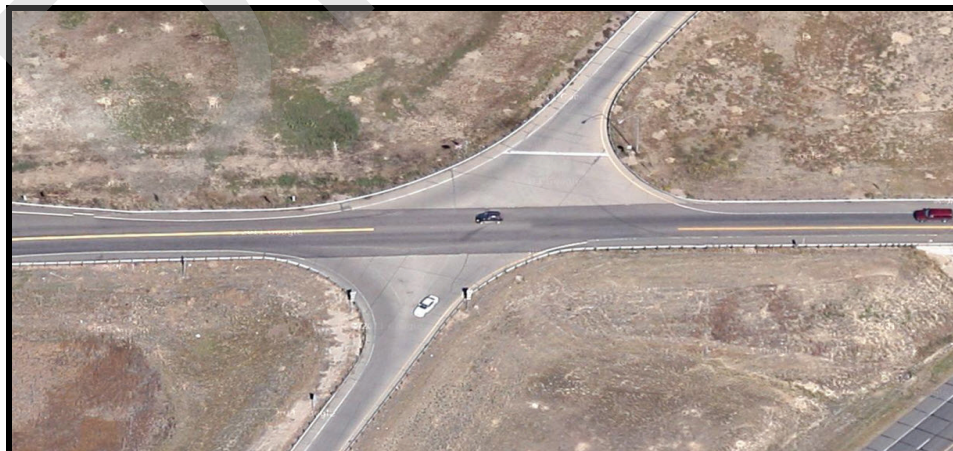
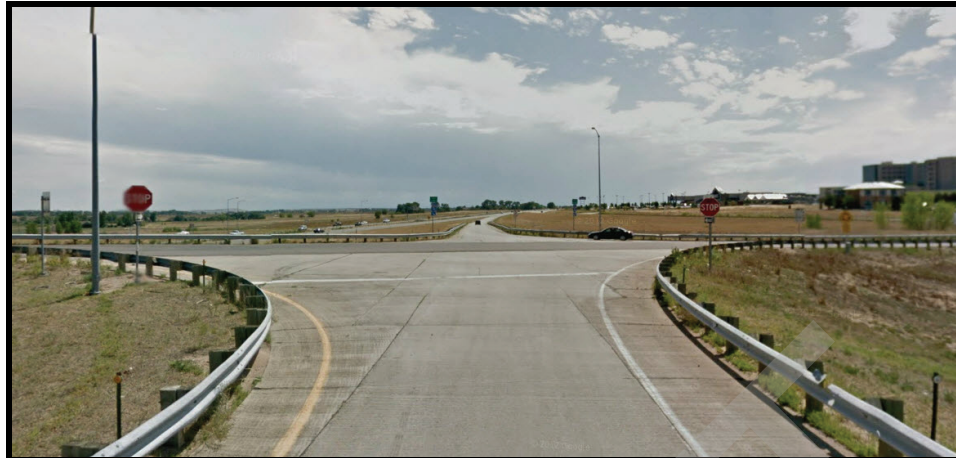


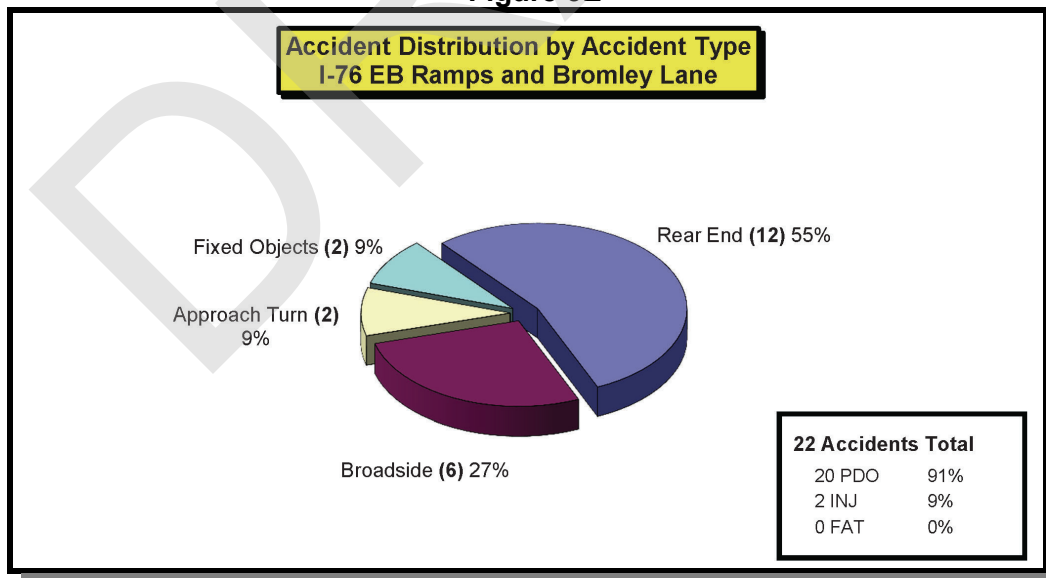
Figure 3D
I-76 WB Off Ramp at Bromley Lane (Street View)



Altering the geometric configuration of the ramp termini into a right angle or construction of a roundabout may help reduce these types of crashes. However, intersection reconfiguration may be outside the scope of a new interchange project at Bridge St and could be considered as part of a separate safety improvement project.

The I-76 eastbound ramp termini with Bromley Lane is four leg intersection which is all way stop controlled. There were 22 crashes over the five year study period which is higher than expected for this type of ramp intersection (unsignalized 2-lane mainline, LOSS IV). **Figure 3E** shows the accident distribution by accident type for the I-76 eastbound ramp termini with Bromley Lane. The majority of crashes were rear end collisions (55 percent). Another common crash at this location were broadside collisions (27 percent).

Figure 3E



Most of the rear end crashes were caused by vehicles traveling along the eastbound off-ramp (8 of 12 crashes). Many of vehicles were attempting to turn left onto westbound Bromley. There a channelized left turn lane for the eastbound off ramp traffic at this intersection (**Figures 3F and 3G**) which may be confusing to some drivers. There were two instances where vehicles backed into the vehicles behind them as a result of not initially recognizing the dedicated channelized left turn lane as they entered the intersection. Placing additional delineation or signing on the median island separating the I-76 eastbound off ramp movements may help guide drivers as they approach the intersection.

Figure 3F

I-76 EB Off Ramp at Bromley Lane (Aerial View)



Figure 3G

I-76 EB Off Ramp at Bromley Lane (Street View)



Broadside crashes were split equally between I-76 eastbound off ramp and eastbound Bromley Lane traffic failing to yield right of way at a stop sign. Similar to the westbound ramp termini, the ramp intersection is slightly skewed. With the channelized left turn from the ramp, the stop sign placement to be further back for the eastbound I-76 off ramp and eastbound Bromley approaches.

Altering the geometric configuration of the ramp termini into a right angle or construction of a roundabout may help reduce these types of crashes. However, intersection reconfiguration may be outside the scope of a new interchange project at Bridge St and could be considered as part of a separate safety improvement project.

I-76 and Baseline Rd / 168th Ave Interchange Analysis

As seen in **Figure 4**, the I-76 and Bromley Lane interchange is a standard diamond interchange. There were four accidents along the ramps and cross streets within this interchange area over the five year study period. **Table 3** breaks it down by section. No crash patterns were detected. There are no suggestions for improvement at this time.

Figure 4
I-76 and Baseline Rd Interchange



Table 3: I-76 and Baseline Rd / 168th Ave Interchange Accident Totals by Section

Section	Number of Accidents			Total
	Property Damage Only	Evident Injury	Fatal	
I-76 WB Ramps / Baseline Rd	1	1	0	2
I-76 WB Off Ramp	1	0	0	1
I-76 WB On Ramp	1	0	0	1
Total	3	1	0	4

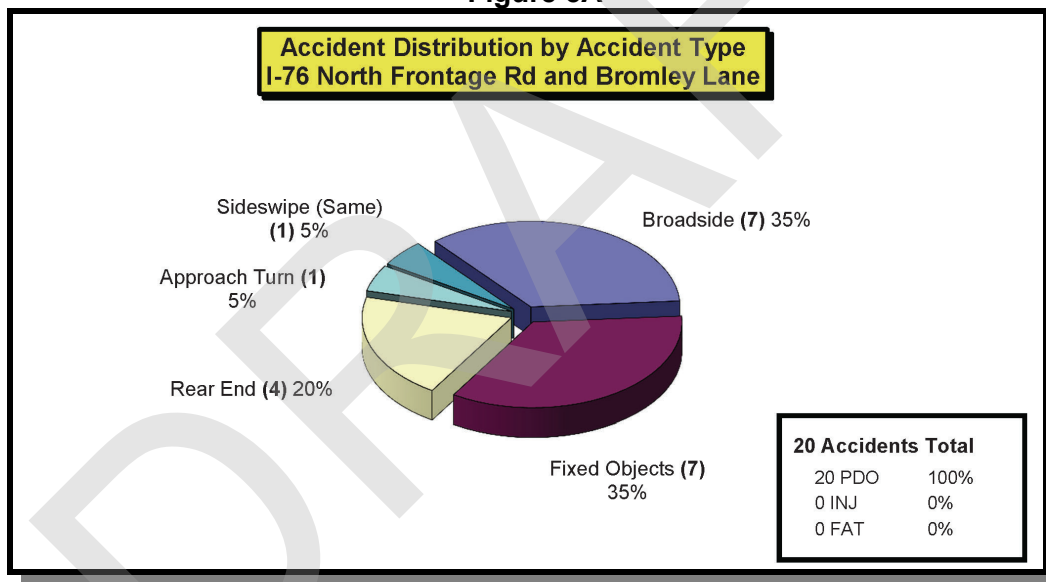
I-76 North Frontage Rd Analysis

Table 4: I-76 North Frontage Rd Accident Totals by Section

Intersection	Number of Accidents			
	Property Damage Only	Evident Injury	Fatal	Total
Bromley Lane	20	0	0	20
50th Ave	9	1	0	10
Longspur Dr	0	1	0	1
Bridge St	1	0	0	1
Baseline Rd	11	0	0	11
Non-Intersection Related	9	2	0	11
Total	50	4	0	54

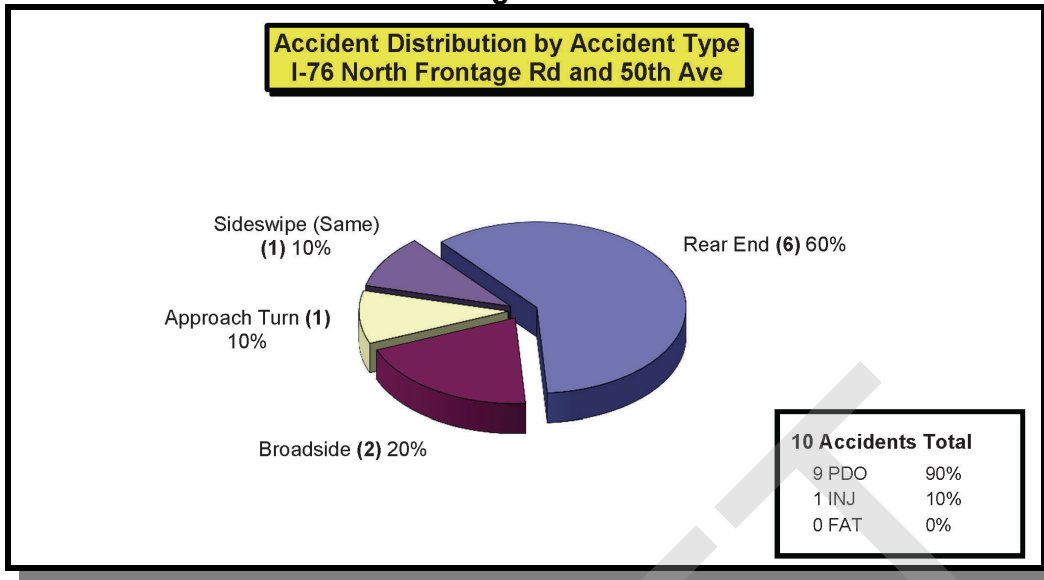
- Accident frequency at Bromley Lane higher than expected (LOSS III).
- Accident frequency at 50th Ave higher than expected (LOSS IV).
- Accident frequency at Baseline Rd higher than expected (LOSS III / LOSS IV).

Figure 5A



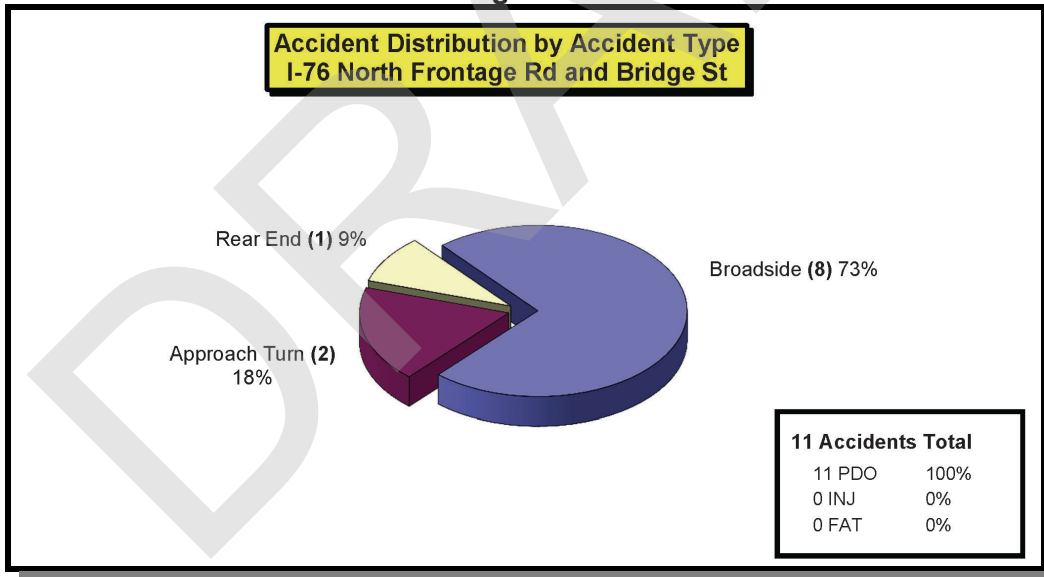
- Roundabout completed by late 2009 (8 crashes before, 12 crashes after).
- 6 of 7 Fixed Object collisions were with signs.
- Most broadsides occurred before roundabout, all fixed object collisions happened after roundabout was built.
- May need more years of crash data to assess effectiveness of roundabout.

Figure 5B



- All rear ends and broadsides initiated by vehicles from southbound 50th Ave approach.
- Southbound acceleration lane on frontage rd may help reduce rear end crashes.

Figure 5C



- Broadside pattern, mostly from southbound frontage rd approach (6 of 8) failing to yield right of way at stop sign.
- Intersection slightly skewed.

Altering the geometric configuration of the ramp termini into a right angle or construction of a roundabout may help reduce these types of crashes. However, intersection reconfiguration may be outside the scope of a new interchange project at Bridge St and could be considered as part of a separate safety improvement project.

I-76 South Frontage Rd Analysis

There were four accidents along the I-76 south frontage rd over the five year study period. No patterns were detected. There are no suggestions for improvement at this time.

Table 5: I-76 South Frontage Rd Accident Totals by Section

Intersection	Number of Accidents			Total
	Property Damage Only	Evident Injury	Fatal	
152nd Ave (Bromley Lane)	1	0	0	1
Bridge St	1	0	0	1
Non-Intersection Related	1	1	0	2
Total	3	1	0	4

Conclusions and Recommendations

These conclusions and recommendations are based on the analysis of five years of accident history, review of video log, and a field visit. The Region is advised to verify through field survey, the observations made in this report regarding physical features, roadside characteristics and traffic control devices.

There were 198 accidents reported along I-76 from MP 21.50 to 26.50 from January 1, 2008 to December 31, 2012, including the interchanges and frontage roads. There were 24 collisions that caused injuries and two that caused fatalities.

I-76 Mainline

The I-76 segment between MP 21.50 and Bromley Lane (MP 22.41) had an accident frequency that was near expected safety performance (LOSS II / LOSS III) when compared to other 4-lane urban freeways within Colorado. The segment between Bromley Lane and Baseline Rd (MP 25.15) had an accident frequency that was better than expected (LOSS II).

The segment between Baseline Rd and MP 26.50 had a better than expected safety performance and a low potential for accident reduction (LOSS I / LOSS II) when compared to other 4-lane rural interstates within Colorado.

Fixed object crashes (mostly cable rail and guard rail) and overturning vehicles were the most common accident type along mainline I-76 over the five year study period. Cable rail and guard rail along this corridor can prevent vehicles from crossing the median which would result in a more serious crash like a head-on or sideswipe opposite direction. Additional cable rail was installed between Bromley Ln and Baseline Rd in early 2013 for a safety improvement project. This area covers where a fatal head-on crossover collision occurred in 2010. The entire stretch of I-76 within the study segment now has median cable rail. Similarly, rumble strips were installed between Bromley Ln and Baseline Rd in early 2013. Shoulder strips (inside/outside) are now present along I-76 north of Bromley Ln. This should help reduce crashes caused by drivers asleep at the wheel as well as any potential drivers that are fatigued or driving under the influence of alcohol or drugs. The additional cable rail and rumble strips from the recent safety improvement project may serve to prevent or mitigate overturning vehicle crashes as well.

I-76 and Bromley Lane Interchange

The I-76 westbound ramp termini with Bromley Lane had 18 crashes over the five year study period which is higher than expected for this type of ramp intersection (LOSS IV). The I-76 eastbound ramp termini with Bromley Lane had 22 crashes over the five year study period which is also higher than expected (LOSS IV).

For both these locations, altering the geometric configuration of the ramp termini into a right angle or construction of a roundabout may help reduce these types of crashes. However, intersection reconfiguration may be outside the scope of a new interchange project at Bridge St and could be considered as part of a separate safety improvement project.

I-76 and Baseline Rd Interchange

No crash patterns were detected. There are no suggestions for improvement at this time.

I-76 North Frontage Rd

Accident frequency at Bromley Lane higher than expected (LOSS III).

- Roundabout completed by late 2009 (8 crashes before, 12 crashes after).
- 6 of 7 Fixed Object collisions were with signs.
- Most broadsides occurred before roundabout, all fixed object collisions happened after roundabout was built.
- May need more years of crash data to assess effectiveness of roundabout.

Accident frequency at 50th Ave higher than expected (LOSS IV).

- All rear ends and broadsides initiated by vehicles from southbound 50th Ave approach.
- Southbound acceleration lane on frontage rd may help reduce rear end crashes.

Accident frequency at Baseline Rd higher than expected (LOSS III / LOSS IV).

- Broadside pattern, mostly from southbound frontage rd approach (6 of 8) failing to yield right of way at stop sign.
- Intersection slightly skewed.
- Altering the geometric configuration of the ramp termini into a right angle or construction of a roundabout may help reduce these types of crashes. However, intersection reconfiguration may be outside the scope of a new interchange project at Bridge St and could be considered as part of a separate safety improvement project.

I-76 South Frontage Rd

No crash patterns were detected. There are no suggestions for improvement at this time.

Recommendations for the entire study section

- Good skid resistance and drainage of the roadway surface.
- Adjustment, repair, and upgrade of existing guardrail to meet current standards.
- Elimination of pavement edge drop-offs (Safety Edge Application).
- Superelevation and crown correction where required.
- Appropriate pavement markings, signing, and delineation.
- Appropriate advance warning signing of curves.
- Replace all button reflectors and guardrail reflectors to insure good nighttime and inclement weather (fog, snow, rain, etc.) delineation.



**Colorado Department of Transportation
Safety and Traffic Engineering
Detailed Accident Summary Report**

Job #: 20130605164243

Highway: 76A **Begin:** 21.50 **End:** 26.50 **From:**01/01/2008 **To:**12/31/2012

Severity	Multi-Vehicle	Location
PDO: 172	One Vehicle: 70	On Road: 127 Off in Median: 2
INJ: 24 29 :Injured	Two Vehicles: 123	Off Road Left: 32 Private Property: 0
FAT: 2 2 :Killed	Three or More: 5	Off Road Right: 37 Unknown: 0
Total: 198	Unknown: 0	Off Road at Tee: 0 Total: 198
	Total: 198	

Accident Type			
Overturning: 21	Road Maintenance Equipment: 0	Fence: 2	
Other Non Collision: 5	Domestic Animal: 1	Tree: 0	
School Age Peds: 0	Wild Animal: 5	Large Rocks or Boulder: 0	
Ped on Toy Motorized Vehicle: 0	Light/Utility Pole: 0	Railroad Crossing Equipment: 0	
Other Pedestrians: 0	Traffic Signal Pole: 0	Barricade: 0	
Head On: 2	Sign: 9	Wall/Building: 0	
Rear End: 55	Guard Rail: 14	Crash Cushion/Traffic Barrel: 0	
Broadside: 27	Cable Rail: 12	Mailbox: 0	
Approach Turn: 8	Concrete Highway Barrier: 0	Other Fixed Object: 0	
Overtaking Turn: 1	Bridge Structure: 0	Involving Other Object: 1	
Sideswipe (Same): 20	Vehicle Debris/Cargo: 2	Unknown: 0	
Sideswipe (Opposite): 2	Culvert/Headwall: 0	Total: 198	
Parked Motor Vehicle: 1	Embankment: 6	Total Fixed Objects: 47	
Railway Vehicle: 0	Curb: 0	Total Other Objects: 3	
Bicycle: 0	Delineator Post: 4		

Lighting Conditions	
Daylight: 136	
Dawn or Dusk: 10	
Dark - Lighted: 32	
Dark - Unlighted: 20	
Unknown: 0	
Total: 198	

Weather Conditions		
None: 168	Dust: 0	
Rain: 6	Wind: 3	
Snow/Sleet/Hail: 19	Unknown: 0	
Fog: 2	Total: 198	

Road Description	
At Intersection: 73	
At Driveway Access: 0	
Intersection Related: 3	
Non Intersection: 100	
Alley Related: 0	
Roundabout: 11	
Ramp: 11	
Parking Lot: 0	
Unknown: 0	
Total: 198	

Road Conditions	
Dry: 161	
Wet: 9	
Muddy: 0	
Snowy: 3	
Icy: 16	
Slushy: 5	
Foreign Material: 0	
Dry w/Icy Road Treatment: 1	
Wet w/Icy Road Treatment: 0	
Snowy w/Icy Road Treatment: 0	
Icy w/Icy Road Treatment: 3	
Slushy w/Icy Road Treatment: 0	
Unknown: 0	
Total: 198	

Mainline/Ramps/Frontage Rds		
Mainline: 83		
Crossroad (Ramp A): 4		
Frontage Rd: 25		
Ramps		
B: 2	H: 0	
C: 2	I: 0	
D: 3	J: 0	
E: 4	K: 0	
F: 0	T: 0	
G: 0		
Intsrx Frontage/Ramps		
M: 31	N: 20	
O: 22	P: 2	
HOV Lanes: 0		
Uknwn: 0		
Total: 198		

Accident Rates	
PDO: 0.94	MVMT Total: 1.08
Injury: 0.13	MVMT
Fatal: 1.09	100 MVMT

ADT: 20,256 Length: 4.96 Coris File: tcoris2011.dbf



**Colorado Department of Transportation
Safety and Traffic Engineering
Detailed Accident Summary Report**

Job #: 20130605164243

Highway: 76A **Begin:** 21.50 **End:** 26.50 **From:**01/01/2008 **To:**12/31/2012

Vehicle Types	Veh 1	Veh 2	Veh 3	Direction	Veh 1	Veh 2	Veh 3
Vehicle/Vehicle Combo (> 10k Lbs):	14	5	0	North:	20	13	0
School Bus (All School Busses):	0	0	0	Northeast:	9	4	0
Non-School Bus (> 8) in Commerce:	0	0	0	East:	69	40	2
Transit Bus:	0	0	0	Southeast:	0	0	0
Passenger Car/Van:	94	68	2	South:	36	20	0
Passenger Car/Van w/Trailer:	1	0	0	Southwest:	9	6	0
Pickup Truck/Utility Van:	41	21	1	West:	55	45	3
Pickup Truck/Utility Van w/Trailer:	3	4	0	Northwest:	0	0	0
SUV:	34	25	2	Unknown:	0	0	0
SUV w/Trailer:	2	1	0	Total:	198	128	5
Motor Home:	0	0	0				
Motorcycle:	3	2	0				
Bicycle:	0	0	0				
Motorized Bicycle:	0	0	0				
Farm Equipment:	0	0	0				
Hit and Run - Unknown:	5	0	0				
Light Rail:	0	0	0				
Other:	1	2	0				
Unknown:	0	0	0				
Commercial Vehicle	Total:	198	128	5			

Contributing Factor	Veh 1	Veh 2	Veh 3	Vehicle Movement	Veh 1	Veh 2	Veh 3
No Apparent Contributing Factor:	65	122	5	Going Straight:	103	65	2
Asleep at the Wheel:	7	1	0	Slowing:	8	4	1
Driver Fatigue:	2	0	0	Stopped in Traffic:	2	44	0
Illness/Medical:	2	0	0	Making Right Turn:	10	1	0
Driver Inexperience:	17	1	0	Making Left Turn:	21	6	0
Agressive Driving:	6	0	0	Making U-Turn:	1	0	0
Driver Unfamiliar with Area:	10	0	0	Passing:	1	0	0
Driver Emotionally Upset:	2	0	0	Backing:	4	0	0
Evading Law Enforcement Officer:	0	0	0	Enter/Leave Parked Pos:	0	0	0
Physical Disability:	0	0	0	Parked:	0	1	1
DUI, DWAI, DUID:	12	1	0	Changing Lanes:	10	0	0
Distracted/Passenger:	3	0	0	Avoiding Object in Road:	5	3	1
Distracted/Cell Phone:	5	0	0	Weaving:	4	0	0
Distracted/Radio:	0	0	0	Spun Out of Control:	20	2	0
Distracted/Other:	11	0	0	Drove Wrong Way:	2	0	0
Other Factor:	56	3	0	Other:	7	2	0
Unknown:	0	0	0	Unknown:	0	0	0
Total:	198	128	5	Total:	198	128	5

Driver Condition (Alcohol)	Veh 1	Veh 2	Veh 3	Driver Condition (Drugs)	Veh 1	Veh 2	Veh 3
No Alcohol Suspected:	164	126	5	No Drugs Suspected:	168	127	5
Alcohol Suspected:	12	1	0	Drugs Suspected:	4	0	0
Unknown Alcohol:	22	1	0	Unknown Drugs:	26	1	0
Alcohol Sub-Total:	198	128	5	Drugs Sub-Total:	198	128	5

ADT: 20,256 **Length:** 4.96 **Coris File:** tcoris2011.dbf

Hwy	MP	Description	R/U code	Functional Class	% Trucks	Adt	Adt year	County	Terrain	Lanes	Signalized	Divided
076A	21.59	CHANGE ROADWAY WIDTH	Urban	Interstate	15.3	31000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	22.00	MILEPOST 22 - SPEED LIMIT (45) - RAMP ON (FROM BROMLEY LN EB RAMP E) EXIT 22	Urban	Interstate	15.3	31000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	22.15	EXIT 22 - SIGN BRIDGE STR (E-17-ZH) EB (TEXT - BROMLEY LN)	Urban	Interstate	15.3	31000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	22.16	RAMP OFF - (TO BROMLEY LN EB RAMP B) EXIT 22	Urban	Interstate	15.3	31000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	22.41	BROMLEY LANE INTERCHANGE STR (E-17-MI) - RD E AND W UNDERPASS SEPARATION	Urban	Interstate	15.3	20000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	22.62	RAMP OFF PAVEMENT GORE	Urban	Interstate	15.3	20000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	22.74	RAMP OFF - (TO BROMLEY LN WB RAMP D) EXIT 22	Urban	Interstate	15.3	20000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	22.80	RAMP ON - (FROM BROMLEY LN WB RAMP C) EXIT 22	Urban	Interstate	15.3	20000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	23.00	MILEPOST 23	Urban	Interstate	15.3	20000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	23.15	MAJOR STR (E-18-A) NB	Urban	Interstate	15.3	20000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	23.42	MAJOR STR (E-18-B) W BURLINGTON DITCH	Urban	Interstate	15.3	20000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	23.71	INTERCHANGE STR (E-18-AO) SH 007D (BRIDGE ST - 160TH AVE) -- OVERPASS SEPARATION	Urban	Interstate	15.3	17000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	24.00	MILEPOST 24	Urban	Interstate	15.3	17000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	24.58	LEAVE BRIGHTON	Urban	Interstate	15.3	17000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	24.87	RAMP ON - (EXIT 25 - FROM BASELINE RD RAMP E)	Urban	Interstate	15.3	17000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	24.93	RAMP OFF - (TO 168TH AVE EB RAMP B) EXIT 25	Urban	Interstate	15.3	17000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	25.00	MILEPOST 25	Urban	Interstate	15.3	17000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	25.14	ADAMS/WELD COUNTY LINE - ENTER DISTRICT (1) - ENTER MAINTSECT (1) - ENTER LOCHBUJE CITY LIMITS - ENTER REGION (4)	Urban	Interstate	15.3	17000	2011	ADAMS	Rolling	4	FALSE	TRUE
076A	25.15	LOCHBUJE INTERCHANGE STR (E-18-AM) - RD E (BASELINE RD) - RD W (168TH AVE)	Rural	Interstate	17.2	17000	2011	WELD	Rolling	4	FALSE	TRUE
076A	25.38	RAMP OFF - (TO BASELINE RD WB RAMP D) EXIT 25	Rural	Interstate	17.2	17000	2011	WELD	Rolling	4	FALSE	TRUE
076A	25.49	RAMP ON - (FROM 168TH AVE WB RAMP C) EXIT 25	Rural	Interstate	17.2	17000	2011	WELD	Rolling	4	FALSE	TRUE
076A	25.50	RAMP ON NB - MAJOR STR (D-18-K) SEEP CANAL	Rural	Interstate	17.2	17000	2011	WELD	Rolling	4	FALSE	TRUE
076A	26.00	MILEPOST 26 - SPEED LIMIT (75)	Rural	Interstate	17.2	17000	2011	WELD	Rolling	4	FALSE	TRUE
076A	26.46	MAJOR STR (D-18-BN) - RD E AND W (CO RD 4) UNDERPASS SEPARATION	Rural	Interstate	17.2	17000	2011	WELD	Rolling	4	FALSE	TRUE

#	Hwy	MP	Date	Time	Sever-ity	Location	Road Description	# of Veh	Road Contour	Road Condition	Lighting	Weather	Ramp	Accident Type	Dir	Vehicle Type	Alcohol	Drugs	Human Factor	Speed	Vehicle Movement
1	076A	21.50	10/19/2008	04:28	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	N	N	DISTRACTED/CELL PHONE	065	SPUN OUT OF CONTROL
2	076A	21.61	11/19/2012	01:19	PDO	ON	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	WILD ANIMAL	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	GOING STRAIGHT
3	076A	21.71	4/19/2010	14:27	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	CABLE RAIL	W	PICKUP TRUCK/UTILITY VAN/WTRAILER	N	N	NONE APPARENT	045	GOING STRAIGHT
4	076A	21.81	10/13/2010	14:31	PDO	ON	NON-INTERSECTION	2	CURVE ON-LEVEL	DRY	DAYLIGHT	NONE	N	REAR END	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	010	STOPPED IN TRAFFIC
5	076A	21.86	11/23/2011	07:21	PDO	ON	NON-INTERSECTION	3	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	INVOLVING OTHER OBJECT	W	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	CHANGING LANES
6	076A	21.91	2/22/2010	07:32	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	NONE	N	REAR END	N	PASSENGER CAR/VAN	N	N	NONE APPARENT	060	SPUN OUT OF CONTROL
7	076A	21.91	8/22/2010	11:45	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	SIDESWIPE (SAME DIRECTION)	W	VEH COMBO (10,000 LBS AND OVER)	N	N	NONE APPARENT	010	GOING STRAIGHT
8	076A	21.91	10/22/2011	23:06	PDO	ON	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	WILD ANIMAL	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	065	GOING STRAIGHT
9	076A	21.91	2/8/2010	07:27	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N	CABLE RAIL	W	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	065	SPUN OUT OF CONTROL
10	076A	21.91	2/3/2011	17:20	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N	CABLE RAIL	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	050	GOING STRAIGHT
11	076A	21.91	5/28/2011	11:13	INU	OFF LEFT	NON-INTERSECTION	1	CURVE ON-LEVEL	DRY	DAYLIGHT	NONE	N	CABLE RAIL	W	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	GOING STRAIGHT
12	076A	21.91	5/20/2009	17:02	PDO	ON	NON-INTERSECTION	2	CURVE ON-LEVEL	DRY	DAYLIGHT	NONE	N	Y (L)	SW	PASSENGER CAR/VAN	N	N	AGGRESSIVE DRIVING	060	SPUN OUT OF CONTROL
13	076A	21.92	10/26/2012	06:03	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-GRADE	ICY	DARK-UNLIGHTED	SNOW/SLEET/HAIL	N	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	N	N	AGGRESSIVE DRIVING	050	SPUN OUT OF CONTROL
14	076A	21.98	8/10/2011	14:46	PDO	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-GRADE	DRY	DAYLIGHT	NONE	N	OVERTURNING	W	PASSENGER CAR/VAN	N	N	AGGRESSIVE DRIVING	075	GOING STRAIGHT
15	076A	22.00	3/19/2011	06:24	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	Y	Y	DUI, DWAI, DUID	070	WEAVING
16	076A	22.00	5/10/2012	16:59	INU	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	N	N	DRIVER INEXPERIENCE	075	CHANGING LANES
17	076A	22.00	9/30/2011	06:03	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	N	N	ILLNESS/MEDICAL	075	GOING STRAIGHT
18	076A	22.01	5/24/2008	10:51	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	SIDESWIPE (SAME DIRECTION)	W	VEH COMBO (10,000 LBS AND OVER)	N	N	NONE APPARENT	065	CHANGING LANES
19	076A	22.01	5/25/2011	12:00	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	CABLE RAIL	W	PASSENGER CAR/VAN	N	N	OTHER FACTOR	060	SLOWING
20	076A	22.02	4/1/2011	00:07	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	REAR END	W	SUV	N	N	ASLEEP AT THE WHEEL	075	GOING STRAIGHT
21	076A	22.07	8/19/2011	11:25	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	FENCE	E	PASSENGER CAR/VAN	N	N	DISTRACTED/OTHER	075	GOING STRAIGHT
22	076A	22.11	12/18/2008	12:21	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	SNOWY	DAYLIGHT	NONE	N	OTHER NON-COLLISION	W	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	CHANGING LANES
23	076A	22.11	6/18/2009	01:32	PDO	ON	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	WILD ANIMAL	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	GOING STRAIGHT
24	076A	22.11	1/30/2009	19:15	PDO	OFF LEFT	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	CABLE RAIL	E	SUV	N	N	NONE APPARENT	080	OTHER
25	076A	22.11	3/12/2009	03:19	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	CABLE RAIL	E	SUV	N	N	ASLEEP AT THE WHEEL	075	GOING STRAIGHT
26	076A	22.11	10/4/2009	15:04	INU	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	SNOWY	DAYLIGHT	WIND	N	CABLE RAIL	E	PASSENGER CAR/VAN	N	N	DRIVER EMOTIONALLY UPSET	040	OTHER
27	076A	22.11	12/31/2010	13:11	PDO	OFF LEFT	NON-INTERSECTION	4	STRAIGHT ON-LEVEL	SLUSHY	DAYLIGHT	NONE	N	CABLE RAIL	W	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	065	SPUN OUT OF CONTROL
28	076A	22.16	3/12/2012	14:08	INU	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	OVERTURNING	W	SUV	N	N	DISTRACTED/OTHER	75	SPUN OUT OF CONTROL
29	076A	22.17	2/4/2008	16:14	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	ICY/W/IS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	N	DELINATOR POST	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	050	GOING STRAIGHT
30	076A	22.21	6/11/2011	21:37	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	CABLE RAIL	W	PASSENGER CAR/VAN	N	N	DRIVER FATIGUE	075	GOING STRAIGHT
31	076A	22.21	3/14/2010	14:39	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	DELINATOR POST	W	SUV	N	N	ASLEEP AT THE WHEEL	075	GOING STRAIGHT
32	076A	22.25	6/25/2010	03:44	PDO	ON	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN/WTRAILER	N	N	OTHER FACTOR	060	AVOIDING OBJECT IN ROAD
33	076A	22.25	12/12/2010	21:42	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-GRADE	DRY	DARK-LIGHTED	NONE	N	WILD ANIMAL	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	050	AVOIDING OBJECT IN ROAD
34	076A	22.29	5/22/2008	09:23	PDO	OFF RIGHT	RAMP	1	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (E)	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	030	SLOWING
35	076A	22.30	3/5/2008	07:35	PDO	OFF RIGHT	RAMP	2	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	NONE	Y (E)	EMBANKMENT	W	PASSENGER CAR/VAN	N	N	NONE APPARENT	040	SPUN OUT OF CONTROL
36	076A	22.31	9/11/2008	21:07	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	WET	DARK-LIGHTED	RAIN	N	SIDESWIPE (SAME DIRECTION)	E	VEH COMBO (10,000 LBS AND OVER)	N	N	NONE APPARENT	075	CHANGING LANES
37	076A	22.32	12/23/2009	16:30	PDO	OFF LEFT	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N	CABLE RAIL	W	VEH COMBO (10,000 LBS AND OVER)	N	N	OTHER FACTOR	050	AVOIDING OBJECT IN ROAD
38	076A	22.32	8/16/2012	02:24	PDO	OFF LEFT	NON-INTERSECTION	1	CURVE ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	CABLE RAIL	E	PASSENGER CAR/VAN	N	N	ASLEEP AT THE WHEEL	060	GOING STRAIGHT
39	076A	22.33	2/14/2008	07:22	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-GRADE	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N	REAR END	W	PASSENGER CAR/VAN	N	N	OTHER FACTOR	030	SLOWING
40	076A	22.33	4/10/2012	16:01	INU	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	REAR END	W	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	GOING STRAIGHT
41	076A	22.37	2/25/2009	14:44	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	PASSING
42	076A	22.37	3/22/2011	21:52	INU	OFF LEFT	RAMP	1	STRAIGHT ON-GRADE	DRY	DARK-UNLIGHTED	NONE	Y (B)	GUARD RAIL	E	PASSENGER CAR/VAN	Y	N	DUI, DWAI, DUID	065	GOING STRAIGHT
43	076A	22.39	3/6/2012	16:48	PDO	ON	NON-INTERSECTION	2	HILLCREST	DRY	DARK-UNLIGHTED	NONE	N	REAR END	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	035	GOING STRAIGHT
44	076A	22.39	1/31/2011	06:16	PDO	ON	RAMP	2	STRAIGHT ON-GRADE	ICY	DAYLIGHT	SNOW/SLEET/HAIL	N	REAR END	E	SUV	N	N	DRIVER UNFAMILIAR W/AREA	040	GOING STRAIGHT
45	076A	22.39	2/24/2011	07:21	PDO	ON	RAMP	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (E)	REAR END	SW	PASSENGER CAR/VAN	N	N	NONE APPARENT	005	GOING STRAIGHT
46	076A	22.39	4/19/2011	07:09	PDO	ON	RAMP	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (E)	SIDESWIPE (SAME DIRECTION)	SW	PICKUP TRUCK/UTILITY VAN	N	N	DRIVER UNFAMILIAR W/AREA	010	GOING STRAIGHT
47	076A	22.40	2/4/2008	15:41	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	ICY/W/IS ICY ROAD TREATMENT	DAYLIGHT	SNOW/SLEET/HAIL	N	GUARD RAIL	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	040	GOING STRAIGHT
48	076A	22.41	7/2/2008	05:33	INU	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAWN OR DUSK	NONE	N	GUARD RAIL	W	PICKUP TRUCK/UTILITY VAN	N	N	DISTRACTED/OTHER	070	WEAVING
49	076A	22.41	10/28/2009	05:39	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	SNOWY	DAYLIGHT	SNOW/SLEET/HAIL	N	GUARD RAIL	E	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	050	AVOIDING OBJECT IN ROAD
50	076A	22.41	7/2/2012	12:26	PDO	ON	NON-INTERSECTION	3	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	VEHICLE DEBRIS OR CARGO	W	OTHER - SEE REPORT	N	N	OTHER FACTOR	075	GOING STRAIGHT

#	Hwy	MP	Date	Time	Sever-ity	Location	Road Description	# of Veh	Road Contour	Road Condition	Lighting	Weather	Ramp	Accident Type	Dir	Vehicle Type	Alcohol	Drugs	Human Factor	Speed	Vehicle Movement
81	076A	22.41	4/18/2011	0721	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (A)	REAR END	W	SUV	N	N	DISTRACTED/PASSING PHONE	020	GOING STRAIGHT
82	076A	22.41	6/19/2009	1904	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (A)	SIDESWIPE (SAME DIRECTION)	E	SUV	N	N	DISTRACTED/PHONE	035	CHANGING LANES
83	076A	22.41	4/28/2010	2116	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DARK-UNLIGHTED	WIND	Y (A)	VEHICLE DEBRIS OR CARGO	E	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	035	GOING STRAIGHT
84	076A	22.41	3/25/2011	1038	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (A)	REAR END	W	VEH COMBO (10,000 LBS AND OVER)	N	N	NONE APPARENT	025	OTHER
85	076A	22.41	11/13/2008	0756	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	REAR END	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	005	GOING STRAIGHT
86	076A	22.41	11/12/2009	0814	PDO	ON	ROUNDABOUT	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	REAR END	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	030	GOING STRAIGHT
87	076A	22.41	11/20/2010	1304	PDO	ON	ROUNDABOUT	2	STRAIGHT ON-LEVEL	SLUSHY	DAYLIGHT	NONE	Y (M)	REAR END	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	010	GOING STRAIGHT
88	076A	22.41	12/23/2010	1335	PDO	ON	ROUNDABOUT	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	REAR END	E	VEH COMBO (10,000 LBS AND OVER)	N	N	OTHER FACTOR	005	GOING STRAIGHT
89	076A	22.41	1/10/2008	1544	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (M)	BROADSIDE	S	PASSENGER CAR/VAN	N	N	OTHER FACTOR	020	GOING STRAIGHT
90	076A	22.41	1/13/2008	1650	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	BROADSIDE	S	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	005	MAKING LEFT TURN
91	076A	22.41	12/19/2008	1028	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	WET	DAYLIGHT	NONE	Y (M)	BROADSIDE	N	PASSENGER CAR/VAN	N	N	DRIVER UNFAMILIAR WITH AREA	020	GOING STRAIGHT
92	076A	22.41	4/19/2009	0822	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	APPROACH TURN	E	SUV	N	N	NONE APPARENT	035	MAKING LEFT TURN
93	076A	22.41	5/17/2009	0631	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	BROADSIDE	S	HT & RUN - UNKNOWN	N	N	NONE APPARENT	025	GOING STRAIGHT
94	076A	22.41	8/7/2009	1454	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	BROADSIDE	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	020	MAKING LEFT TURN
95	076A	22.41	10/2/2009	1701	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	BROADSIDE	N	PASSENGER CAR/VAN	N	N	NONE APPARENT	015	GOING STRAIGHT
96	076A	22.41	6/4/2012	0145	PDO	ON	ROUNDABOUT	2	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (M)	BROADSIDE	W	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	025	GOING STRAIGHT
97	076A	22.41	2/14/2012	2055	PDO	OFF RIGHT	ROUNDABOUT	1	CURVE ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (M)	SIGN	W	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	040	OTHER
98	076A	22.41	6/3/2012	0959	PDO	OFF RIGHT	ROUNDABOUT	1	CURVE ON-LEVEL	DRY	DAYLIGHT	NONE	Y (M)	SIGN	W	HT & RUN - UNKNOWN	N	N	AGGRESSIVE DRIVING	020	MAKING LEFT TURN
99	076A	22.41	10/10/2012	0517	PDO	OFF LEFT	ROUNDABOUT	1	CURVE ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (M)	SIGN	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	030	OTHER
100	076A	22.41	11/14/2011	0004	PDO	OFF RIGHT	ROUNDABOUT	1	CURVE ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (M)	GUARD RAIL	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	035	GOING STRAIGHT
101	076A	22.41	5/15/2010	0622	PDO	OFF RIGHT	ROUNDABOUT	1	CURVE ON-LEVEL	WET	DARK-LIGHTED	RAIN	Y (M)	SIGN	E	PICKUP TRUCK/UTILITY VAN	N	N	DRIVER UNFAMILIAR WITH AREA	045	GOING STRAIGHT
102	076A	22.41	10/21/2010	1920	PDO	OFF LEFT	ROUNDABOUT	2	CURVE ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (M)	SIGN	E	PASSENGER CAR/VAN	N	N	ASLEEP AT THE WHEEL	040	OTHER
103	076A	22.41	10/20/2010	1932	PDO	OFF RIGHT	ROUNDABOUT	1	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (M)	SIGN	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	025	GOING STRAIGHT
104	076A	22.41	5/19/2008	1147	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PASSENGER CAR/VAN	N	N	OTHER FACTOR	005	GOING STRAIGHT
105	076A	22.41	7/11/2008	1405	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	005	SLOWING
106	076A	22.41	9/10/2008	0759	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	015	MAKING RIGHT TURN
107	076A	22.41	11/15/2008	1053	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	010	MAKING RIGHT TURN
108	076A	22.41	11/16/2008	1127	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	020	GOING STRAIGHT
109	076A	22.41	6/24/2009	1425	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	005	MAKING RIGHT TURN
110	076A	22.41	7/28/2009	1627	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PASSENGER CAR/VAN	N	N	DISTRACTED/OTHER	035	GOING STRAIGHT
111	076A	22.41	3/22/2010	1746	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	W	PASSENGER CAR/VAN	N	N	DUI, DWAI, DUID	035	GOING STRAIGHT
112	076A	22.41	4/30/2010	1811	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PASSENGER CAR/VAN	N	N	OTHER FACTOR	010	GOING STRAIGHT
113	076A	22.41	5/5/2010	1635	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	005	SLOWING
114	076A	22.41	6/16/2011	0813	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	SUV	N	N	OTHER FACTOR	005	MAKING RIGHT TURN
115	076A	22.41	1/5/2012	0808	PDO	ON	AT INTERSECTION	2	HILLCREST	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PASSENGER CAR/VAN	N	N	OTHER FACTOR	15	MAKING RIGHT TURN
116	076A	22.41	2/16/2012	1045	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	SUV	N	N	OTHER FACTOR	006	GOING STRAIGHT
117	076A	22.41	6/17/2012	1756	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (N)	REAR END	S	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	010	MAKING RIGHT TURN
118	076A	22.41	10/7/2008	0718	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	BROADSIDE	S	PASSENGER CAR/VAN	N	N	OTHER FACTOR	015	MAKING LEFT TURN
119	076A	22.41	7/8/2009	0918	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (N)	APPROACH TURN	W	VEH COMBO (10,000 LBS AND OVER)	N	N	NONE APPARENT	010	MAKING LEFT TURN
120	076A	22.41	2/7/2012	1618	INJ	ON	AT INTERSECTION	2	HILLCREST	DRY	DAYLIGHT	NONE	Y (N)	BROADSIDE	S	VEH COMBO (10,000 LBS AND OVER)	N	N	DRIVER UNFAMILIAR WITH AREA	020	MAKING LEFT TURN
121	076A	22.41	10/6/2010	1622	PDO	ON	AT INTERSECTION	2	HILLCREST	DRY	DAYLIGHT	NONE	Y (N)	SIDESWIPE (SAME DIRECTION)	S	VEH COMBO (10,000 LBS AND OVER)	N	N	OTHER FACTOR	005	MAKING RIGHT TURN
122	076A	22.41	10/19/2012	1456	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (O)	APPROACH TURN	E	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	015	GOING STRAIGHT
123	076A	22.41	3/24/2008	1145	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (O)	REAR END	N	SUV	N	N	DISTRACTED/OTHER	003	GOING STRAIGHT
124	076A	22.41	6/9/2008	1922	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (O)	REAR END	N	PASSENGER CAR/VAN	N	N	DISTRACTED/OTHER	010	SLOWING
125	076A	22.41	11/25/2008	0808	INJ	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (O)	REAR END	N	PASSENGER CAR/VAN	N	N	OTHER FACTOR	005	GOING STRAIGHT
126	076A	22.41	10/21/2009	0800	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	WET	DAYLIGHT	RAIN	Y (O)	REAR END	N	SUV	N	N	NONE APPARENT	005	GOING STRAIGHT
127	076A	22.41	11/25/2009	2023	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DARK-LIGHTED	NONE	Y (O)	REAR END	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	030	GOING STRAIGHT
128	076A	22.41	12/24/2009	0605	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DARK-LIGHTED	SNOW/SLEET/HAIR	Y (O)	REAR END	N	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	005	SPUN OUT OF CONTROL
129	076A	22.41	4/6/2010	1507	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (O)	REAR END	E	PASSENGER CAR/VAN	N	N	DISTRACTED/PHONE	005	GOING STRAIGHT
130	076A	22.41	4/21/2011	1219	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (O)	REAR END	N	PASSENGER CAR/VAN	N	N	OTHER FACTOR	015	BACKING
131	076A	22.41	9/13/2011	0768	PDO	ON	AT INTERSECTION	2	CURVE ON-GRADE	DRY	DAYLIGHT	NONE	Y (O)	REAR END	N	SUV	N	N	OTHER FACTOR	010	GOING STRAIGHT
132	076A	22.41	4/4/2012	1310	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (O)	REAR END	N	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	05	BACKING
133	076A	22.41	6/23/2012	2353	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (O)	REAR END	E	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	030	GOING STRAIGHT
134	076A	22.41	12/19/2012	0654	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	SNOW/SLEET/HAIR	Y (O)	REAR END	N	SUV	N	N	NONE APPARENT	020	SLOWING
135	076A	22.41	1/31/2008	1541	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (O)	BROADSIDE	N	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	010	MAKING LEFT TURN
136	076A	22.41	3/13/2008	1824	INJ	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAWN OR DUSK	NONE	Y (O)	BROADSIDE	E	VEH COMBO (10,000 LBS AND OVER)	N	N	OTHER FACTOR	020	GOING STRAIGHT
137	076A	22.41	5/9/2008	0756	PDO	ON	AT INTERSECTION	2	CURVE ON-GRADE	DRY	DAYLIGHT	NONE	Y (O)	BROADSIDE	N	PASSENGER CAR/VAN	N	N	NONE APPARENT	010	MAKING LEFT TURN
138	076A	22.41	11/20/2008	1459	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (O)	BROADSIDE	E	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	020	GOING STRAIGHT
139	076A	22.41	1/12/2010	1822	PDO	ON	AT INTERSECTION	2	HILLCREST	DRY	DARK-LIGHTED	NONE	Y (O)	BROADSIDE	N	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	015	MAKING LEFT TURN
140	076A	22.41	12/24/2010	13																	

#	Hwy	MP	Date	Time	Sever-ity	Location	Road Description	# of Veh	Road Contour	Road Condition	Lighting	Weather	Ramp	Accident Type	Dir	Vehicle Type	Alcohol	Drugs	Human Factor	Speed	Vehicle Movement
111	076A	22.41	2/25/2011	1607	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (O)	APPROACH TURN	E	PICKUP TRUCK/UTILITY	N	N	DISTRACTED/CELL PHONE	005	MAKING LEFT TURN
112	076A	22.41	12/9/2011	0606	PDO	OFF LEFT	AT INTERSECTION	1	STRAIGHT ON-LEVEL	WET	DARK-UNLIGHTED	FOG	Y (O)	GUARD RAIL	N	PASSENGER CAR/VAN	N	N	OTHER FACTOR	035	GOING LEFT TURN
113	076A	22.41	3/29/2012	1851	PDO	OFF LEFT	AT INTERSECTION	1	CURVE ON-LEVEL	DRY	DAYLIGHT	NONE	Y (O)	GUARD RAIL	N	PASSENGER CAR/VAN VEH COMBO (10,000 LBS AND OVER)	N	N	OTHER FACTOR	10	MAKING LEFT TURN
114	076A	22.41	12/14/2010	1754	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DARK-UNLIGHTED	NONE	Y (P)	REAR END	E	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	015	GOING STRAIGHT
115	076A	22.42	7/31/2008	2203	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DARK-LIGHTED	NONE	N	OTHER NON-COLLISION	E	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	075	GOING STRAIGHT
116	076A	22.42	2/14/2010	1001	PDO	ON	RAMP	2	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	NONE	Y (D)	REAR END	W	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	020	GOING STRAIGHT
117	076A	22.43	3/20/2010	0203	PDO	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-LEVEL	ICY WAJIS ICY ROAD TREATMENT	DAWN OR DUSK	SNOW/SLEETHAIL	Y (L)	GUARD RAIL	SW	PASSENGER CAR/VAN	N	N	DRIVER UNFAMILIAR W/AREA	030	SPUN OUT OF CONTROL
118	076A	22.44	8/13/2010	0927	PDO	ON	RAMP	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (D)	REAR END	W	SUV	N	N	OTHER FACTOR	005	GOING STRAIGHT
119	076A	22.44	2/6/2008	1302	PDO	ON	INTERSECTION RELATED	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	SIDESWIPE (SAME DIRECTION)	S	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	020	CHANGING LANES
120	076A	22.44	10/23/2011	1311	PDO	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-LEVEL	SLUSHY	DAYLIGHT	SNOW/SLEETHAIL	Y (L)	EMBAKMENT	SW	PASSENGER CAR/VAN	N	N	OTHER FACTOR	035	GOING STRAIGHT
121	076A	22.46	5/10/2010	1909	PDO	OFF RIGHT	NON-INTERSECTION	2	CURVE ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	GUARD RAIL	NE	PASSENGER CAR/VAN	Y	N	DUI/DWAI DUID	030	GOING STRAIGHT
122	076A	22.49	9/22/2011	0649	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	OVERTAKING TURN	N	PASSENGER CAR/VAN	N	N	DRIVER EMOTIONALLY UPSET	015	MAKING L-TURN
123	076A	22.49	12/28/2012	1951	PDO	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-GRADE	ICY	DARK-UNLIGHTED	NONE	Y (L)	SIGN	SW	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	045	GOING STRAIGHT
124	076A	22.52	7/11/2009	1042	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	REAR END	S	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	010	MAKING RIGHT TURN
125	076A	22.52	8/5/2009	0652	PDO	ON	AT INTERSECTION	2	CURVE ON-GRADE	DRY	DAYLIGHT	NONE	Y (L)	REAR END	S	SUV	N	N	NONE APPARENT	010	MAKING RIGHT TURN
126	076A	22.52	5/31/2010	1349	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (L)	REAR END	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	010	GOING STRAIGHT
127	076A	22.52	11/10/2010	0815	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (L)	REAR END	S	SUV	N	N	OTHER FACTOR	005	GOING STRAIGHT
128	076A	22.52	10/27/2011	0716	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	REAR END	S	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	005	GOING STRAIGHT
129	076A	22.52	6/3/2012	0911	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (L)	REAR END	S	SUV	N	N	AGRESSIVE DRIVING	010	GOING STRAIGHT
130	076A	22.52	12/23/2008	1535	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (L)	BROADSIDE	S	SUV	N	N	NONE APPARENT	010	MAKING RIGHT TURN
131	076A	22.52	6/27/2012	1239	INJ	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	APPROACH TURN	NE	SUV	N	N	DRIVER INEXPERIENCE	010	MAKING LEFT TURN
132	076A	22.53	9/20/2012	1519	PDO	ON	INTERSECTION RELATED	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	SIDESWIPE (SAME DIRECTION)	NE	PASSENGER CAR/VAN	N	N	NONE APPARENT	040	CHANGING LANES
133	076A	22.54	1/2/2009	1551	PDO	ON	INTERSECTION RELATED	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	BROADSIDE	S	SUV	N	N	NONE APPARENT	020	MAKING LEFT TURN
134	076A	22.55	4/19/2010	1428	PDO	OFF RIGHT	RAMP	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	Y (C)	PARKED MOTOR VEHICLE	E	PASSENGER CAR/VAN	N	N	DISTRACTED/OTHER	045	GOING STRAIGHT
135	076A	22.66	5/1/2008	1507	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	SLUSHY	DAYLIGHT	SNOW/SLEETHAIL	N	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	075	SPUN OUT OF CONTROL
136	076A	22.71	5/24/2010	1022	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	WIND	N	OVERTURNING	E	SUV	N	N	OTHER FACTOR	070	GOING STRAIGHT
137	076A	22.71	2/8/2010	2030	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	075	GOING STRAIGHT
138	076A	22.80	12/14/2010	1708	FAT	OFF DIVIDED HIGHWAY	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAWN OR DUSK	NONE	N	HEAD ON	E	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	059	drove wrong way
139	076A	22.96	5/7/2009	1514	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	REAR END	NE	PASSENGER CAR/VAN	N	N	NONE APPARENT	045	GOING STRAIGHT
140	076A	23.00	5/27/2012	1313	INJ	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (L)	APPROACH TURN	NE	SUV	N	Y	NONE APPARENT	015	MAKING LEFT TURN
141	076A	23.00	4/16/2010	0613	INJ	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAWN OR DUSK	NONE	N	SIGN	E	PASSENGER CAR/VAN	N	N	DRIVER UNFAMILIAR W/AREA	075	GOING STRAIGHT
142	076A	23.01	7/2/2009	0619	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAWN OR DUSK	NONE	N	EMBAKMENT	W	SUV	N	N	OTHER FACTOR	070	WEAVING
143	076A	23.20	6/17/2010	2241	INJ	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN	N	N	DRIVER INEXPERIENCE	075	SPUN OUT OF CONTROL
144	076A	23.51	4/5/2010	1133	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	OVERTURNING	W	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	GOING STRAIGHT
145	076A	23.55	12/3/2011	1510	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-GRADE	WET	DAYLIGHT	NONE	N	REAR END	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	065	GOING STRAIGHT
146	076A	23.56	10/2/2010	0131	INJ	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (L)	OVERTURNING	NE	PASSENGER CAR/VAN	Y	N	DUI/DWAI DUID	070	GOING STRAIGHT
147	076A	23.60	11/20/2010	0624	INJ	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	OVERTURNING	W	SUV W/TRAILER	N	N	DRIVER INEXPERIENCE	075	GOING STRAIGHT
148	076A	23.66	12/30/2010	2225	PDO	OFF LEFT	NON-INTERSECTION	1	CURVE ON-LEVEL	ICY	DARK-LIGHTED	SNOW/SLEETHAIL	N	OVERTURNING	W	PICKUP TRUCK/UTILITY VAN	N	N	DRIVER UNFAMILIAR W/AREA	060	GOING STRAIGHT
149	076A	23.67	3/19/2009	1855	INJ	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-GRADE	DRY	DAWN OR DUSK	NONE	Y (L)	OVERTURNING	NE	MOTORCYCLE	N	N	DRIVER UNFAMILIAR W/AREA	035	OTHER
150	076A	23.69	2/7/2012	0822	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	SNOW/SLEETHAIL	N	SIDESWIPE (SAME DIRECTION)	W	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	060	GOING STRAIGHT
151	076A	23.70	10/10/2009	0926	PDO	OFF DIVIDED HIGHWAY	NON-INTERSECTION	1	STRAIGHT ON-GRADE	ICY	DAYLIGHT	SNOW/SLEETHAIL	N	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN	N	N	OTHER FACTOR	060	SPUN OUT OF CONTROL
152	076A	23.70	1/17/2010	1415	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	SIDESWIPE (SAME DIRECTION)	E	PASSENGER CAR/VAN	N	N	OTHER FACTOR	075	GOING STRAIGHT
153	076A	23.70	10/21/2012	0227	PDO	OFF LEFT	NON-INTERSECTION	1	CURVE ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	GUARD RAIL	E	PASSENGER CAR/VAN	N	N	ASLEEP AT THE WHEEL	075	GOING STRAIGHT
154	076A	23.71	9/15/2012	1507	PDO	ON	NON-INTERSECTION	3	CURVE ON-LEVEL	DRY	DAYLIGHT	NONE	N	REAR END	E	PICKUP TRUCK/UTILITY VAN	N	N	DRIVER UNFAMILIAR W/AREA	045	GOING STRAIGHT
155	076A	23.71	12/7/2012	0035	INJ	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	GUARD RAIL	E	PASSENGER CAR/VAN	Y	N	DUI/DWAI DUID	075	SPUN OUT OF CONTROL
156	076A	23.71	9/12/2010	1647	PDO	ON	AT INTERSECTION	2	HILLCREST	DRY	DAYLIGHT	NONE	Y (M)	BROADSIDE	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	040	STOPPED IN TRAFFIC
157	076A	23.71	5/18/2012	1819	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (P)	BROADSIDE	N	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	010	GOING STRAIGHT
158	076A	23.72	11/26/2010	2348	PDO	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-GRADE	DRY	DARK-LIGHTED	NONE	Y (L)	EMBAKMENT	SW	PICKUP TRUCK/UTILITY VAN	N	N	DUI/DWAI DUID	020	BACKING
159	076A	23.74	6/12/2011	2244	INJ	ON	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	Y (R)	OTHER NON-COLLISION	NE	SUV	N	N	NONE APPARENT	030	GOING STRAIGHT
160	076A	23.82	5/28/2010	1610	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	OVERTURNING	W	SUV	N	N	OTHER FACTOR	076	GOING STRAIGHT

#	Hwy	MP	Date	Time	Sever-ity	Location	Road Description	# of Veh	Road Contour	Road Condition	Lighting	Weather	Ramp	Accident Type	Dir	Vehicle Type	Alcohol	Drugs	Human Factor	Speed	Vehicle Movement
161	076A	23.85	9/13/2012	0511	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN	N	Y	DUI, DWAI, DUID	080	GOING STRAIGHT
162	076A	23.99	9/21/2010	1651	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	Y (R)	OVERTURNING	SW	PICKUP TRUCK/UTILITY VAN	N	N	DRIVER INEXPERIENCE	065	GOING STRAIGHT
163	076A	24.00	5/21/2012	0615	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	SIDESWIPE (SAME DIRECTION)	W	VEH COMBO (10,001 LBS AND OVER)	N	N	OTHER FACTOR	070	CHANGING LANES
164	076A	24.00	7/22/2009	1717	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	WET	DAYLIGHT	RAIN	N	REAR END	W	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	065	SPUN OUT OF CONTROL
165	076A	24.00	10/4/2012	0457	INJ	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	DOMESTIC ANIMAL	W	HIT & RUN - UNKNOWN	N	N	OTHER FACTOR	075	GOING STRAIGHT
166	076A	24.06	4/8/2008	0716	INJ	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAWN OR DUSK	FOG	N	OVERTURNING	E	PICKUP TRUCK/UTILITY VAN	N	N	ILLNESS/MEDICAL	075	WEAVING
167	076A	24.09	11/8/2011	2043	PDO	ON	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	WILD ANIMAL	W	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	GOING STRAIGHT
168	076A	24.11	4/30/2011	0752	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	OTHER NON-COLLISION	W	PASSENGER CAR/VAN	N	N	OTHER FACTOR	075	SPUN OUT OF CONTROL
169	076A	24.18	5/28/2008	1718	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	OVERTURNING	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	075	GOING STRAIGHT
170	076A	24.32	8/30/2008	1900	PDO	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-LEVEL	DRY	DAWN OR DUSK	NONE	N	OVERTURNING	E	PASSENGER CAR/VAN	Y	N	NONE APPARENT	075	GOING STRAIGHT
171	076A	24.65	11/19/2010	1115	PDO	ON	NON-INTERSECTION	3	STRAIGHT ON-LEVEL	DRY	DAWN OR DUSK	NONE	N	SIDESWIPE (SAME DIRECTION)	E	HIT & RUN - UNKNOWN	N	N	NONE APPARENT	075	AVOIDING OBJECT IN ROAD
172	076A	24.83	5/31/2009	1205	INJ	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	SIGN	W	SUV	N	N	DISTRACTED/PASSENGER	075	GOING STRAIGHT
173	076A	24.85	11/3/2011	0557	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	SIDESWIPE (SAME DIRECTION)	W	SUV	N	N	OTHER FACTOR	065	CHANGING LANES
174	076A	24.90	8/19/2011	1300	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	OVERTURNING	E	PASSENGER CAR/VAN	N	N	ASLEEP AT THE WHEEL	075	GOING STRAIGHT
175	076A	25.15	1/15/2008	1635	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	BROADSIDE	N	PASSENGER CAR/VAN	N	N	DISTRACTED/PASSENGER	065	GOING STRAIGHT
176	076A	25.15	9/8/2009	0820	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	REAR END	S	SUV	N	N	DRIVER INEXPERIENCE	010	GOING STRAIGHT
177	076A	25.15	8/25/2008	0900	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	BROADSIDE	S	VEH COMBO (10,001 LBS AND OVER)	N	N	NONE APPARENT	UK	MAKING LEFT TURN
178	076A	25.15	9/4/2008	0735	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	N	BROADSIDE	S	PASSENGER CAR/VAN	N	N	OTHER FACTOR	005	MAKING LEFT TURN
179	076A	25.15	3/15/2009	1937	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	APPROACH TURN	W	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	030	MAKING LEFT TURN
180	076A	25.15	3/16/2009	1115	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	N	BROADSIDE	S	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	UK	MAKING LEFT TURN
181	076A	25.15	4/21/2009	1735	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	N	BROADSIDE	S	PICKUP TRUCK/UTILITY VAN	N	N	NONE APPARENT	UK	GOING STRAIGHT
182	076A	25.15	5/4/2009	1615	PDO	ON	AT INTERSECTION	2	HILLCREST	DRY	DAYLIGHT	NONE	N	BROADSIDE	S	PASSENGER CAR/VAN	N	N	NONE APPARENT	010	GOING STRAIGHT
183	076A	25.15	7/3/2009	2149	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DARK-LIGHTED	NONE	N	BROADSIDE	S	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	010	MAKING LEFT TURN
184	076A	25.15	8/27/2009	1435	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	BROADSIDE	N	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	UK	GOING STRAIGHT
185	076A	25.15	12/20/2008	2027	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	APPROACH TURN	W	HIT & RUN - UNKNOWN	N	N	DRIVER INEXPERIENCE	UK	GOING STRAIGHT
186	076A	25.15	2/20/2008	1425	PDO	ON	AT INTERSECTION	2	STRAIGHT ON-GRADE	DRY	DAYLIGHT	NONE	N	REAR END	W	SUV	N	N	AGGRESSIVE DRIVING	035	MAKING LEFT TURN
187	076A	25.15	6/24/2009	1910	INJ	OFF RIGHT	AT INTERSECTION	1	CURVE ON-GRADE	DRY	DAYLIGHT	NONE	N	DELINEATOR POST	S	MOTORCYCLE	N	N	DRIVER INEXPERIENCE	045	GOING STRAIGHT
188	076A	25.20	4/20/2011	2252	PDO	OFF RIGHT	RAMP	1	STRAIGHT ON-GRADE	WET	DARK-LIGHTED	RAIN	Y (C)	DELINEATOR POST	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	UK	SPUN OUT OF CONTROL
189	076A	25.20	1/1/2009	1622	PDO	OFF LEFT	RAMP	1	CURVE ON-GRADE	DRY	DAYLIGHT	NONE	N	OVERTURNING	W	MOTORCYCLE	Y	N	DUI, DWAI, DUID	060	GOING STRAIGHT
190	076A	25.45	8/24/2008	2108	INJ	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DARK-UNLIGHTED	NONE	N	OVERTURNING	W	PASSENGER CAR/VAN	Y	Y	DUI, DWAI, DUID	075	SPUN OUT OF CONTROL
191	076A	25.50	3/20/2009	2015	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DARK-LIGHTED	NONE	N	HEAD ON	W	SUV	Y	N	DISTRACTED/CELL PHONE	075	GOING STRAIGHT
192	076A	25.50	4/17/2009	1756	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	SLUSHY	DAYLIGHT	SNOW/SLEETHAIL	N	EMBANKMENT	E	PASSENGER CAR/VAN	N	N	NONE APPARENT	065	SPUN OUT OF CONTROL
193	076A	25.50	7/10/2009	1934	PDO	OFF LEFT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	FENCE	E	PICKUP TRUCK/UTILITY VAN W/TRAILER	N	N	DISTRACTED/OTHER	065	GOING STRAIGHT
194	076A	25.53	1/11/2010	0840	FAT	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	REAR END	W	VEH COMBO (10,001 LBS AND OVER)	N	N	DISTRACTED/OTHER	070	GOING STRAIGHT
195	076A	25.60	11/30/2008	0650	PDO	OFF RIGHT	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	ICY	DAYLIGHT	SNOW/SLEETHAIL	N	GUARD RAIL	E	PASSENGER CAR/VAN	N	N	DISTRACTED/OTHER	065	GOING STRAIGHT
196	076A	26.00	6/29/2008	1650	PDO	ON	NON-INTERSECTION	1	STRAIGHT ON-LEVEL	DRY	DAYLIGHT	NONE	N	OTHER NON-COLLISION	W	SUV W/TRAILER	N	N	OTHER FACTOR	065	GOING STRAIGHT
197	076A	26.00	7/24/2008	1802	PDO	ON	NON-INTERSECTION	2	STRAIGHT ON-LEVEL	WET	DAYLIGHT	RAIN	N	SIDESWIPE (SAME DIRECTION)	W	PASSENGER CAR/VAN	N	N	DRIVER INEXPERIENCE	070	SPUN OUT OF CONTROL
198	076A	26.37	6/14/2008	0000	PDO	OFF RIGHT	NON-INTERSECTION	1	CURVE ON-GRADE	DRY	DARK-UNLIGHTED	NONE	N	EMBANKMENT	NE	PASSENGER CAR/VAN	Y	N	DUI, DWAI, DUID	035	DROVE WRONG WAY



Appendix E
Part 1. HCS Reports

Due to volume constraints, available as a separate DVD.

Part 2.
Preliminary
Roundabout Operations
Analysis



Memorandum

August 27, 2013

To	David Sprague, PE – Atkins		
From	Troy Pankratz, PE – GHD, Inc. Amanda DeAmico – GHD, Inc.	Tel	(608) 216-2058
Subject	I-76 and Bridge Street Interchange Improvements Brighton, Colorado Preliminary Roundabout Operational Analysis	Job no.	28/10/128

OPERATIONAL ANALYSIS METHODOLOGY

A preliminary operational analysis was completed for the potential roundabouts to be located along Bridge Street at the proposed I-76 ramp terminals and the existing frontage road intersections in Brighton, Colorado. Three roundabout configuration alternatives were analyzed. Alternative 1 consists of four four-leg roundabouts, one at each of the proposed I-76 ramp terminals and one at each of the frontage road intersections. Alternative 2 consists of two six-leg roundabouts, one at each of the combined proposed I-76 ramp terminal and frontage road intersections. Alternative 3 consists of three roundabouts, one six-leg roundabout at the southbound ramp terminal, one four-leg roundabout at the northbound ramp terminal, and one four-leg roundabout at the East Frontage Road.

Build year 2019 and design year 2035 peak hour traffic volumes and truck percentages provided by Atkins were balanced between adjacent intersections and utilized to analyze the traffic operations for the potential roundabout alternatives. The balanced 2019 and 2035 peak hour traffic volumes and truck percentages for each alternative are shown in Figure 1 through Figure 5. A conceptual lane configuration for each alternative is shown in Figure 5 through Figure 8.

A preliminary analysis for each alternative was performed with the ARCADY model in Junctions 8 roundabout design and capacity analysis software. Preliminary geometric parameters were used with a 10% capacity reduction to correlate the results to recent U.S. observations and provide conservative results. In addition to the ARCADY analysis, a Highway Capacity Model (HCM) 2010 analysis was conducted in Junctions 8 to provide a comparison to the ARCADY results. The HCM roundabout capacity equations, which are dependent on critical and follow-up headways, are based on national averages; however, lower headways have been observed. Critical and follow-up headway values were adjusted in the HCM analyses to better reflect recent observations at U.S. roundabouts. Headway values used in the analysis are listed in Table 1.

Table 1. Adjusted Headway Values

# of Circulating (Conflicting) Lanes	Critical Headway (s)	Follow-up Headway (s)
One	4.2	2.8
Two	4.0	2.8

The results of the preliminary ARCADY and HCM analyses for each alternative are summarized in the following section and documented in Appendix A through Appendix F.

OPERATIONAL ANALYSIS RESULTS

Alternative 1: Four Roundabouts

2019 Build Year

The results of the ARCADY and HCM operational analyses for build year 2019 at the potential single-lane roundabouts to be located along Bridge Street are listed in Table 2 through Table 5. The results indicate that single-lane roundabouts at each of the four intersections will operate acceptably in the 2019 build year.

Table 2. West Frontage Road 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	6.4	A	N/A	6.7	A	N/A
	SB West Frontage Road	4.9	A	25	5.7	A	25
	EB Bridge Street	6.2	A	25	7.0	A	25
	NB West Frontage Road	4.4	A	25	4.5	A	25
	WB Bridge Street	6.7	A	25	6.8	A	25
HCM	Overall	7.7	A	N/A	8.1	A	N/A
	SB West Frontage Road	5.4	A	25	6.6	A	25
	EB Bridge Street	7.7	A	50	8.6	A	75
	NB West Frontage Road	4.8	A	25	4.9	A	25
	WB Bridge Street	8.1	A	75	8.2	A	75

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 3. I-76 Southbound Ramp Terminal 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	7.0	A	N/A	7.1	A	N/A
	SB I-76 Off Ramp	5.5	A	25	5.4	A	25
	EB Bridge Street	7.2	A	25	7.8	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	7.1	A	25	6.7	A	25
HCM	Overall	8.5	A	N/A	8.5	A	N/A
	SB I-76 Off Ramp	6.5	A	25	6.3	A	25
	EB Bridge Street	9.0	A	75	9.4	A	75
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	8.4	A	75	8.0	A	75

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 4. I-76 Northbound Ramp Terminal 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	5.9	A	N/A	6.6	A	N/A
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.6	A	25	3.9	A	25
	NB I-76 Off Ramp	6.4	A	25	7.7	A	25
	WB Bridge Street	6.1	A	25	6.2	A	25
HCM	Overall	7.4	A	N/A	8.3	A	N/A
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.7	A	25	4.3	A	25
	NB I-76 Off Ramp	8.1	A	75	9.9	A	75
	WB Bridge Street	7.7	A	25	7.9	A	25

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 5. East Frontage Road 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	4.2	A	N/A	3.9	A	N/A
	SB East Frontage Road	3.6	A	25	3.4	A	25
	EB Bridge Street	3.9	A	25	3.9	A	25
	NB East Frontage Road	3.8	A	25	3.6	A	25
	WB Bridge Street	4.6	A	25	4.2	A	25
HCM	Overall	4.6	A	N/A	4.3	A	N/A
	SB East Frontage Road	3.7	A	25	3.4	A	25
	EB Bridge Street	4.3	A	25	4.3	A	25
	NB East Frontage Road	3.8	A	25	3.9	A	25
	WB Bridge Street	5.2	A	25	4.5	A	25

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

2035 Design Year

The results of the ARCADY and HCM operational analyses for design year 2035 at the potential single-lane roundabouts to be located along Bridge Street are listed in Table 6 through Table 9. The results indicate that single-lane roundabouts at each of the four intersections will operate acceptably in the 2035 design year.

Table 6. West Frontage Road 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	6.6	A	N/A	8.6	A	N/A
	SB West Frontage Road	4.9	A	25	6.2	A	25
	EB Bridge Street	6.8	A	25	10.0	B	50
	NB West Frontage Road	4.6	A	25	5.1	A	25
	WB Bridge Street	6.7	A	25	7.7	A	25
HCM	Overall	8.0	A	N/A	10.1	B	N/A
	SB West Frontage Road	5.4	A	25	7.3	A	25
	EB Bridge Street	8.4	A	75	11.6	B	100
	NB West Frontage Road	5.0	A	25	5.7	A	25
	WB Bridge Street	8.1	A	75	9.3	A	100

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 7. I-76 Southbound Ramp Terminal 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	7.9	A	N/A	9.0	A	N/A
	SB I-76 Off Ramp	6.0	A	25	5.9	A	25
	EB Bridge Street	8.7	A	25	11.0	B	50
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	7.5	A	25	7.6	A	25
HCM	Overall	9.6	A	N/A	10.5	B	N/A
	SB I-76 Off Ramp	7.4	A	25	7.1	A	25
	EB Bridge Street	11.0	B	100	12.6	B	125
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	8.8	A	75	9.0	A	100

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 8. I-76 Northbound Ramp Terminal 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	6.4	A	N/A	7.8	A	N/A
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.6	A	25	3.9	A	25
	NB I-76 Off Ramp	6.9	A	25	9.4	A	25
	WB Bridge Street	6.4	A	25	6.8	A	25
HCM	Overall	8.0	A	N/A	9.8	A	N/A
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.8	A	25	4.4	A	25
	NB I-76 Off Ramp	8.7	A	75	11.9	B	125
	WB Bridge Street	8.3	A	50	8.8	A	50

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 9. East Frontage Road 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	4.2	A	N/A	4.0	A	N/A
	SB East Frontage Road	3.6	A	25	3.4	A	25
	EB Bridge Street	4.0	A	25	4.0	A	25
	NB East Frontage Road	3.8	A	25	3.7	A	25
	WB Bridge Street	4.6	A	25	4.2	A	25
HCM	Overall	4.7	A	N/A	4.4	A	N/A
	SB East Frontage Road	3.8	A	25	3.4	A	25
	EB Bridge Street	4.5	A	25	4.5	A	25
	NB East Frontage Road	3.8	A	25	4.0	A	25
	WB Bridge Street	5.2	A	25	4.5	A	25

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Alternative 2: Two Roundabouts

2019 Build Year

The results of the ARCADY and HCM operational analyses for build year 2019 at the potential single-lane roundabouts to be located along Bridge Street are listed in Table 10 and Table 11. The results indicate that single-lane roundabouts at both of the six-leg intersections will operate acceptably in the 2019 design year.

Table 10. I-76 Southbound Ramp Terminal 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	6.9	A	N/A	6.8	A	N/A
	SB I-76 Off Ramp	5.4	A	25	5.2	A	25
	SB West Frontage Road	5.2	A	25	5.8	A	25
	EB Bridge Street	7.1	A	25	7.5	A	25
	NB West Frontage Road	4.8	A	25	4.6	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	7.3	A	25	6.8	A	25
HCM	Overall	8.6	A	N/A	8.5	A	N/A
	SB I-76 Off Ramp	6.7	A	25	6.4	A	25
	SB West Frontage Road	6.2	A	25	7.2	A	25
	EB Bridge Street	9.4	A	75	9.6	A	75
	NB West Frontage Road	5.5	A	25	5.3	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	8.7	A	75	8.2	A	75

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 11. I-76 Northbound Ramp Terminal 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	6.0	A	N/A	6.5	A	N/A
	SB East Frontage Road	4.7	A	25	4.7	A	25
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.7	A	25	3.9	A	25
	NB I-76 Off Ramp	6.6	A	25	7.8	A	25
	NB East Frontage Road	4.8	A	25	5.1	A	25
	WB Bridge Street	6.1	A	25	6.0	A	25
HCM	Overall	7.6	A	N/A	8.3	A	N/A
	SB East Frontage Road	5.4	A	25	5.3	A	25
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.9	A	25	4.4	A	25
	NB I-76 Off Ramp	8.5	A	75	10.2	B	100
	NB East Frontage Road	5.4	A	25	6.3	A	25
	WB Bridge Street	8.0	A	25	7.5	A	25

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

2035 Design Year

The results of the ARCADY and HCM operational analyses for design year 2035 at the potential single-lane roundabouts to be located along Bridge Street are listed in Table 12 and Table 13. The results indicate that single-lane roundabouts at both of the six-leg intersections will operate acceptably in the 2035 design year.

Table 12. I-76 Southbound Ramp Terminal 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	7.6	A	N/A	9.3	A	N/A
	SB I-76 Off Ramp	5.8	A	25	5.9	A	25
	SB West Frontage Road	5.5	A	25	6.6	A	25
	EB Bridge Street	8.4	A	25	11.9	B	75
	NB West Frontage Road	5.1	A	25	5.4	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	7.6	A	25	8.1	A	25
HCM	Overall	9.5	A	N/A	11.4	B	N/A
	SB I-76 Off Ramp	7.5	A	25	7.4	A	25
	SB West Frontage Road	6.5	A	25	8.4	A	25
	EB Bridge Street	11.3	B	100	14.7	B	150
	NB West Frontage Road	6.0	A	25	6.4	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	9.0	A	75	9.7	A	100

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 13. I-76 Northbound Ramp Terminal 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	6.3	A	N/A	7.6	A	N/A
	SB East Frontage Road	4.7	A	25	4.9	A	25
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.7	A	25	4.0	A	25
	NB I-76 Off Ramp	7.1	A	25	9.5	A	25
	NB East Frontage Road	4.9	A	25	5.5	A	25
	WB Bridge Street	6.3	A	25	6.3	A	25
HCM	Overall	7.9	A	N/A	9.6	A	N/A
	SB East Frontage Road	5.5	A	25	5.6	A	25
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.9	A	25	4.5	A	25
	NB I-76 Off Ramp	9.0	A	75	12.1	B	125
	NB East Frontage Road	5.5	A	25	7.0	A	25
	WB Bridge Street	8.2	A	50	8.0	A	25

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Alternative 3: Three Roundabouts

2019 Build Year

The results of the ARCADY and HCM operational analyses for build year 2019 at the potential single-lane roundabouts to be located along Bridge Street are listed in Table 14 through Table 16. The results indicate that single-lane roundabouts at each of the four intersections will operate acceptably in the 2019 build year. The ARCADY and HCM operational analysis data for the I-76 southbound ramp terminal is documented in Appendix E. The ARCADY and HCM operational analysis data for the I-76 northbound ramp terminal and the East Frontage Road intersection is documented in Appendix C and Appendix D, respectively.

Table 14. I-76 Southbound Ramp Terminal 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	6.9	A	N/A	7.3	A	N/A
	SB I-76 Off Ramp	5.4	A	25	5.2	A	25
	SB West Frontage Road	5.2	A	25	7.1	A	25
	EB Bridge Street	7.1	A	25	8.6	A	25
	NB West Frontage Road	4.8	A	25	4.6	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	7.3	A	25	6.8	A	25
HCM	Overall	8.6	A	N/A	9.3	A	N/A
	SB I-76 Off Ramp	6.7	A	25	6.4	A	25
	SB West Frontage Road	6.2	A	25	9.6	A	50
	EB Bridge Street	9.4	A	75	11.4	B	75
	NB West Frontage Road	5.5	A	25	5.3	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	8.7	A	75	8.2	A	75

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 15. I-76 Northbound Ramp Terminal 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	5.9	A	N/A	6.6	A	N/A
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.6	A	25	3.9	A	25
	NB I-76 Off Ramp	6.4	A	25	7.7	A	25
	WB Bridge Street	6.1	A	25	6.2	A	25
HCM	Overall	7.4	A	N/A	8.3	A	N/A
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.7	A	25	4.3	A	25
	NB I-76 Off Ramp	8.1	A	75	9.9	A	75
	WB Bridge Street	7.7	A	25	7.9	A	25

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 16. East Frontage Road 2019 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	4.2	A	N/A	3.9	A	N/A
	SB East Frontage Road	3.6	A	25	3.4	A	25
	EB Bridge Street	3.9	A	25	3.9	A	25
	NB East Frontage Road	3.8	A	25	3.6	A	25
	WB Bridge Street	4.6	A	25	4.2	A	25
HCM	Overall	4.6	A	N/A	4.3	A	N/A
	SB East Frontage Road	3.7	A	25	3.4	A	25
	EB Bridge Street	4.3	A	25	4.3	A	25
	NB East Frontage Road	3.8	A	25	3.9	A	25
	WB Bridge Street	5.2	A	25	4.5	A	25

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

2035 Design Year

The results of the ARCADY and HCM operational analyses for design year 2035 at the potential single-lane roundabouts to be located along Bridge Street are listed in Table 17 through Table 19. The results indicate that single-lane roundabouts at each of the four intersections will operate acceptably in the 2035 design year. The ARCADY and HCM operational analysis data for the I-76 southbound ramp terminal is documented in Appendix E. The ARCADY and HCM operational analysis data for the I-76 northbound ramp terminal and the East Frontage Road intersection is documented in Appendix C and Appendix D, respectively.

Table 17. I-76 Southbound Ramp Terminal 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	7.6	A	N/A	9.3	A	N/A
	SB I-76 Off Ramp	5.8	A	25	5.9	A	25
	SB West Frontage Road	5.5	A	25	6.6	A	25
	EB Bridge Street	8.4	A	25	11.9	B	75
	NB West Frontage Road	5.1	A	25	5.4	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	7.6	A	25	8.1	A	25
HCM	Overall	9.5	A	N/A	11.4	B	N/A
	SB I-76 Off Ramp	7.5	A	25	7.4	A	25
	SB West Frontage Road	6.5	A	25	8.4	A	25
	EB Bridge Street	11.3	B	100	14.7	B	150
	NB West Frontage Road	6.0	A	25	6.4	A	25
	SB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	WB Bridge Street	9.0	A	75	9.7	A	100

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

Table 18. I-76 Northbound Ramp Terminal 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	6.4	A	N/A	7.8	A	N/A
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.6	A	25	3.9	A	25
	NB I-76 Off Ramp	6.9	A	25	9.4	A	25
	WB Bridge Street	6.4	A	25	6.8	A	25
HCM	Overall	8.0	A	N/A	9.8	A	N/A
	NB I-76 On Ramp	N/A	N/A	N/A	N/A	N/A	N/A
	EB Bridge Street	3.8	A	25	4.4	A	25
	NB I-76 Off Ramp	8.7	A	75	11.9	B	125
	WB Bridge Street	8.3	A	50	8.8	A	50

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

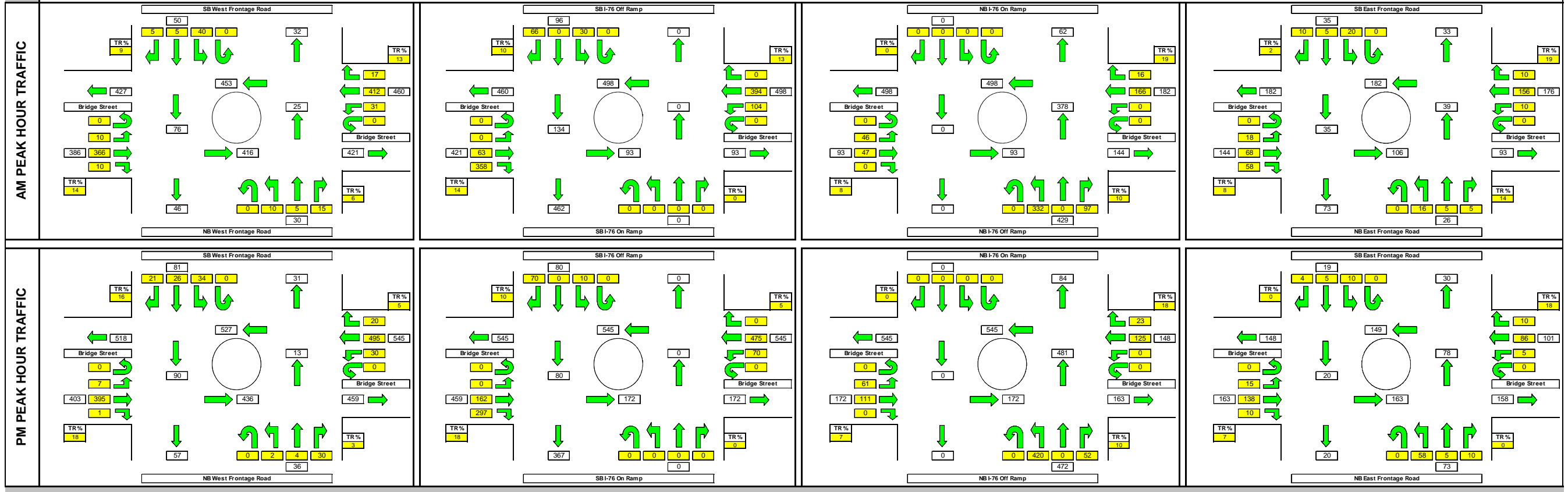
Table 19. East Frontage Road 2035 Preliminary Operational Analysis Summary

Model	Movement	AM Peak Period			PM Peak Period		
		Delay (s)	LOS ¹	Queue ² (ft)	Delay (s)	LOS ¹	Queue ² (ft)
ARCADY	Overall	4.2	A	N/A	4.0	A	N/A
	SB East Frontage Road	3.6	A	25	3.4	A	25
	EB Bridge Street	4.0	A	25	4.0	A	25
	NB East Frontage Road	3.8	A	25	3.7	A	25
	WB Bridge Street	4.6	A	25	4.2	A	25
HCM	Overall	4.7	A	N/A	4.4	A	N/A
	SB East Frontage Road	3.8	A	25	3.4	A	25
	EB Bridge Street	4.5	A	25	4.5	A	25
	NB East Frontage Road	3.8	A	25	4.0	A	25
	WB Bridge Street	5.2	A	25	4.5	A	25

¹ LOS Source: 2010 Highway Capacity Manual – Unsignalized Intersections

² Queue represents maximum 95th percentile lane queue

2019 BUILD YEAR - ALTERNATIVE 1



2035 DESIGN YEAR - ALTERNATIVE 1

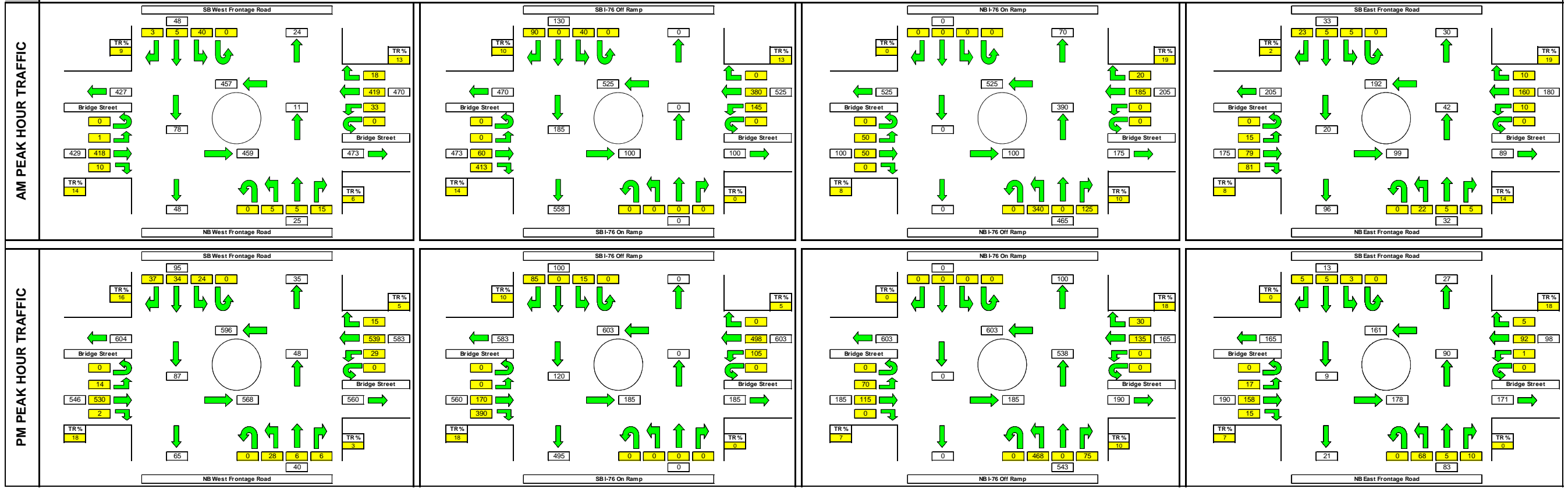
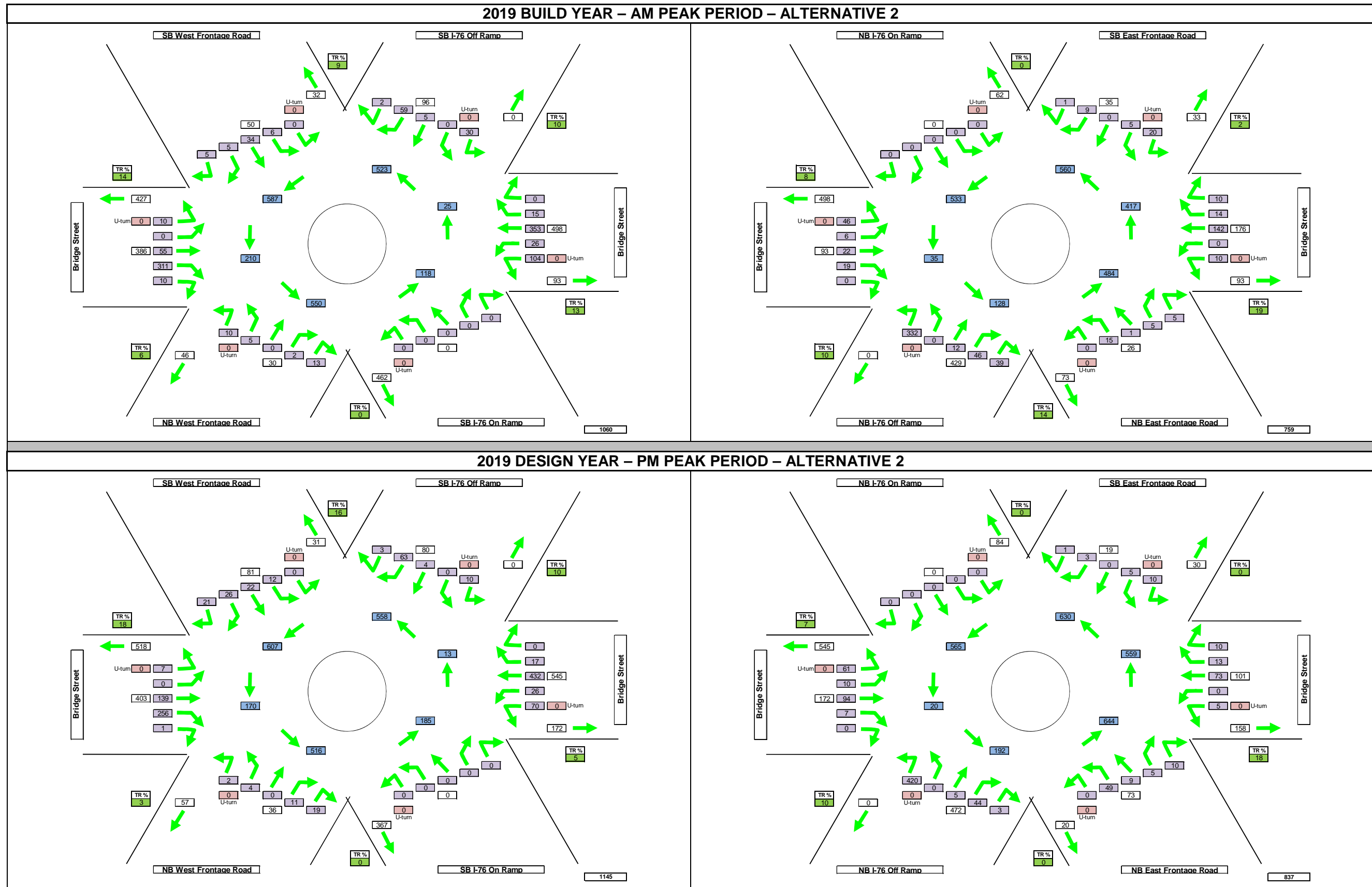
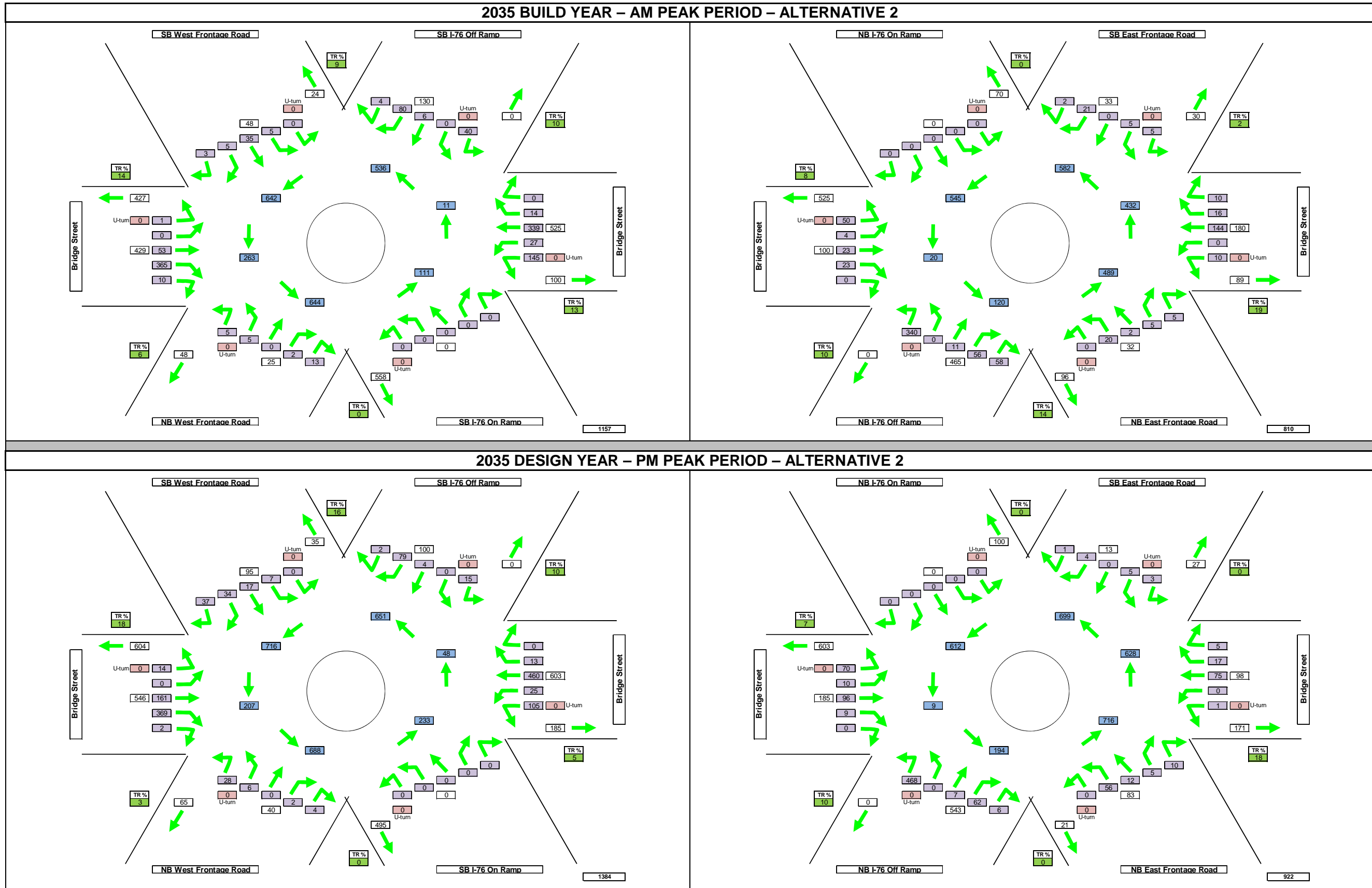


Figure 1. Alternative 1 Peak Hour Traffic Volumes, 2019 and 2035





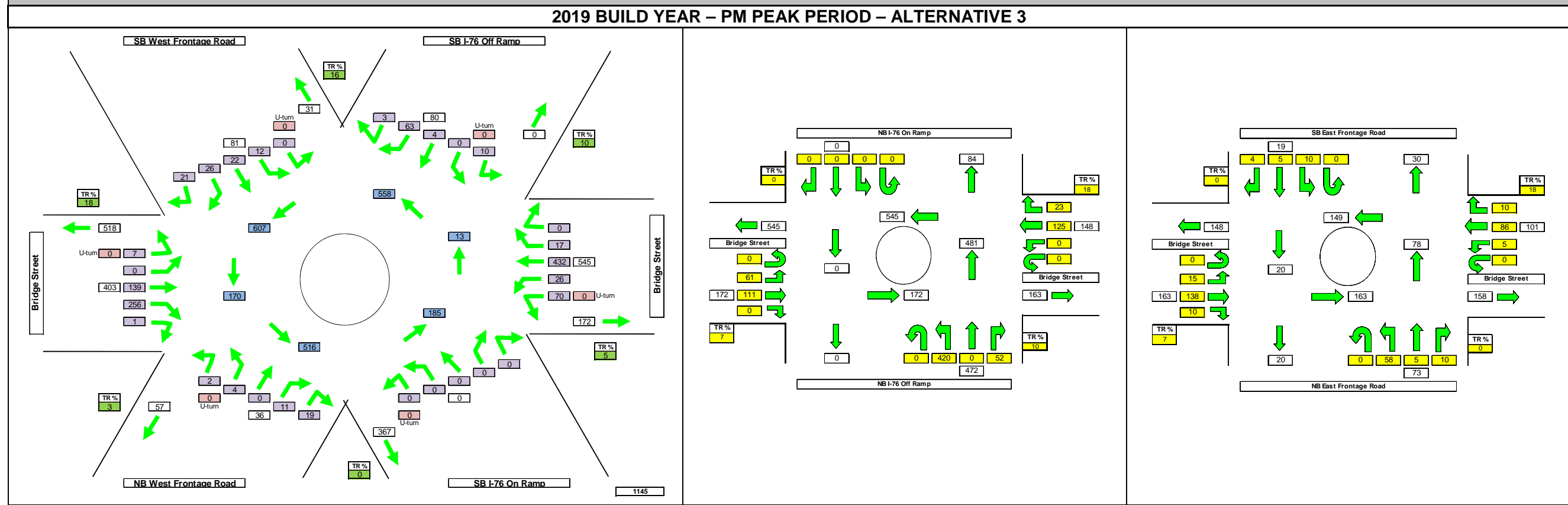
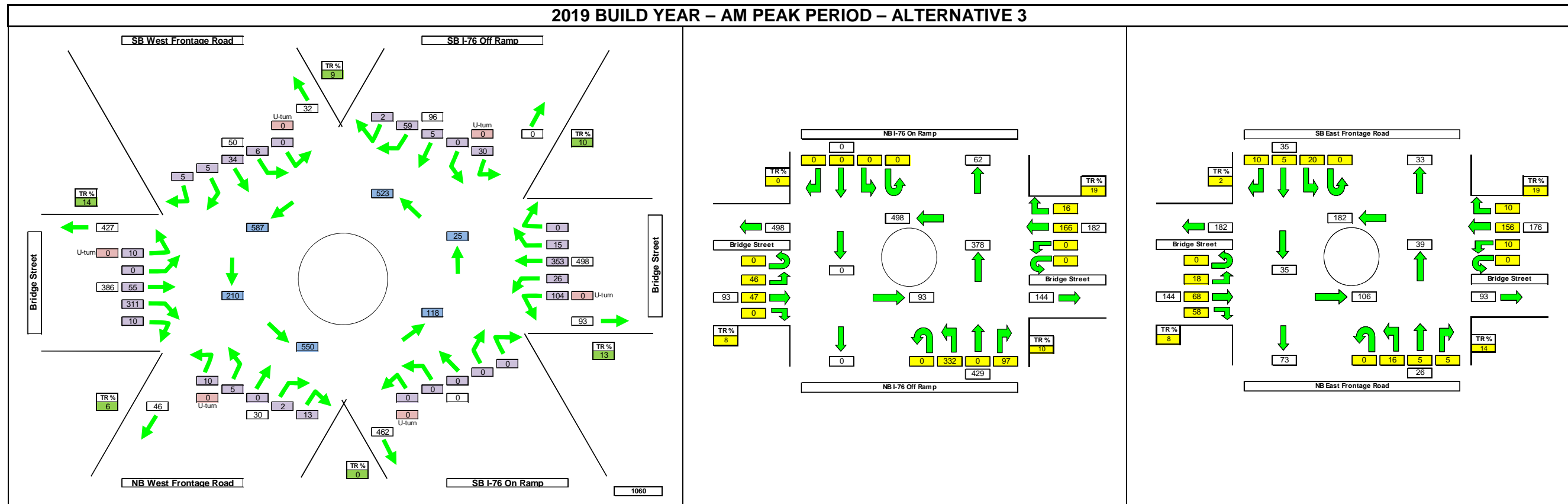


Figure 4. Alternative 3 Peak Hour Traffic Volumes, 2019

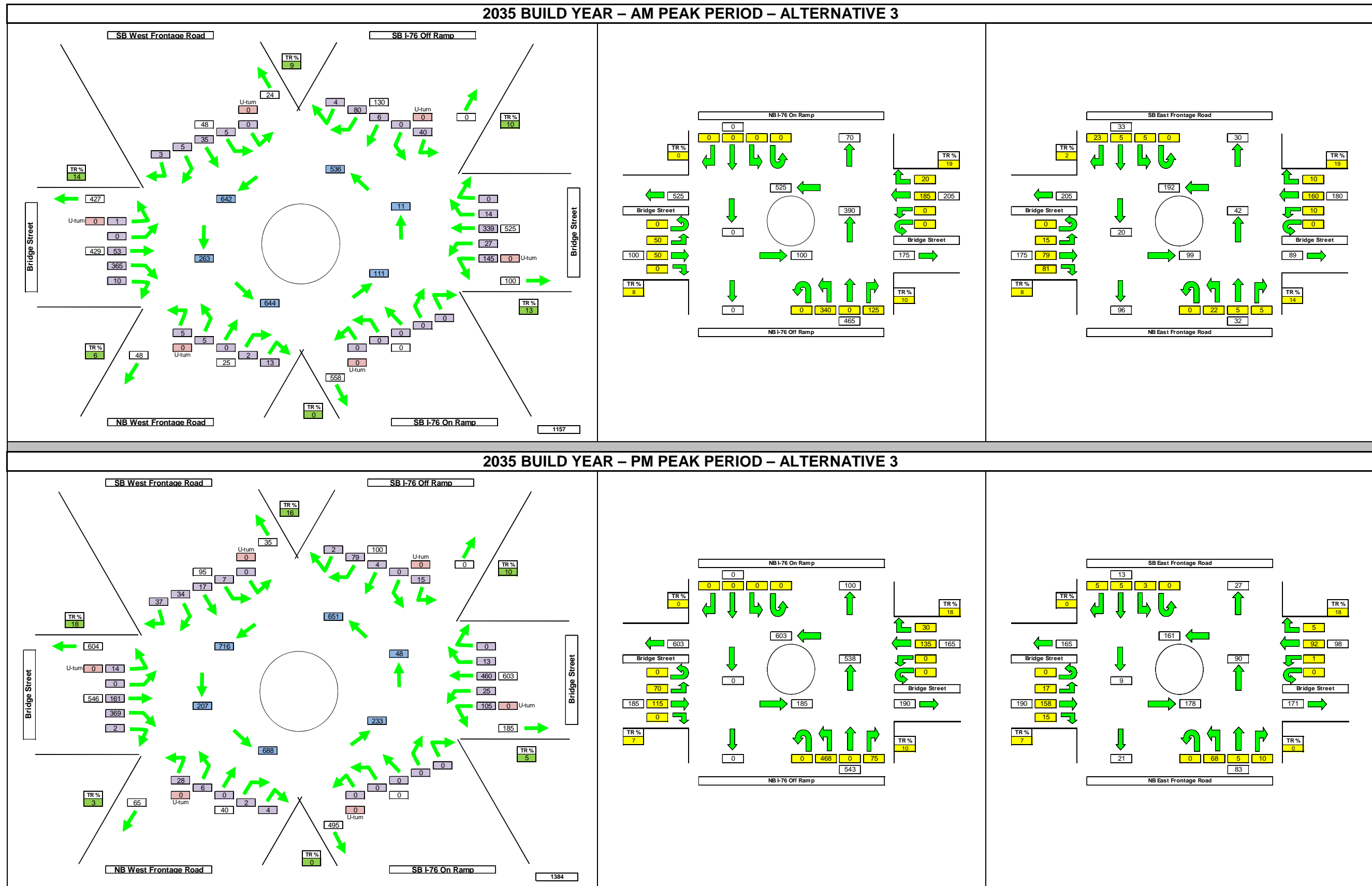


Figure 5. Alternative 3 Peak Hour Traffic Volumes, 2035

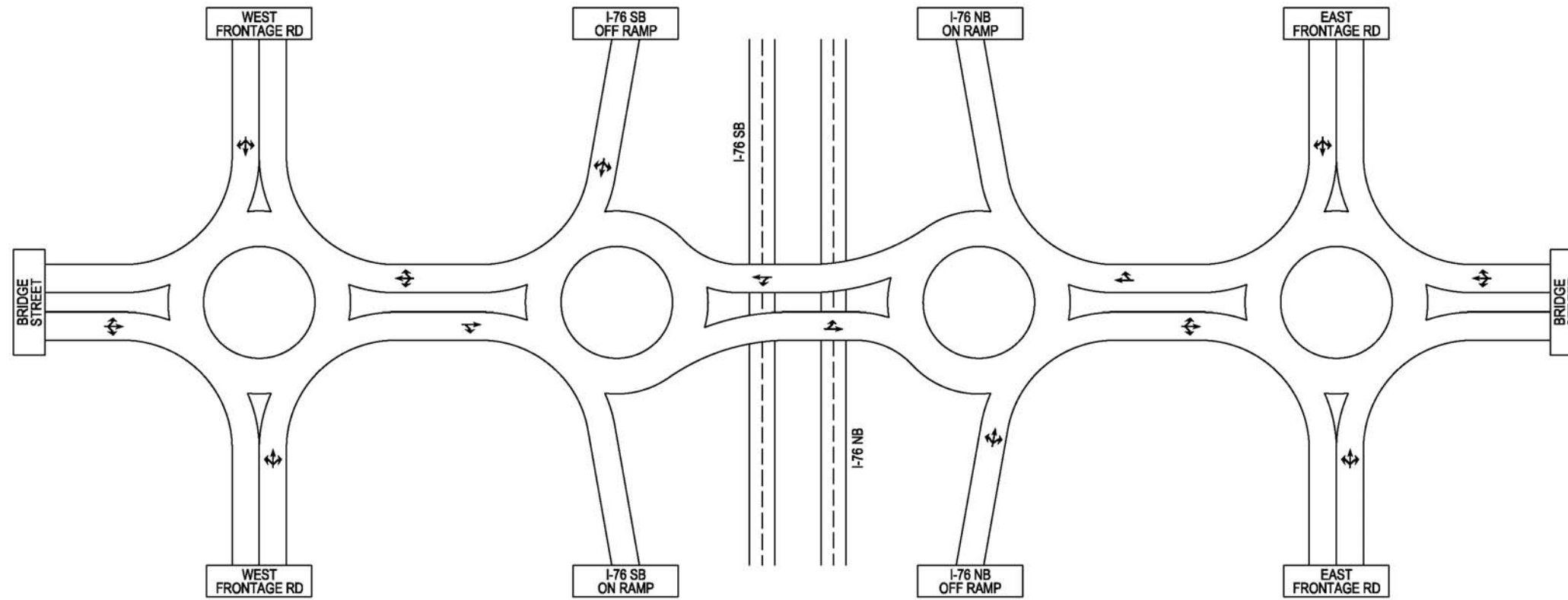


Figure 6. Alternative 1 Conceptual Lane Configuration

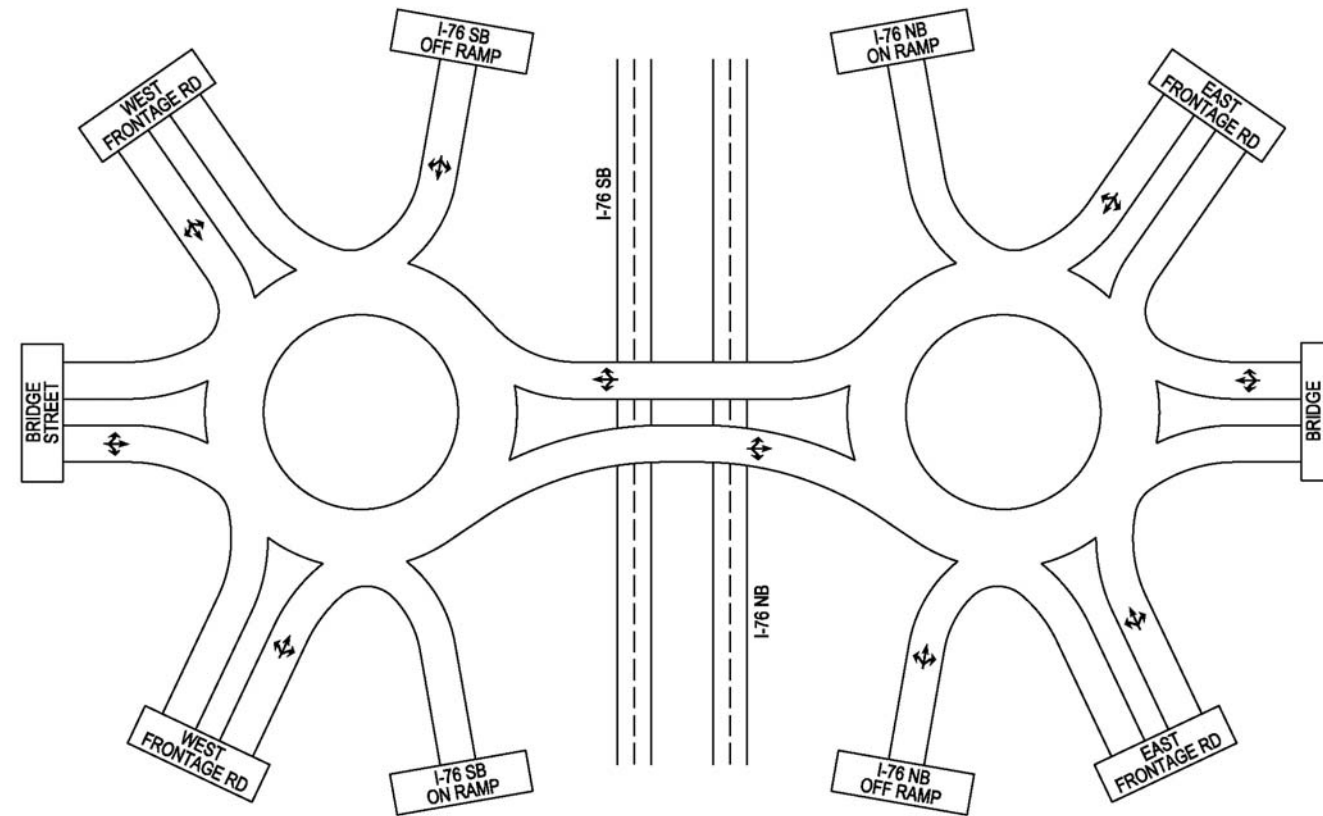


Figure 7. Alternative 2 Conceptual Lane Configuration

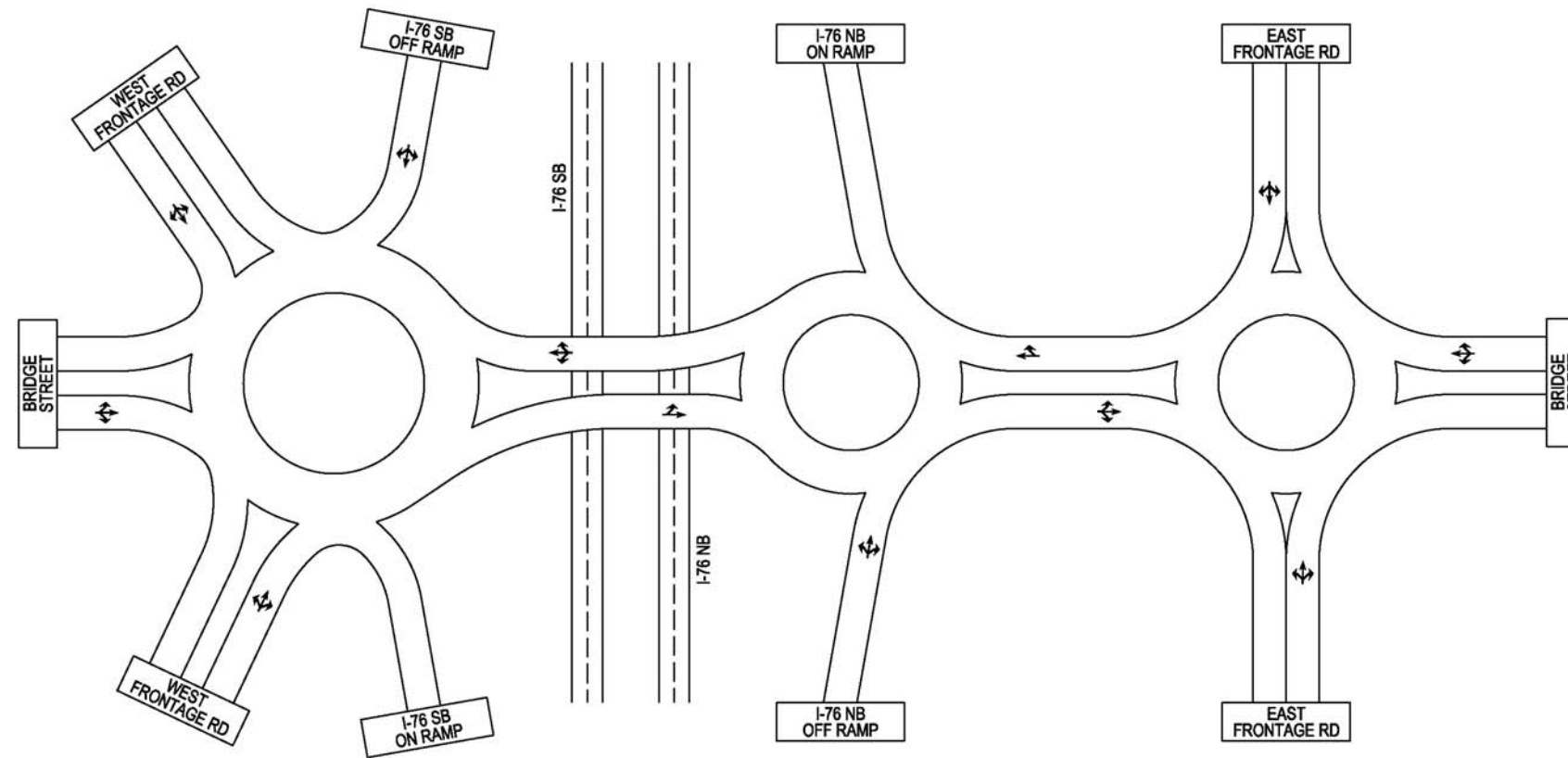


Figure 8. Alternative 3 Conceptual Lane Configuration

APPENDIX A
BRIDGE STREET AND WEST FRONTAGE ROAD
INTERSECTION

ALTERNATIVE 1: FOUR ROUNDABOUTS

OPERATIONAL ANALYSIS DOCUMENTATION

A.1 ARCADY Results (2019 and 2035).....A.1.1 – A.1.4
A.2 HCM Results (2019 and 2035)A.2.1 – A.2.4

Bridge Street and West Frontage Road Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB West Frontage Road	5.000	5.000	40.000	0.000	50.00
EB Bridge Street	10.000	366.000	10.000	0.000	386.00
NB West Frontage Road	15.000	5.000	10.000	0.000	30.00
WB Bridge Street	17.000	412.000	31.000	0.000	460.00
Total	47.00	788.00	91.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB West Frontage Road	9.000	9.000	9.000	9.000	9.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.00
NB West Frontage Road	6.000	6.000	6.000	6.000	6.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.00
Average	10.50	10.50	10.50	10.50	-

Geometry and Analysis Results

Leg	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00
f - Effective flare length (ft)	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	130.00	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	50.00	386.00	30.00	460.00
Max V/C Ratio	0.07	0.42	0.04	0.49
Max Delay (s)	4.85	6.24	4.44	6.71
Max LOS	A	A	A	A
Max 95th percentile Queue (Veh)	?	1.00	?	?

Bridge Street and West Frontage Road Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB West Frontage Road	21.000	26.000	34.000	0.000	81.00
EB Bridge Street	1.000	395.000	7.000	0.000	403.00
NB West Frontage Road	30.000	4.000	2.000	0.000	36.00
WB Bridge Street	20.000	495.000	30.000	0.000	545.00
Total	72.00	920.00	73.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB West Frontage Road	16.000	16.000	16.000	16.000	16.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.00
NB West Frontage Road	3.000	3.000	3.000	3.000	3.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.00
Average	10.50	10.50	10.50	10.50	-

Geometry and Analysis Results

Leg	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00
f - Effective flare length (ft)	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	130.00	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	81.00	403.00	36.00	545.00
Max V/C Ratio	0.12	0.46	0.05	0.53
Max Delay (s)	5.65	6.99	4.48	6.80
Max LOS	A	A	A	A
Max 95th percentile Queue (Veh)	?	200.00	?	?



Bridge Street and West Frontage Road Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB West Frontage Road	3.000	5.000	40.000	0.000	48.00
EB Bridge Street	10.000	418.000	1.000	0.000	429.00
NB West Frontage Road	15.000	5.000	5.000	0.000	25.00
WB Bridge Street	18.000	419.000	33.000	0.000	470.00
Total	46.00	847.00	79.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB West Frontage Road	9.000	9.000	9.000	9.000	9.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.00
NB West Frontage Road	6.000	6.000	6.000	6.000	6.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.00
Average	10.50	10.50	10.50	10.50	-

Geometry and Analysis Results

Leg	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00
f - Effective flare length (ft)	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	130.00	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	48.00	429.00	25.00	470.00
Max V/C Ratio	0.07	0.47	0.03	0.49
Max Delay (s)	4.85	6.82	4.57	6.74
Max LOS	A	A	A	A
Max 95th percentile Queue (Veh)	?	1.00	?	?

Bridge Street and West Frontage Road Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB West Frontage Road	37.000	34.000	24.000	0.000	95.00
EB Bridge Street	2.000	530.000	14.000	0.000	546.00
NB West Frontage Road	6.000	6.000	28.000	0.000	40.00
WB Bridge Street	15.000	539.000	29.000	0.000	583.00
Total	60.00	1109.00	95.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB West Frontage Road	16.000	16.000	16.000	16.000	16.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.00
NB West Frontage Road	3.000	3.000	3.000	3.000	3.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.00
Average	10.50	10.50	10.50	10.50	-

Geometry and Analysis Results

Leg	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00
f - Effective flare length (ft)	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	130.00	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	95.00	546.00	40.00	583.00
Max V/C Ratio	0.15	0.63	0.06	0.58
Max Delay (s)	6.18	10.01	5.13	7.73
Max LOS	A	B	A	A
Max 95th percentile Queue (Veh)	?	2.00	?	1.00



Bridge Street and West Frontage Road Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

HCM Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB West Frontage Road	5.000	5.000	40.000	0.000	50.00
EB Bridge Street	10.000	366.000	10.000	0.000	386.00
NB West Frontage Road	15.000	5.000	10.000	0.000	30.00
WB Bridge Street	17.000	412.000	31.000	0.000	460.00
Total	47.00	788.00	91.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB West Frontage Road	9.000	9.000	9.000	9.000	9.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.00
NB West Frontage Road	6.000	6.000	6.000	6.000	6.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.00
Average	10.50	10.50	10.50	10.50	-

Geometry and Analysis Results

Leg	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	54.35	419.57	32.61	500.00
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	492.39	82.61	452.17	27.17
Capacity (Veh/hr)	764.88	1050.45	812.93	1112.01
Queue95 (Veh)	0.23	1.95	0.13	2.38
Delay (s)	5.42	7.68	4.81	8.10
V/C Ratio	0.07	0.40	0.04	0.45
LOS	A	A	A	A



Bridge Street and West Frontage Road Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

HCM Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB West Frontage Road	21.000	26.000	34.000	0.000	81.00
EB Bridge Street	1.000	395.000	7.000	0.000	403.00
NB West Frontage Road	30.000	4.000	2.000	0.000	36.00
WB Bridge Street	20.000	495.000	30.000	0.000	545.00
Total	72.00	920.00	73.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB West Frontage Road	16.000	16.000	16.000	16.000	16.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.00
NB West Frontage Road	3.000	3.000	3.000	3.000	3.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.00
Average	10.50	10.50	10.50	10.50	-

Geometry and Analysis Results

Leg	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	88.04	438.04	39.13	592.39
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	572.83	97.83	473.91	14.13
Capacity (Veh/hr)	693.51	1000.31	807.64	1209.86
Queue95 (Veh)	0.43	2.26	0.15	2.78
Delay (s)	6.58	8.56	4.93	8.24
V/C Ratio	0.13	0.44	0.05	0.49
LOS	A	A	A	A



Bridge Street and West Frontage Road Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

HCM Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB West Frontage Road	3.000	5.000	40.000	0.000	48.00
EB Bridge Street	10.000	418.000	1.000	0.000	429.00
NB West Frontage Road	15.000	5.000	5.000	0.000	25.00
WB Bridge Street	18.000	419.000	33.000	0.000	470.00
Total	46.00	847.00	79.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB West Frontage Road	9.000	9.000	9.000	9.000	9.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.00
NB West Frontage Road	6.000	6.000	6.000	6.000	6.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.00
Average	10.50	10.50	10.50	10.50	-

Geometry and Analysis Results

Leg	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	52.17	466.30	27.17	510.87
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	496.74	84.78	498.91	11.96
Capacity (Veh/hr)	761.72	1048.44	779.84	1126.78
Queue95 (Veh)	0.22	2.33	0.11	2.41
Delay (s)	5.42	8.38	4.96	8.08
V/C Ratio	0.07	0.44	0.03	0.45
LOS	A	A	A	A



Bridge Street and West Frontage Road Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

HCM Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB West Frontage Road	37.000	34.000	24.000	0.000	95.00
EB Bridge Street	2.000	530.000	14.000	0.000	546.00
NB West Frontage Road	6.000	6.000	28.000	0.000	40.00
WB Bridge Street	15.000	539.000	29.000	0.000	583.00
Total	60.00	1109.00	95.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB West Frontage Road	16.000	16.000	16.000	16.000	16.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.00
NB West Frontage Road	3.000	3.000	3.000	3.000	3.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.00
Average	10.50	10.50	10.50	10.50	-

Geometry and Analysis Results

Leg	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	103.26	593.48	43.48	633.70
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	647.83	94.57	617.39	52.17
Capacity (Veh/hr)	652.48	1003.17	707.61	1172.40
Queue95 (Veh)	0.56	4.03	0.20	3.36
Delay (s)	7.34	11.61	5.73	9.32
V/C Ratio	0.16	0.59	0.06	0.54
LOS	A	B	A	A



APPENDIX B
BRIDGE STREET AND I-76 SOUTHBOUND RAMP TERMINAL
INTERSECTION

ALTERNATIVE 1: FOUR ROUNDABOUTS

OPERATIONAL ANALYSIS DOCUMENTATION

B.1 ARCADY Results (2019 and 2035).....B.1.1 – B.1.4
B.2 HCM Results (2019 and 2035)B.2.1 – B.2.4

Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB I-76 Off Ramp	66.000	0.000	30.000	0.000	96.00
EB Bridge Street	358.000	63.000	0.000	0.000	421.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	394.000	104.000	0.000	498.00
Total	424.00	457.00	134.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.00
Average	9.25	9.25	9.25	9.25	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	EB Bridge Street	SB I-76 On Ramp	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	Exit-only	12.00
E - Entry width (ft)	14.00	14.00	Exit-only	14.00
f - Effective flare length (ft)	130.00	130.00	Exit-only	130.00
R - Entry radius (ft)	65.00	65.00	Exit-only	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	Exit-only	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	Exit-only	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	96.00	421.00	Exit-only	498.00
Max V/C Ratio	0.14	0.48	Exit-only	0.52
Max Delay (s)	5.49	7.18	Exit-only	7.06
Max LOS	A	A	Exit-only	A
Max 95th percentile Queue (Veh)	?	1.00	Exit-only	?

Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB I-76 Off Ramp	70.000	0.000	10.000	0.000	80.00
EB Bridge Street	297.000	162.000	0.000	0.000	459.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	475.000	70.000	0.000	545.00
Total	367.00	637.00	80.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.00
Average	8.25	8.25	8.25	8.25	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	EB Bridge Street	SB I-76 On Ramp	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	Exit-only	12.00
E - Entry width (ft)	14.00	14.00	Exit-only	14.00
f - Effective flare length (ft)	130.00	130.00	Exit-only	130.00
R - Entry radius (ft)	65.00	65.00	Exit-only	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	Exit-only	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	Exit-only	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	80.00	459.00	Exit-only	545.00
Max V/C Ratio	0.12	0.52	Exit-only	0.53
Max Delay (s)	5.39	7.79	Exit-only	6.68
Max LOS	A	A	Exit-only	A
Max 95th percentile Queue (Veh)	?	?	Exit-only	?



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB I-76 Off Ramp	90.000	0.000	40.000	0.000	130.00
EB Bridge Street	413.000	60.000	0.000	0.000	473.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	380.000	145.000	0.000	525.00
Total	503.00	440.00	185.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.00
Average	9.25	9.25	9.25	9.25	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	EB Bridge Street	SB I-76 On Ramp	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	Exit-only	12.00
E - Entry width (ft)	14.00	14.00	Exit-only	14.00
f - Effective flare length (ft)	130.00	130.00	Exit-only	130.00
R - Entry radius (ft)	65.00	65.00	Exit-only	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	Exit-only	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	Exit-only	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	130.00	473.00	Exit-only	525.00
Max V/C Ratio	0.19	0.56	Exit-only	0.55
Max Delay (s)	6.00	8.74	Exit-only	7.50
Max LOS	A	A	Exit-only	A
Max 95th percentile Queue (Veh)	?	1.00	Exit-only	?



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB I-76 Off Ramp	85.000	0.000	15.000	0.000	100.00
EB Bridge Street	390.000	170.000	0.000	0.000	560.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	498.000	105.000	0.000	603.00
Total	475.00	668.00	120.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.00
Average	8.25	8.25	8.25	8.25	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	EB Bridge Street	SB I-76 On Ramp	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	Exit-only	12.00
E - Entry width (ft)	14.00	14.00	Exit-only	14.00
f - Effective flare length (ft)	130.00	130.00	Exit-only	130.00
R - Entry radius (ft)	65.00	65.00	Exit-only	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	Exit-only	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	Exit-only	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	100.00	560.00	Exit-only	603.00
Max V/C Ratio	0.15	0.65	Exit-only	0.58
Max Delay (s)	5.90	10.96	Exit-only	7.58
Max LOS	A	B	Exit-only	A
Max 95th percentile Queue (Veh)	?	2.00	Exit-only	1.00

Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

HCM Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB I-76 Off Ramp	66.000	0.000	30.000	0.000	96.00
EB Bridge Street	358.000	63.000	0.000	0.000	421.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	394.000	104.000	0.000	498.00
Total	424.00	457.00	134.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.00
Average	9.25	9.25	9.25	9.25	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	EB Bridge Street	SB I-76 On Ramp	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	104.35	457.61	0.00	541.30
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	541.30	145.65	101.09	0.00
Capacity (Veh/hr)	725.51	992.92	1176.65	1138.05
Queue95 (Veh)	0.50	2.47	0.00	2.63
Delay (s)	6.51	8.99	3.06	8.38
V/C Ratio	0.14	0.46	0.00	0.48
LOS	A	A	A	A

Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

HCM Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB I-76 Off Ramp	70.000	0.000	10.000	0.000	80.00
EB Bridge Street	297.000	162.000	0.000	0.000	459.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	475.000	70.000	0.000	545.00
Total	367.00	637.00	80.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.00
Average	8.25	8.25	8.25	8.25	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	EB Bridge Street	SB I-76 On Ramp	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	86.96	498.91	0.00	592.39
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	592.39	86.96	186.96	0.00
Capacity (Veh/hr)	719.68	1014.48	1083.44	1224.76
Queue95 (Veh)	0.41	2.78	0.00	2.72
Delay (s)	6.29	9.39	3.32	8.08
V/C Ratio	0.12	0.49	0.00	0.48
LOS	A	A	A	A

Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

HCM Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB I-76 Off Ramp	90.000	0.000	40.000	0.000	130.00
EB Bridge Street	413.000	60.000	0.000	0.000	473.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	380.000	145.000	0.000	525.00
Total	503.00	440.00	185.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.00
Average	9.25	9.25	9.25	9.25	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	EB Bridge Street	SB I-76 On Ramp	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	141.30	514.13	0.00	570.65
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	570.65	201.09	108.70	0.00
Capacity (Veh/hr)	706.98	945.81	1169.11	1138.05
Queue95 (Veh)	0.74	3.36	0.00	2.90
Delay (s)	7.36	10.96	3.08	8.81
V/C Ratio	0.20	0.54	0.00	0.50
LOS	A	B	A	A

Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts
Operational Analysis Documentation

HCM Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB I-76 Off Ramp	85.000	0.000	15.000	0.000	100.00
EB Bridge Street	390.000	170.000	0.000	0.000	560.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	498.000	105.000	0.000	603.00
Total	475.00	668.00	120.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.00
Average	8.25	8.25	8.25	8.25	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	EB Bridge Street	SB I-76 On Ramp	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	108.70	608.70	0.00	655.43
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	655.43	130.43	201.09	0.00
Capacity (Veh/hr)	683.47	978.79	1069.80	1224.76
Queue95 (Veh)	0.56	4.50	0.00	3.30
Delay (s)	7.06	12.64	3.37	8.95
V/C Ratio	0.16	0.62	0.00	0.54
LOS	A	B	A	A

APPENDIX C

BRIDGE STREET AND I-76 NORTHBOUND RAMP TERMINAL INTERSECTION

ALTERNATIVE 1: FOUR ROUNDABOUTS AND ALTERNATIVE 3: THREE ROUNDABOUTS

OPERATIONAL ANALYSIS DOCUMENTATION

C.1 ARCADY Results (2019 and 2035).....	C.1.1 – C.1.4
C.2 HCM Results (2019 and 2035)	C.2.1 – C.2.4

Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	47.000	46.000	0.000	93.00
NB I-76 Off Ramp	97.000	0.000	332.000	0.000	429.00
WB Bridge Street	16.000	166.000	0.000	0.000	182.00
Total	113.00	213.00	378.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.00
Average	9.25	9.25	9.25	9.25	-

Geometry and Analysis Results

Leg	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	WB Bridge Street
V - Approach road half-width (ft)	Exit-only	12.00	12.00	12.00
E - Entry width (ft)	Exit-only	14.00	14.00	14.00
f - Effective flare length (ft)	Exit-only	130.00	130.00	130.00
R - Entry radius (ft)	Exit-only	75.00	75.00	75.00
D - Inscribed circle diameter (ft)	Exit-only	150.00	150.00	150.00
PHI - Conflict (entry) angle (deg)	Exit-only	20.00	20.00	20.00
Exit Only	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	Exit-only	93.00	429.00	182.00
Max V/C Ratio	Exit-only	0.09	0.46	0.25
Max Delay (s)	Exit-only	3.56	6.38	6.07
Max LOS	Exit-only	A	A	A
Max 95th percentile Queue (Veh)	Exit-only	?	1.00	?



Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	111.000	61.000	0.000	172.00
NB I-76 Off Ramp	52.000	0.000	420.000	0.000	472.00
WB Bridge Street	23.000	125.000	0.000	0.000	148.00
Total	75.00	236.00	481.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.00
Average	8.75	8.75	8.75	8.75	-

Geometry and Analysis Results

Leg	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	WB Bridge Street
V - Approach road half-width (ft)	Exit-only	12.00	12.00	12.00
E - Entry width (ft)	Exit-only	14.00	14.00	14.00
l' - Effective flare length (ft)	Exit-only	130.00	130.00	130.00
R - Entry radius (ft)	Exit-only	75.00	75.00	75.00
D - Inscribed circle diameter (ft)	Exit-only	150.00	150.00	150.00
PHI - Conflict (entry) angle (deg)	Exit-only	20.00	20.00	20.00
Exit Only	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	Exit-only	172.00	472.00	148.00
Max V/C Ratio	Exit-only	0.17	0.53	0.22
Max Delay (s)	Exit-only	3.85	7.66	6.23
Max LOS	Exit-only	A	A	A
Max 95th percentile Queue (Veh)	Exit-only	?	?	?

Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	50.000	50.000	0.000	100.00
NB I-76 Off Ramp	125.000	0.000	340.000	0.000	465.00
WB Bridge Street	20.000	185.000	0.000	0.000	205.00
Total	145.00	235.00	390.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.00
Average	9.25	9.25	9.25	9.25	-

Geometry and Analysis Results

Leg	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	WB Bridge Street
V - Approach road half-width (ft)	Exit-only	12.00	12.00	12.00
E - Entry width (ft)	Exit-only	14.00	14.00	14.00
l' - Effective flare length (ft)	Exit-only	130.00	130.00	130.00
R - Entry radius (ft)	Exit-only	75.00	75.00	75.00
D - Inscribed circle diameter (ft)	Exit-only	150.00	150.00	150.00
PHI - Conflict (entry) angle (deg)	Exit-only	20.00	20.00	20.00
Exit Only	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	Exit-only	100.00	465.00	205.00
Max V/C Ratio	Exit-only	0.10	0.50	0.29
Max Delay (s)	Exit-only	3.58	6.92	6.42
Max LOS	Exit-only	A	A	A
Max 95th percentile Queue (Veh)	Exit-only	?	?	?

Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	115.000	70.000	0.000	185.00
NB I-76 Off Ramp	75.000	0.000	468.000	0.000	543.00
WB Bridge Street	30.000	135.000	0.000	0.000	165.00
Total	105.00	250.00	538.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.00
Average	8.75	8.75	8.75	8.75	-

Geometry and Analysis Results

Leg	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	WB Bridge Street
V - Approach road half-width (ft)	Exit-only	12.00	12.00	12.00
E - Entry width (ft)	Exit-only	14.00	14.00	14.00
l' - Effective flare length (ft)	Exit-only	130.00	130.00	130.00
R - Entry radius (ft)	Exit-only	75.00	75.00	75.00
D - Inscribed circle diameter (ft)	Exit-only	150.00	150.00	150.00
PHI - Conflict (entry) angle (deg)	Exit-only	20.00	20.00	20.00
Exit Only	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	Exit-only	185.00	543.00	165.00
Max V/C Ratio	Exit-only	0.18	0.61	0.26
Max Delay (s)	Exit-only	3.91	9.38	6.84
Max LOS	Exit-only	A	A	A
Max 95th percentile Queue (Veh)	Exit-only	?	1.00	?

Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	47.000	46.000	0.000	93.00
NB I-76 Off Ramp	97.000	0.000	332.000	0.000	429.00
WB Bridge Street	16.000	166.000	0.000	0.000	182.00
Total	113.00	213.00	378.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.00
Average	9.25	9.25	9.25	9.25	-

Geometry and Analysis Results

Leg	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	0.00	101.09	466.30	197.83
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	541.30	0.00	101.09	410.87
Capacity (Veh/hr)	798.06	1190.74	1073.66	760.21
Queue95 (Veh)	0.00	0.28	2.24	1.04
Delay (s)	4.51	3.73	8.07	7.69
V/C Ratio	0.00	0.08	0.43	0.26
LOS	A	A	A	A

Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	111.000	61.000	0.000	172.00
NB I-76 Off Ramp	52.000	0.000	420.000	0.000	472.00
WB Bridge Street	23.000	125.000	0.000	0.000	148.00
Total	75.00	236.00	481.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.00
Average	8.75	8.75	8.75	8.75	-

Geometry and Analysis Results

Leg	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	0.00	186.96	513.04	160.87
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	592.39	0.00	186.96	522.82
Capacity (Veh/hr)	767.04	1201.87	1000.19	696.97
Queue95 (Veh)	0.00	0.55	3.01	0.89
Delay (s)	4.69	4.32	9.89	7.86
V/C Ratio	0.00	0.16	0.51	0.23
LOS	A	A	A	A

Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	50.000	50.000	0.000	100.00
NB I-76 Off Ramp	125.000	0.000	340.000	0.000	465.00
WB Bridge Street	20.000	185.000	0.000	0.000	205.00
Total	145.00	235.00	390.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.00
Average	9.25	9.25	9.25	9.25	-

Geometry and Analysis Results

Leg	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	0.00	108.70	505.43	222.83
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	570.65	0.00	108.70	423.91
Capacity (Veh/hr)	777.09	1190.74	1066.80	751.80
Queue95 (Veh)	0.00	0.30	2.60	1.24
Delay (s)	4.63	3.78	8.74	8.27
V/C Ratio	0.00	0.09	0.47	0.30
LOS	A	A	A	A

Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	115.000	70.000	0.000	185.00
NB I-76 Off Ramp	75.000	0.000	468.000	0.000	543.00
WB Bridge Street	30.000	135.000	0.000	0.000	165.00
Total	105.00	250.00	538.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.00
Average	8.75	8.75	8.75	8.75	-

Geometry and Analysis Results

Leg	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	0.00	201.09	590.22	179.35
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	655.44	0.00	201.09	584.78
Capacity (Veh/hr)	726.16	1201.87	988.47	661.04
Queue95 (Veh)	0.00	0.60	4.11	1.10
Delay (s)	4.96	4.43	11.87	8.82
V/C Ratio	0.00	0.17	0.60	0.27
LOS	A	A	B	A

APPENDIX D
BRIDGE STREET AND EAST FRONTAGE ROAD
INTERSECTION

ALTERNATIVE 1: FOUR ROUNDABOUTS AND
ALTERNATIVE 3: THREE ROUNDABOUTS

OPERATIONAL ANALYSIS DOCUMENTATION

D.1 ARCADY Results (2019 and 2035)..... D.1.1 – D.1.4
D.2 HCM Results (2019 and 2035) D.2.1 – D.2.4

Bridge Street and East Frontage Road Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB East Frontage Road	10.000	5.000	20.000	0.000	35.00
EB Bridge Street	58.000	68.000	18.000	0.000	144.00
NB East Frontage Road	5.000	5.000	16.000	0.000	26.00
WB Bridge Street	10.000	156.000	10.000	0.000	176.00
Total	83.00	234.00	64.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB East Frontage Road	2.000	2.000	2.000	2.000	2.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.00
NB East Frontage Road	14.000	14.000	14.000	14.000	14.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.00
Average	10.75	10.75	10.75	10.75	-

Geometry and Analysis Results

Leg	SB East Frontage Road	EB Bridge Street	NB East Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00
f - Effective flare length (ft)	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	130.00	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	35.00	144.00	26.00	176.00
Max V/C Ratio	0.04	0.15	0.03	0.20
Max Delay (s)	3.60	3.89	3.76	4.57
Max LOS	A	A	A	A
Max 95th percentile Queue (Veh)	?	?	?	?

Bridge Street and East Frontage Road Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB East Frontage Road	4.000	5.000	10.000	0.000	19.00
EB Bridge Street	10.000	138.000	15.000	0.000	163.00
NB East Frontage Road	10.000	5.000	58.000	0.000	73.00
WB Bridge Street	10.000	86.000	5.000	0.000	101.00
Total	34.00	234.00	88.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB East Frontage Road	0.000	0.000	0.000	0.000	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.00
NB East Frontage Road	0.000	0.000	0.000	0.000	0.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.00
Average	6.25	6.25	6.25	6.25	-

Geometry and Analysis Results

Leg	SB East Frontage Road	EB Bridge Street	NB East Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00
l - Effective flare length (ft)	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	130.00	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	19.00	163.00	73.00	101.00
Max V/C Ratio	0.02	0.16	0.07	0.11
Max Delay (s)	3.37	3.89	3.58	4.19
Max LOS	A	A	A	A
Max 95th percentile Queue (Veh)	?	?	?	?



Bridge Street and East Frontage Road Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB East Frontage Road	23.000	5.000	5.000	0.000	33.00
EB Bridge Street	81.000	79.000	15.000	0.000	175.00
NB East Frontage Road	5.000	5.000	22.000	0.000	32.00
WB Bridge Street	10.000	160.000	10.000	0.000	180.00
Total	119.00	249.00	52.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB East Frontage Road	2.000	2.000	2.000	2.000	2.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.00
NB East Frontage Road	14.000	14.000	14.000	14.000	14.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.00
Average	10.75	10.75	10.75	10.75	-

Geometry and Analysis Results

Leg	SB East Frontage Road	EB Bridge Street	NB East Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00
f - Effective flare length (ft)	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	130.00	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	33.00	175.00	32.00	180.00
Max V/C Ratio	0.04	0.18	0.04	0.20
Max Delay (s)	3.62	3.99	3.77	4.61
Max LOS	A	A	A	A
Max 95th percentile Queue (Veh)	?	?	?	?

Bridge Street and East Frontage Road Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB East Frontage Road	5.000	5.000	3.000	0.000	13.00
EB Bridge Street	15.000	158.000	17.000	0.000	190.00
NB East Frontage Road	10.000	5.000	68.000	0.000	83.00
WB Bridge Street	5.000	92.000	1.000	0.000	98.00
Total	35.00	260.00	89.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB East Frontage Road	0.000	0.000	0.000	0.000	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.00
NB East Frontage Road	0.000	0.000	0.000	0.000	0.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.00
Average	6.25	6.25	6.25	6.25	-

Geometry and Analysis Results

Leg	SB East Frontage Road	EB Bridge Street	NB East Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00
f - Effective flare length (ft)	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	130.00	130.00	130.00	130.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	13.00	190.00	83.00	98.00
Max V/C Ratio	0.01	0.19	0.09	0.11
Max Delay (s)	3.37	3.99	3.66	4.21
Max LOS	A	A	A	A
Max 95th percentile Queue (Veh)	?	?	?	?

Bridge Street and East Frontage Road Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB East Frontage Road	10.000	5.000	20.000	0.000	35.00
EB Bridge Street	58.000	68.000	18.000	0.000	144.00
NB East Frontage Road	5.000	5.000	16.000	0.000	26.00
WB Bridge Street	10.000	156.000	10.000	0.000	176.00
Total	83.00	234.00	64.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB East Frontage Road	2.000	2.000	2.000	2.000	2.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.00
NB East Frontage Road	14.000	14.000	14.000	14.000	14.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.00
Average	10.75	10.75	10.75	10.75	-

Geometry and Analysis Results

Leg	SB East Frontage Road	EB Bridge Street	NB East Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	38.04	156.52	28.26	191.30
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	197.83	38.04	115.22	42.39
Capacity (Veh/hr)	1050.00	1153.58	1024.77	1041.65
Queue95 (Veh)	0.11	0.47	0.09	0.67
Delay (s)	3.74	4.29	3.75	5.15
V/C Ratio	0.04	0.14	0.03	0.18
LOS	A	A	A	A

Bridge Street and East Frontage Road Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB East Frontage Road	4.000	5.000	10.000	0.000	19.00
EB Bridge Street	10.000	138.000	15.000	0.000	163.00
NB East Frontage Road	10.000	5.000	58.000	0.000	73.00
WB Bridge Street	10.000	86.000	5.000	0.000	101.00
Total	34.00	234.00	88.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB East Frontage Road	0.000	0.000	0.000	0.000	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.00
NB East Frontage Road	0.000	0.000	0.000	0.000	0.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.00
Average	6.25	6.25	6.25	6.25	-

Geometry and Analysis Results

Leg	SB East Frontage Road	EB Bridge Street	NB East Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	20.65	177.17	79.35	109.78
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	161.96	21.74	177.17	84.78
Capacity (Veh/hr)	1117.76	1180.76	1109.89	1019.18
Queue95 (Veh)	0.06	0.53	0.23	0.36
Delay (s)	3.37	4.34	3.85	4.50
V/C Ratio	0.02	0.15	0.07	0.11
LOS	A	A	A	A

Bridge Street and East Frontage Road Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB East Frontage Road	23.000	5.000	5.000	0.000	33.00
EB Bridge Street	81.000	79.000	15.000	0.000	175.00
NB East Frontage Road	5.000	5.000	22.000	0.000	32.00
WB Bridge Street	10.000	160.000	10.000	0.000	180.00
Total	119.00	249.00	52.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB East Frontage Road	2.000	2.000	2.000	2.000	2.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.00
NB East Frontage Road	14.000	14.000	14.000	14.000	14.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.00
Average	10.75	10.75	10.75	10.75	-

Geometry and Analysis Results

Leg	SB East Frontage Road	EB Bridge Street	NB East Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	35.87	190.22	34.78	195.65
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	208.70	21.74	107.61	45.65
Capacity (Veh/hr)	1039.72	1168.64	1030.57	1038.47
Queue95 (Veh)	0.11	0.58	0.10	0.69
Delay (s)	3.76	4.49	3.78	5.21
V/C Ratio	0.03	0.16	0.03	0.19
LOS	A	A	A	A

Bridge Street and East Frontage Road Intersection
Alternative 1: Four Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	U-Turn	Total
SB East Frontage Road	5.000	5.000	3.000	0.000	13.00
EB Bridge Street	15.000	158.000	17.000	0.000	190.00
NB East Frontage Road	10.000	5.000	68.000	0.000	83.00
WB Bridge Street	5.000	92.000	1.000	0.000	98.00
Total	35.00	260.00	89.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	U-Turn	Average
SB East Frontage Road	0.000	0.000	0.000	0.000	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.00
NB East Frontage Road	0.000	0.000	0.000	0.000	0.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.00
Average	6.25	6.25	6.25	6.25	-

Geometry and Analysis Results

Leg	SB East Frontage Road	EB Bridge Street	NB East Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1
Lane Type	Single lane ▼	Single lane ▼	Single lane ▼	Single lane ▼
Number Of Conflicting Lanes	1	1	1	1
Destination Legs	1,2,3,4	1,2,3,4	1,2,3,4	1,2,3,4
Demand (Veh/hr)	14.13	206.52	90.22	106.52
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	175.00	9.78	193.48	97.83
Capacity (Veh/hr)	1106.10	1192.55	1094.43	1008.75
Queue95 (Veh)	0.04	0.63	0.27	0.35
Delay (s)	3.36	4.52	4.00	4.52
V/C Ratio	0.01	0.17	0.08	0.11
LOS	A	A	A	A



APPENDIX E

BRIDGE STREET AND I-76 SOUTHBOUND RAMP TERMINAL INTERSECTION

ALTERNATIVE 2: TWO ROUNDABOUTS AND ALTERNATIVE 3: THREE ROUNDABOUTS

OPERATIONAL ANALYSIS DOCUMENTATION

E.1 ARCADY Results (2019 and 2035).....	E.1.1 – E.1.4
E.2 HCM Results (2019 and 2035)	E.2.1 – E.2.4

Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB I-76 Off Ramp	2.000	59.000	5.000	0.000	30.000	0.000	96.00
SB West Frontage Road	5.000	5.000	34.000	6.000	0.000	0.000	50.00
EB Bridge Street	10.000	311.000	55.000	0.000	10.000	0.000	386.00
NB West Frontage Road	13.000	2.000	0.000	5.000	10.000	0.000	30.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	15.000	353.000	26.000	104.000	0.000	498.00
Total	30.00	392.00	447.00	37.00	154.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
SB West Frontage Road	9.000	9.000	9.000	9.000	9.000	9.000	9.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.000	14.000	14.00
NB West Frontage Road	6.000	6.000	6.000	6.000	6.000	6.000	6.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.000	13.000	13.00
Average	8.67	8.67	8.67	8.67	8.67	8.67	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	SB I-76 On Ramp	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00	Exit-only	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00	Exit-only	14.00
l' - Effective flare length (ft)	130.00	130.00	130.00	130.00	Exit-only	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00	Exit-only	65.00
D - Inscribed circle diameter (ft)	180.00	180.00	180.00	180.00	Exit-only	180.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00	Exit-only	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	96.00	50.00	386.00	30.00	Exit-only	498.00
Max V/C Ratio	0.14	0.07	0.46	0.04	Exit-only	0.53
Max Delay (s)	5.37	5.21	7.14	4.77	Exit-only	7.26
Max LOS	A	A	A	A	Exit-only	A
Max 95th percentile Queue (Veh)	?	?	1.00	?	Exit-only	?



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB I-76 Off Ramp	3.000	63.000	4.000	0.000	10.000	0.000	80.00
SB West Frontage Road	21.000	26.000	22.000	12.000	0.000	0.000	81.00
EB Bridge Street	1.000	256.000	139.000	0.000	7.000	0.000	403.00
NB West Frontage Road	19.000	11.000	0.000	4.000	2.000	0.000	36.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	17.000	432.000	26.000	70.000	0.000	545.00
Total	44.00	373.00	597.00	42.00	89.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
SB West Frontage Road	16.000	16.000	16.000	16.000	16.000	16.000	16.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.000	18.000	18.00
NB West Frontage Road	3.000	3.000	3.000	3.000	3.000	3.000	3.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.000	5.000	5.00
Average	8.67	8.67	8.67	8.67	8.67	8.67	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	SB I-76 On Ramp	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00	Exit-only	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00	Exit-only	14.00
l' - Effective flare length (ft)	130.00	130.00	130.00	130.00	Exit-only	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00	Exit-only	65.00
D - Inscribed circle diameter (ft)	180.00	180.00	180.00	180.00	Exit-only	180.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00	Exit-only	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	80.00	81.00	403.00	36.00	Exit-only	545.00
Max V/C Ratio	0.11	0.13	0.48	0.05	Exit-only	0.53
Max Delay (s)	5.22	5.80	7.53	4.59	Exit-only	6.78
Max LOS	A	A	A	A	Exit-only	A
Max 95th percentile Queue (Veh)	?	?	1.00	?	Exit-only	?



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB I-76 Off Ramp	4.000	80.000	6.000	0.000	40.000	0.000	130.00
SB West Frontage Road	3.000	5.000	35.000	5.000	0.000	0.000	48.00
EB Bridge Street	10.000	365.000	53.000	0.000	1.000	0.000	429.00
NB West Frontage Road	13.000	2.000	0.000	5.000	5.000	0.000	25.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	14.000	339.000	27.000	145.000	0.000	525.00
Total	30.00	466.00	433.00	37.00	191.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
SB West Frontage Road	9.000	9.000	9.000	9.000	9.000	9.000	9.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.000	14.000	14.00
NB West Frontage Road	6.000	6.000	6.000	6.000	6.000	6.000	6.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.000	13.000	13.00
Average	8.67	8.67	8.67	8.67	8.67	8.67	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	SB I-76 On Ramp	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00	Exit-only	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00	Exit-only	14.00
l' - Effective flare length (ft)	130.00	130.00	130.00	130.00	Exit-only	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00	Exit-only	65.00
D - Inscribed circle diameter (ft)	180.00	180.00	180.00	180.00	Exit-only	180.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00	Exit-only	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	130.00	48.00	429.00	25.00	Exit-only	525.00
Max V/C Ratio	0.19	0.07	0.53	0.04	Exit-only	0.55
Max Delay (s)	5.76	5.45	8.44	5.13	Exit-only	7.60
Max LOS	A	A	A	A	Exit-only	A
Max 95th percentile Queue (Veh)	?	?	?	?	Exit-only	?



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB I-76 Off Ramp	2.000	79.000	4.000	0.000	15.000	0.000	100.00
SB West Frontage Road	37.000	34.000	17.000	7.000	0.000	0.000	95.00
EB Bridge Street	2.000	369.000	161.000	0.000	14.000	0.000	546.00
NB West Frontage Road	4.000	2.000	0.000	6.000	28.000	0.000	40.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	13.000	460.000	25.000	105.000	0.000	603.00
Total	45.00	497.00	642.00	38.00	162.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
SB West Frontage Road	16.000	16.000	16.000	16.000	16.000	16.000	16.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.000	18.000	18.00
NB West Frontage Road	3.000	3.000	3.000	3.000	3.000	3.000	3.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.000	5.000	5.00
Average	8.67	8.67	8.67	8.67	8.67	8.67	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	SB I-76 On Ramp	WB Bridge Street
V - Approach road half-width (ft)	12.00	12.00	12.00	12.00	Exit-only	12.00
E - Entry width (ft)	14.00	14.00	14.00	14.00	Exit-only	14.00
l' - Effective flare length (ft)	130.00	130.00	130.00	130.00	Exit-only	130.00
R - Entry radius (ft)	65.00	65.00	65.00	65.00	Exit-only	65.00
D - Inscribed circle diameter (ft)	180.00	180.00	180.00	180.00	Exit-only	180.00
PHI - Conflict (entry) angle (deg)	20.00	20.00	20.00	20.00	Exit-only	20.00
Exit Only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	100.00	95.00	546.00	40.00	Exit-only	603.00
Max V/C Ratio	0.15	0.16	0.67	0.06	Exit-only	0.60
Max Delay (s)	5.85	6.57	11.92	5.39	Exit-only	8.07
Max LOS	A	A	B	A	Exit-only	A
Max 95th percentile Queue (Veh)	?	?	3.00	?	Exit-only	1.00



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB I-76 Off Ramp	2.000	59.000	5.000	0.000	30.000	0.000	96.00
SB West Frontage Road	5.000	5.000	34.000	6.000	0.000	0.000	50.00
EB Bridge Street	10.000	311.000	55.000	0.000	10.000	0.000	386.00
NB West Frontage Road	13.000	2.000	0.000	5.000	10.000	0.000	30.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	15.000	353.000	26.000	104.000	0.000	498.00
Total	30.00	392.00	447.00	37.00	154.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
SB West Frontage Road	9.000	9.000	9.000	9.000	9.000	9.000	9.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.000	14.000	14.00
NB West Frontage Road	6.000	6.000	6.000	6.000	6.000	6.000	6.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.000	13.000	13.00
Average	8.67	8.67	8.67	8.67	8.67	8.67	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	SB I-76 On Ramp	WB Bridge Street
HCM Lane	1	1	1	1	1	1
Lane Type	Single lane	Single lane	Single lane	Single lane	Single lane	Single lane
Number Of Conflicting Lanes	1	1	1	1	1	1
Destination Legs	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6
Demand (Veh/hr)	104.35	54.35	419.57	32.61	0.00	541.30
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	568.48	638.05	228.26	597.83	128.26	27.17
Capacity (Veh/hr)	708.91	674.34	924.72	715.54	1150.17	1112.01
Queue95 (Veh)	0.51	0.26	2.40	0.14	0.00	2.74
Delay (s)	6.69	6.21	9.35	5.50	3.13	8.70
V/C Ratio	0.15	0.08	0.45	0.05	0.00	0.49
LOS	A	A	A	A	A	A



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB I-76 Off Ramp	3.000	63.000	4.000	0.000	10.000	0.000	80.00
SB West Frontage Road	21.000	26.000	22.000	12.000	0.000	0.000	81.00
EB Bridge Street	1.000	256.000	139.000	0.000	7.000	0.000	403.00
NB West Frontage Road	19.000	11.000	0.000	4.000	2.000	0.000	36.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	17.000	432.000	26.000	70.000	0.000	545.00
Total	44.00	373.00	597.00	42.00	89.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
SB West Frontage Road	16.000	16.000	16.000	16.000	16.000	16.000	16.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.000	18.000	18.00
NB West Frontage Road	3.000	3.000	3.000	3.000	3.000	3.000	3.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.000	5.000	5.00
Average	8.67	8.67	8.67	8.67	8.67	8.67	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	SB I-76 On Ramp	WB Bridge Street
HCM Lane	1	1	1	1	1	1
Lane Type	Single lane	Single lane	Single lane	Single lane	Single lane	Single lane
Number Of Conflicting Lanes	1	1	1	1	1	1
Destination Legs	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6
Demand (Veh/hr)	86.96	88.04	438.04	39.13	0.00	592.39
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	606.52	659.78	184.78	560.87	201.09	14.13
Capacity (Veh/hr)	710.93	643.73	930.99	751.81	1071.97	1209.86
Queue95 (Veh)	0.42	0.47	2.56	0.16	0.00	2.78
Delay (s)	6.38	7.16	9.61	5.31	3.36	8.24
V/C Ratio	0.12	0.14	0.47	0.05	0.00	0.49
LOS	A	A	A	A	A	A



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB I-76 Off Ramp	4.000	80.000	6.000	0.000	40.000	0.000	130.00
SB West Frontage Road	3.000	5.000	35.000	5.000	0.000	0.000	48.00
EB Bridge Street	10.000	365.000	53.000	0.000	1.000	0.000	429.00
NB West Frontage Road	13.000	2.000	0.000	5.000	5.000	0.000	25.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	14.000	339.000	27.000	145.000	0.000	525.00
Total	30.00	466.00	433.00	37.00	191.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
SB West Frontage Road	9.000	9.000	9.000	9.000	9.000	9.000	9.00
EB Bridge Street	14.000	14.000	14.000	14.000	14.000	14.000	14.00
NB West Frontage Road	6.000	6.000	6.000	6.000	6.000	6.000	6.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	13.000	13.000	13.000	13.000	13.000	13.000	13.00
Average	8.67	8.67	8.67	8.67	8.67	8.67	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	SB I-76 On Ramp	WB Bridge Street
HCM Lane	1	1	1	1	1	1
Lane Type	Single lane	Single lane	Single lane	Single lane	Single lane	Single lane
Number Of Conflicting Lanes	1	1	1	1	1	1
Destination Legs	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6
Demand (Veh/hr)	141.30	52.17	466.30	27.17	0.00	570.65
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	582.61	697.82	285.87	700.00	120.65	11.96
Capacity (Veh/hr)	699.98	640.05	879.18	653.84	1157.93	1126.78
Queue95 (Veh)	0.75	0.27	3.19	0.13	0.00	2.95
Delay (s)	7.45	6.53	11.27	5.95	3.11	8.96
V/C Ratio	0.20	0.08	0.53	0.04	0.00	0.51
LOS	A	A	B	A	A	A



Bridge Street and I-76 Southbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts and Alternative 3: Three Roundabouts
Operational Analysis Documentation

HCM Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB I-76 Off Ramp	2.000	79.000	4.000	0.000	15.000	0.000	100.00
SB West Frontage Road	37.000	34.000	17.000	7.000	0.000	0.000	95.00
EB Bridge Street	2.000	369.000	161.000	0.000	14.000	0.000	546.00
NB West Frontage Road	4.000	2.000	0.000	6.000	28.000	0.000	40.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	0.000	13.000	460.000	25.000	105.000	0.000	603.00
Total	45.00	497.00	642.00	38.00	162.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
SB West Frontage Road	16.000	16.000	16.000	16.000	16.000	16.000	16.00
EB Bridge Street	18.000	18.000	18.000	18.000	18.000	18.000	18.00
NB West Frontage Road	3.000	3.000	3.000	3.000	3.000	3.000	3.00
SB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
WB Bridge Street	5.000	5.000	5.000	5.000	5.000	5.000	5.00
Average	8.67	8.67	8.67	8.67	8.67	8.67	-

Geometry and Analysis Results

Leg	SB I-76 Off Ramp	SB West Frontage Road	EB Bridge Street	NB West Frontage Road	SB I-76 On Ramp	WB Bridge Street
HCM Lane	1	1	1	1	1	1
Lane Type	Single lane	Single lane	Single lane	Single lane	Single lane	Single lane
Number Of Conflicting Lanes	1	1	1	1	1	1
Destination Legs	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6
Demand (Veh/hr)	108.70	103.26	593.48	43.48	0.00	655.43
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	707.61	778.26	225.00	747.82	253.26	52.17
Capacity (Veh/hr)	654.25	583.94	900.80	635.51	1024.44	1172.40
Queue95 (Veh)	0.59	0.64	5.11	0.22	0.00	3.60
Delay (s)	7.43	8.37	14.65	6.42	3.51	9.69
V/C Ratio	0.17	0.18	0.66	0.07	0.00	0.56
LOS	A	A	B	A	A	A



APPENDIX F

BRIDGE STREET AND I-76 NORTHBOUND RAMP TERMINAL INTERSECTION

ALTERNATIVE 2: TWO ROUNDABOUTS

OPERATIONAL ANALYSIS DOCUMENTATION

F.1 ARCADY Results (2019 and 2035)	F.1.1 – F.1.4
F.2 HCM Results (2019 and 2035).....	F.2.1 – F.2.4

Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB East Frontage Road	1.000	9.000	0.000	5.000	20.000	0.000	35.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	19.000	22.000	6.000	46.000	0.000	93.00
NB I-76 Off Ramp	39.000	46.000	12.000	0.000	332.000	0.000	429.00
NB East Frontage Road	5.000	5.000	1.000	15.000	0.000	0.000	26.00
WB Bridge Street	10.000	14.000	142.000	0.000	10.000	0.000	176.00
Total	55.00	93.00	177.00	26.00	408.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB East Frontage Road	2.000	2.000	2.000	2.000	2.000	2.000	2.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.000	8.000	8.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
NB East Frontage Road	14.000	14.000	14.000	14.000	14.000	14.000	14.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.000	19.000	19.00
Average	8.83	8.83	8.83	8.83	8.83	8.83	-

Geometry and Analysis Results

Leg	SB East Frontage Road	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	NB East Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	Exit-only	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	Exit-only	14.00	14.00	14.00	14.00
l' - Effective flare length (ft)	130.00	Exit-only	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	Exit-only	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	180.00	Exit-only	180.00	180.00	180.00	180.00
PHI - Conflict (entry) angle (deg)	20.00	Exit-only	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	35.00	Exit-only	93.00	429.00	26.00	176.00
Max V/C Ratio	0.05	Exit-only	0.09	0.47	0.04	0.25
Max Delay (s)	4.65	Exit-only	3.66	6.64	4.79	6.13
Max LOS	A	Exit-only	A	A	A	A
Max 95th percentile Queue (Veh)	?	Exit-only	?	200.00	?	?



Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts
Operational Analysis Documentation

ARCADY Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB East Frontage Road	1.000	3.000	0.000	5.000	10.000	0.000	19.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	7.000	94.000	10.000	61.000	0.000	172.00
NB I-76 Off Ramp	3.000	44.000	5.000	0.000	420.000	0.000	472.00
NB East Frontage Road	10.000	5.000	9.000	49.000	0.000	0.000	73.00
WB Bridge Street	10.000	13.000	73.000	0.000	5.000	0.000	101.00
Total	24.00	72.00	181.00	64.00	496.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB East Frontage Road	0.000	0.000	0.000	0.000	0.000	0.000	0.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.000	7.000	7.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
NB East Frontage Road	0.000	0.000	0.000	0.000	0.000	0.000	0.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.000	18.000	18.00
Average	5.83	5.83	5.83	5.83	5.83	5.83	-

Geometry and Analysis Results

Leg	SB East Frontage Road	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	NB East Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	Exit-only	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	Exit-only	14.00	14.00	14.00	14.00
l' - Effective flare length (ft)	130.00	Exit-only	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	Exit-only	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	180.00	Exit-only	180.00	180.00	180.00	180.00
PHI - Conflict (entry) angle (deg)	20.00	Exit-only	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	19.00	Exit-only	172.00	472.00	73.00	101.00
Max V/C Ratio	0.03	Exit-only	0.17	0.53	0.10	0.16
Max Delay (s)	4.66	Exit-only	3.93	7.84	5.09	5.96
Max LOS	A	Exit-only	A	A	A	A
Max 95th percentile Queue (Veh)	?	Exit-only	?	?	?	?



Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB East Frontage Road	2,000	21,000	0,000	5,000	5,000	0,000	33,000
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0,000
EB Bridge Street	0,000	23,000	23,000	4,000	50,000	0,000	100,000
NB I-76 Off Ramp	58,000	56,000	11,000	0,000	340,000	0,000	465,000
NB East Frontage Road	5,000	5,000	2,000	20,000	0,000	0,000	32,000
WB Bridge Street	10,000	16,000	144,000	0,000	10,000	0,000	180,000
Total	75,000	121,000	180,000	29,000	405,000	0,000	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB East Frontage Road	2,000	2,000	2,000	2,000	2,000	2,000	2,000
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0,000
EB Bridge Street	8,000	8,000	8,000	8,000	8,000	8,000	8,000
NB I-76 Off Ramp	10,000	10,000	10,000	10,000	10,000	10,000	10,000
NB East Frontage Road	14,000	14,000	14,000	14,000	14,000	14,000	14,000
WB Bridge Street	19,000	19,000	19,000	19,000	19,000	19,000	19,000
Average	8.83	8.83	8.83	8.83	8.83	8.83	-

Geometry and Analysis Results

Leg	SB East Frontage Road	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	NB East Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	Exit-only	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	Exit-only	14.00	14.00	14.00	14.00
l' - Effective flare length (ft)	130.00	Exit-only	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	Exit-only	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	180.00	Exit-only	180.00	180.00	180.00	180.00
PHI - Conflict (entry) angle (deg)	20.00	Exit-only	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	33.00	Exit-only	100.00	465.00	32.00	180.00
Max V/C Ratio	0.05	Exit-only	0.10	0.50	0.05	0.26
Max Delay (s)	4.72	Exit-only	3.65	7.11	4.86	6.26
Max LOS	A	Exit-only	A	A	A	A
Max 95th percentile Queue (Veh)	?	Exit-only	?	?	?	?



Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts
Operational Analysis Documentation

ARCADY Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB East Frontage Road	1.000	4.000	0.000	5.000	3.000	0.000	13.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	9.000	96.000	10.000	70.000	0.000	185.00
NB I-76 Off Ramp	6.000	62.000	7.000	0.000	468.000	0.000	543.00
NB East Frontage Road	10.000	5.000	12.000	56.000	0.000	0.000	83.00
WB Bridge Street	5.000	17.000	75.000	0.000	1.000	0.000	98.00
Total	22.00	97.00	190.00	71.00	542.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB East Frontage Road	0.000	0.000	0.000	0.000	0.000	0.000	0.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.000	7.000	7.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
NB East Frontage Road	0.000	0.000	0.000	0.000	0.000	0.000	0.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.000	18.000	18.00
Average	5.83	5.83	5.83	5.83	5.83	5.83	-

Geometry and Analysis Results

Leg	SB East Frontage Road	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	NB East Frontage Road	WB Bridge Street
V - Approach road half-width (ft)	12.00	Exit-only	12.00	12.00	12.00	12.00
E - Entry width (ft)	14.00	Exit-only	14.00	14.00	14.00	14.00
l' - Effective flare length (ft)	130.00	Exit-only	130.00	130.00	130.00	130.00
R - Entry radius (ft)	65.00	Exit-only	65.00	65.00	65.00	65.00
D - Inscribed circle diameter (ft)	180.00	Exit-only	180.00	180.00	180.00	180.00
PHI - Conflict (entry) angle (deg)	20.00	Exit-only	20.00	20.00	20.00	20.00
Exit Only	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percentage Intercept Adjustment (%)	90.00	90.00	90.00	90.00	90.00	90.00
Average Demand (Veh/hr)	13.00	Exit-only	185.00	543.00	83.00	98.00
Max V/C Ratio	0.02	Exit-only	0.18	0.61	0.12	0.16
Max Delay (s)	4.89	Exit-only	3.96	9.47	5.53	6.31
Max LOS	A	Exit-only	A	A	A	A
Max 95th percentile Queue (Veh)	?	Exit-only	?	1.00	?	?



Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts
Operational Analysis Documentation

HCM Results

2019 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB East Frontage Road	1.000	9.000	0.000	5.000	20.000	0.000	35.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	19.000	22.000	6.000	46.000	0.000	93.00
NB I-76 Off Ramp	39.000	46.000	12.000	0.000	332.000	0.000	429.00
NB East Frontage Road	5.000	5.000	1.000	15.000	0.000	0.000	26.00
WB Bridge Street	10.000	14.000	142.000	0.000	10.000	0.000	176.00
Total	55.00	93.00	177.00	26.00	408.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB East Frontage Road	2.000	2.000	2.000	2.000	2.000	2.000	2.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.000	8.000	8.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
NB East Frontage Road	14.000	14.000	14.000	14.000	14.000	14.000	14.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.000	19.000	19.00
Average	8.83	8.83	8.83	8.83	8.83	8.83	-

Geometry and Analysis Results

Leg	SB East Frontage Road	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	NB East Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1	1	1
Lane Type	Single lane	Single lane	Single lane	Single lane	Single lane	Single lane
Number Of Conflicting Lanes	1	1	1	1	1	1
Destination Legs	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6
Demand (Veh/hr)	38.04	0.00	101.09	466.30	28.26	191.30
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	608.69	579.35	38.04	139.13	526.09	453.26
Capacity (Veh/hr)	738.63	774.65	1153.58	1040.15	720.17	732.61
Queue95 (Veh)	0.16	0.00	0.29	2.36	0.12	1.04
Delay (s)	5.40	4.65	3.86	8.48	5.40	7.95
V/C Ratio	0.05	0.00	0.09	0.45	0.04	0.26
LOS	A	A	A	A	A	A



Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts
Operational Analysis Documentation

HCM Results

2019 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB East Frontage Road	1.000	3.000	0.000	5.000	10.000	0.000	19.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	7.000	94.000	10.000	61.000	0.000	172.00
NB I-76 Off Ramp	3.000	44.000	5.000	0.000	420.000	0.000	472.00
NB East Frontage Road	10.000	5.000	9.000	49.000	0.000	0.000	73.00
WB Bridge Street	10.000	13.000	73.000	0.000	5.000	0.000	101.00
Total	24.00	72.00	181.00	64.00	496.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB East Frontage Road	0.000	0.000	0.000	0.000	0.000	0.000	0.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.000	7.000	7.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
NB East Frontage Road	0.000	0.000	0.000	0.000	0.000	0.000	0.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.000	18.000	18.00
Average	5.83	5.83	5.83	5.83	5.83	5.83	-

Geometry and Analysis Results

Leg	SB East Frontage Road	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	NB East Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1	1	1
Lane Type	Single lane	Single lane	Single lane	Single lane	Single lane	Single lane
Number Of Conflicting Lanes	1	1	1	1	1	1
Destination Legs	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6
Demand (Veh/hr)	20.65	0.00	186.96	513.04	79.35	109.78
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	684.79	614.13	21.74	208.69	700.00	607.61
Capacity (Veh/hr)	714.83	759.57	1180.76	982.63	708.92	651.71
Queue95 (Veh)	0.09	0.00	0.56	3.11	0.38	0.60
Delay (s)	5.33	4.74	4.41	10.21	6.28	7.48
V/C Ratio	0.03	0.00	0.16	0.52	0.11	0.17
LOS	A	A	A	B	A	A



Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts
Operational Analysis Documentation

HCM Results

2035 - AM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB East Frontage Road	2.000	21.000	0.000	5.000	5.000	0.000	33.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	23.000	23.000	4.000	50.000	0.000	100.00
NB I-76 Off Ramp	58.000	56.000	11.000	0.000	340.000	0.000	465.00
NB East Frontage Road	5.000	5.000	2.000	20.000	0.000	0.000	32.00
WB Bridge Street	10.000	16.000	144.000	0.000	10.000	0.000	180.00
Total	75.00	121.00	180.00	29.00	405.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB East Frontage Road	2.000	2.000	2.000	2.000	2.000	2.000	2.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	8.000	8.000	8.000	8.000	8.000	8.000	8.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
NB East Frontage Road	14.000	14.000	14.000	14.000	14.000	14.000	14.00
WB Bridge Street	19.000	19.000	19.000	19.000	19.000	19.000	19.00
Average	8.83	8.83	8.83	8.83	8.83	8.83	-

Geometry and Analysis Results

Leg	SB East Frontage Road	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	NB East Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1	1	1
Lane Type	Single lane	Single lane	Single lane	Single lane	Single lane	Single lane
Number Of Conflicting Lanes	1	1	1	1	1	1
Destination Legs	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6
Demand (Veh/hr)	35.87	0.00	108.70	505.43	34.78	195.65
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	632.61	592.39	21.74	130.43	531.52	469.57
Capacity (Veh/hr)	723.31	765.63	1168.64	1047.00	716.13	722.31
Queue95 (Veh)	0.16	0.00	0.31	2.69	0.15	1.10
Delay (s)	5.48	4.70	3.86	9.02	5.53	8.18
V/C Ratio	0.05	0.00	0.09	0.48	0.05	0.27
LOS	A	A	A	A	A	A



Bridge Street and I-76 Northbound Ramp Terminal Intersection
Alternative 2: Two Roundabouts
Operational Analysis Documentation

HCM Results

2035 - PM Peak Period

Volumes

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Total
SB East Frontage Road	1.000	4.000	0.000	5.000	3.000	0.000	13.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	0.000	9.000	96.000	10.000	70.000	0.000	185.00
NB I-76 Off Ramp	6.000	62.000	7.000	0.000	468.000	0.000	543.00
NB East Frontage Road	10.000	5.000	12.000	56.000	0.000	0.000	83.00
WB Bridge Street	5.000	17.000	75.000	0.000	1.000	0.000	98.00
Total	22.00	97.00	190.00	71.00	542.00	0.00	-

Truck Percentages

From \ To	1st	2nd	3rd	4th	5th	U-Turn	Average
SB East Frontage Road	0.000	0.000	0.000	0.000	0.000	0.000	0.00
NB I-76 On Ramp	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only	0.00
EB Bridge Street	7.000	7.000	7.000	7.000	7.000	7.000	7.00
NB I-76 Off Ramp	10.000	10.000	10.000	10.000	10.000	10.000	10.00
NB East Frontage Road	0.000	0.000	0.000	0.000	0.000	0.000	0.00
WB Bridge Street	18.000	18.000	18.000	18.000	18.000	18.000	18.00
Average	5.83	5.83	5.83	5.83	5.83	5.83	-

Geometry and Analysis Results

Leg	SB East Frontage Road	NB I-76 On Ramp	EB Bridge Street	NB I-76 Off Ramp	NB East Frontage Road	WB Bridge Street
HCM Lane	1	1	1	1	1	1
Lane Type	Single lane	Single lane	Single lane	Single lane	Single lane	Single lane
Number Of Conflicting Lanes	1	1	1	1	1	1
Destination Legs	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6	1,2,3,4,5,6
Demand (Veh/hr)	14.13	0.00	201.09	590.22	90.22	106.52
Pedestrian Flow (Veh/hr)	0.00	0.00	0.00	0.00	0.00	0.00
Conflicting Flow (Veh/hr)	759.78	665.22	9.78	210.87	778.26	682.61
Capacity (Veh/hr)	670.91	727.16	1192.55	980.80	662.67	611.75
Queue95 (Veh)	0.06	0.00	0.61	4.18	0.47	0.63
Delay (s)	5.59	4.95	4.47	12.06	6.97	7.99
V/C Ratio	0.02	0.00	0.17	0.60	0.14	0.17
LOS	A	A	A	B	A	A



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial data. This includes not only sales and purchases but also expenses and income. The text suggests that a consistent and thorough record-keeping system is essential for identifying trends and making informed decisions.

Next, the document addresses the issue of budgeting. It states that a well-defined budget is crucial for controlling costs and maximizing resources. By setting clear financial goals and limits, individuals and organizations can avoid overspending and ensure that their financial plans are realistic and achievable. The text provides several tips for creating an effective budget, such as tracking expenses and adjusting the budget as needed.

The third section focuses on the importance of regular financial reviews. It explains that periodic assessments of financial performance allow for the identification of areas that need improvement and the implementation of corrective measures. This process involves comparing actual results against budgeted figures and analyzing the reasons for any variances. The document stresses that these reviews should be conducted frequently to stay on top of financial health.

Finally, the document discusses the role of professional advice in financial management. It notes that while many financial tasks can be handled internally, consulting with experts such as accountants or financial planners can provide valuable insights and ensure compliance with relevant regulations. The text encourages individuals to seek professional help when they are unsure about complex financial matters or when they need specialized expertise.