FARNAM STREET CORRIDOR STUDY

Dodge Street to 40th Street

OPW 53944

Prepared for:

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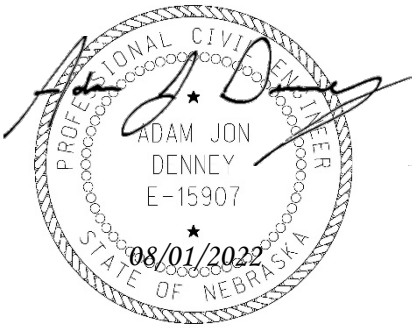

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1. INTRODUCTION

1.1 Project Introduction and Purpose

The City of Omaha has tasked Felsburg Holt & Ullevig (FHU) with completing a corridor study to improve the segment of Farnam Street from Dodge Street to 40th Street. This project coincides with UNMC / Nebraska Medicine's NExT initiative with plans to invest approximately $ 2.6 billion into their campus over an eight-year period.

The purpose of this study is to analyze the feasibility of permanently converting Farnam Street to a continuous, two-way street through the project area. The study evaluates other appropriate improvements that could be implemented to accommodate future growth with a focus on vehicle, bicycle, and pedestrian travel.

The segment of Farnam Street that passes through the Dundee neighborhood is currently a two-lane undivided roadway from 46th Street to Happy Hollow Boulevard. This segment also switches between one-way and two-way operation throughout the day using variable lane assignment via signalization. During morning commuter period (7:00 AM to 9:00 AM), Farnam Street operates as a two-lane one-way roadway in the eastbound direction. During the afternoon commuter period (4:00 PM to 6:00 PM), Farnam Street operates as a two-lane one-way roadway in the westbound direction. This one-way operation only occurs during the commuter peak hours on weekdays; Farnam Street otherwise operates as two-way the rest of the day and all day during the weekends.

From Saddle Creek Road to 40th Street, Farnam Street currently operates as a non-continuous two-way street. Eastbound traffic shifts to Harney Street at the "S" curve near 42nd Street. Two-way traffic resumes on Farnam Street east of 42nd Street. Eastbound vehicles cannot continue on Farnam Street through 42nd Street, but westbound traffic is continuous.

Included in this report is an operations analysis, a cross-section analysis, a crash analysis, a signal warrant analysis, an auxiliary turn lane analysis, and an alternatives analysis. The primary focus is on traffic operations at the following intersections:

- Dodge Street & Happy Hollow Boulevard (signalized)
- Farnam Street & Dodge Street (signalized)
- Farnam Street & Happy Hollow Boulevard (signalized)
- Farnam Street & 52nd Street (signalized)
- Farnam Street & 51st Street (ped signal)
- Farnam Street & 50th Street (signalized)
- Farnam Street & 49th Street (unsignalized)
- Farnam Street & 46th Street (unsignalized)
- Farnam Street & Saddle Creek Road (signalized)
- Farnam Street & 44th Street (signalized)
- Farnam Street & 42nd Street (signalized)
- Farnam Street & 40th Street (signalized)
- Harney Street & 42nd Street (signalized)
- Harney Street & 40th Street (signalized)

The study evaluates the following time periods:

- Existing year (2021) AM and PM weekday peak hours with one-way Farnam Street
- Existing year (2021) AM and PM weekday peak hours with two-way Farnam Street
- Future year (2040) for the AM and PM weekday peak hours with one-way Farnam Street
- Future year (2040) for the AM and PM weekday peak hours with two-way Farnam Street

1.2 Existing Roadway Network

The corridor study evaluates Farnam Street from Dodge Street / Happy Hollow Boulevard to 40th Street. The following section describes in more detail the study area roadway segments. The location of the project in relation to the surrounding roadway network is shown on **Figure 1-1**.

- **Farnam Street**, an east-west roadway, is classified as a minor arterial based on State and Federal guidelines. The speed limit on Farnam Street through the project study area is posted at 30 miles per hour (mph). The segment of Farnam Street that passes through the Dundee neighborhood is a two-lane undivided roadway from 46th Street to Happy Hollow Boulevard. From Saddle Creek Road to 42nd Street, Farnam Street operates as a four-lane divided roadway, and east of 42nd Street, it transitions to a three-lane undivided roadway with two lanes of traffic westbound and one lane of traffic eastbound.
- **Dodge Street**, an east-west street, is classified as an other principal arterial according to Federal and State guidelines and is also US Highway 6. Dodge Street runs just north of Farnam Street, and it has a 5-lane cross section with curb and gutter. The posted speed limit is 35 mph.
- **Harney Street**, an east-west roadway, is classified as a minor arterial with a posted speed limit of 30 mph. Harney Street runs just south of Farnam Street. In the project study area, Harney Street is one-way eastbound roadway with a 3-lane cross section between 42nd Street and 41st Street, and it transitions to a two-lane cross section east of 41st Street.
- **Saddle Creek Road**, a north-south roadway, is classified as an other principal arterial with a posted speed limit of 35 mph through the project study area. Saddle Creek Road runs along the west side of UNMC's campus. In the project study area, Saddle Creek Road is a four-lane divided roadway.
- **Happy Hollow Boulevard** is a major collector street serving the neighborhoods to the north and south of the project study area. It is a north-south roadway running along the west side of the corridor that is classified as a major collector with a posted speed limit of 30 mph. Happy Hollow Boulevard typically has a two-lane cross section with auxiliary lanes at major intersections.
- **52nd Street**, a north-south street, is classified as a major collector with a posted speed limit of 30 mph in the study area. 52nd Street has a two-lane cross section with an auxiliary northbound right-turn lane provided at the intersection with Farnam Street. 52nd Street primarily serves the neighborhoods to the north and south of the project study area.
- **51st Street** is a local street serving the neighborhoods to the north and south of Farnam Street. It has a two-lane cross section with a posted speed limit of 30 mph through the study area. There is a ped signal immediately west of the intersection of 51st Street with Farnam Street.
- **50th Street** is a north-south roadway that is classified as a major collector. It has a two-lane cross section with a posted speed limit of 25 mph through the project study area. Northbound, an auxiliary right-turn lane is provided at the intersection with Farnam Street.
- **49th Street** is a local street serving the neighborhoods along either side of Farnam Street. The speed limit along 49th Street through the study area is posted at 25 mph. 49th Street is a two-lane undivided roadway.
- **48th Street** is a minor collector street serving the neighborhoods along either side of Farnam Street. The speed limit along 48th Street through the study area is posted at 25 mph. 48th Street is a two-lane undivided roadway that provides connectivity between Leavenworth Street and Dodge Street and the Dundee neighborhood.

- **46th Street** is a local street that runs north-south through the study area. It has a posted speed limit of 25 mph. 46th Street has a two-lane cross section in the study area. 46th Street serves as an alternate route for westbound traffic on Farnam Street to get to Dodge Street.
- **44th Street** is local street that runs north-south through the study area. 44th Street has a three-lane cross section with a posted speed limit of 25 mph in the project study area. At the intersection of 44th Street with Farnam Street, auxiliary left-turn lanes are present on both approaches of 44th Street; there is also an auxiliary northbound right-turn lane present at the intersection. South of Farnam Street, 44th Street provides access to UNMC's campus.
- **42nd Street**, a north-south roadway, is classified as a minor arterial according to federal and state guidelines. 42nd Street has a three-lane cross section in the study area with a two-way left-turn lane (TWLTL). The posted speed limit on 42nd Street within the project limits is posted at 30 mph.
- **40th Street**, a north-south roadway, is classified as a major collector within the project study area; north of Dodge Street it is classified as a minor arterial. The segment of 40th Street between Dodge Street and Farnam Street functions features a three-lane cross section with a TWLTL. South of Farnam Street, 40th Street functions as a two-lane undivided roadway. North of Harney Street, the posted speed limit on 40th Street is 30 mph. South of Harney Street, the speed limit is reduced to 25 mph.

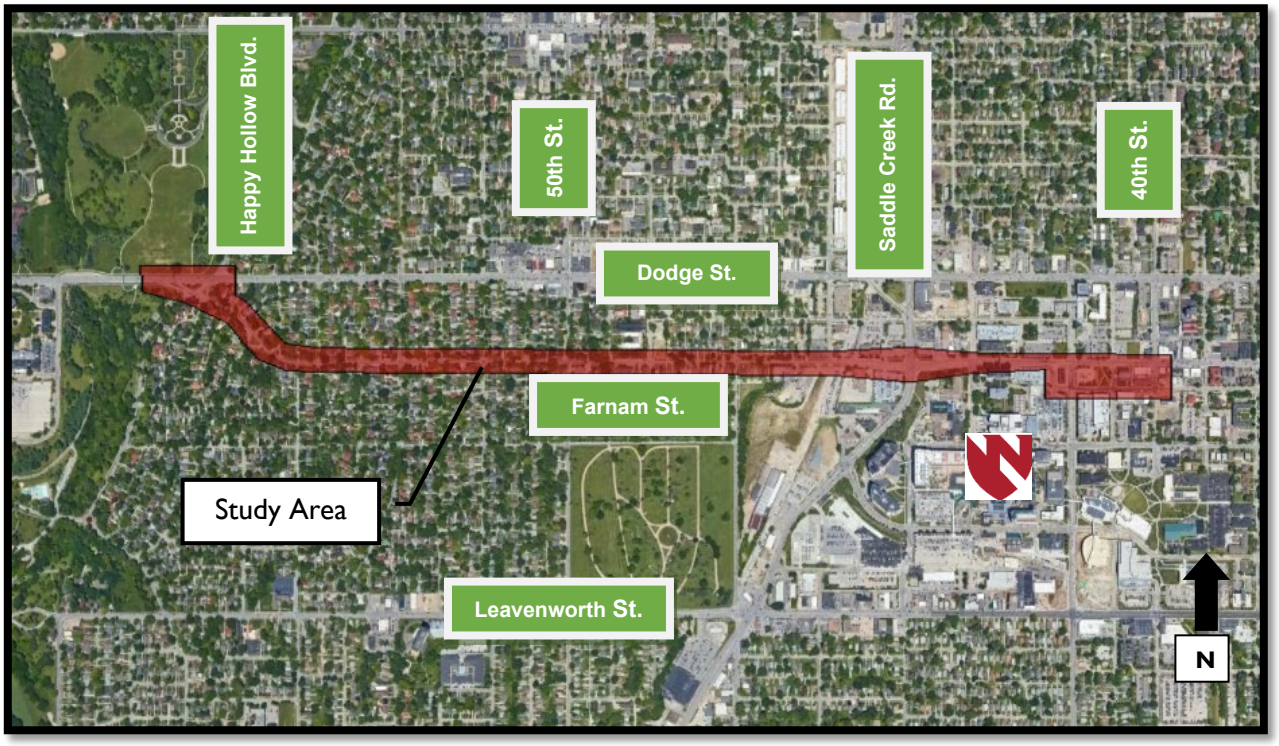


Figure 1-1. Project Study Area

2. BICYCLE, PEDESTRIAN, & TRANSIT FACILITIES

2.1 Existing Transit Facilities

There are several Metro Transit bus routes that run through and around the project study area. The 15 route runs along 42nd Street, then along Farnam Street where it then runs north-south on 40th Street through the study area. The 3 route follows a similar route to that of the 15 bus through the study area; however, it uses Harney Street to go between 40th Street and 42nd Street.

Just north of the study corridor, the 98 route and the Omaha Rapid Bus Transit (ORBT) bus route run along Dodge Street. Metro Transit routes within the study area are shown on **Figure 2-1**.

2.2 Existing Pedestrian/Bicycle Facilities

Numerous pedestrian and bicycle facilities are located along the study corridor. A pedestrian signal is located on the west leg of the intersection of Farnam Street with 51st Street. Pedestrian facilities within the study area are shown on **Figure 2-1**.

There are a number of bicycle facilities surrounding the study area. Multiple facility types are described in the *Omaha Metropolitan Area Bicycle Map, 2017 Edition*, which are addressed below:

Multi-use Trails:

- The Field Club trail runs just south of the project study area, terminating at Leavenworth Street near 40th Street. Various trails are provided throughout the UNMC campus but are not officially designated as multi-use trails.
- Running along the west side of Happy Hollow Boulevard, the Elmwood South Trail runs north and connects into the Happy Hollow Boulevard Trail. This trail follows Happy Hollow Boulevard north.

Bike Omaha System:

- Facilities designated as part of the Bike Omaha System are intended to serve as connections to downtown, major central city destinations, and trail systems throughout Omaha.
- 51st Street, running north-south, is classified as being part of the Bike Omaha System. It provides access to the Boulevard Trail at the intersection of 51st Street with Happy Hollow Boulevard.
- 40th Street, north of Dewey Avenue, is identified as being part of the Bike Omaha System. This route provides bikers access to the Blackstone District and UNMC's campus south of Farnam Street. It also connects into a number of Bike Omaha corridors to the north of the study area. These include Burt Street and Nicholas Street.

Experienced Rider Streets:

- Farnam Street and Harney Street, running east-west, are both designated as experienced rider streets within the project study area. 50th Street as well as 46th Street south of Farnam Street, both running north-south, are also designated as experienced rider streets. According to the City of Omaha's bicycle guide, these streets have moderate traffic volumes and are generally suitable for experienced cyclists comfortable with riding in mixed traffic.

Continuous Low-Volume Streets:

- Howard Street and Dewey Avenue, east-west streets running just south of Farnam Street, are designated as continuous low-volume streets. The Harney Street Bikeway pilot project currently provides a two-way cycle track on Harney Street just east of the study area; Dewey Avenue is designated as the bikeway route west of Turner Boulevard into the UNMC campus.

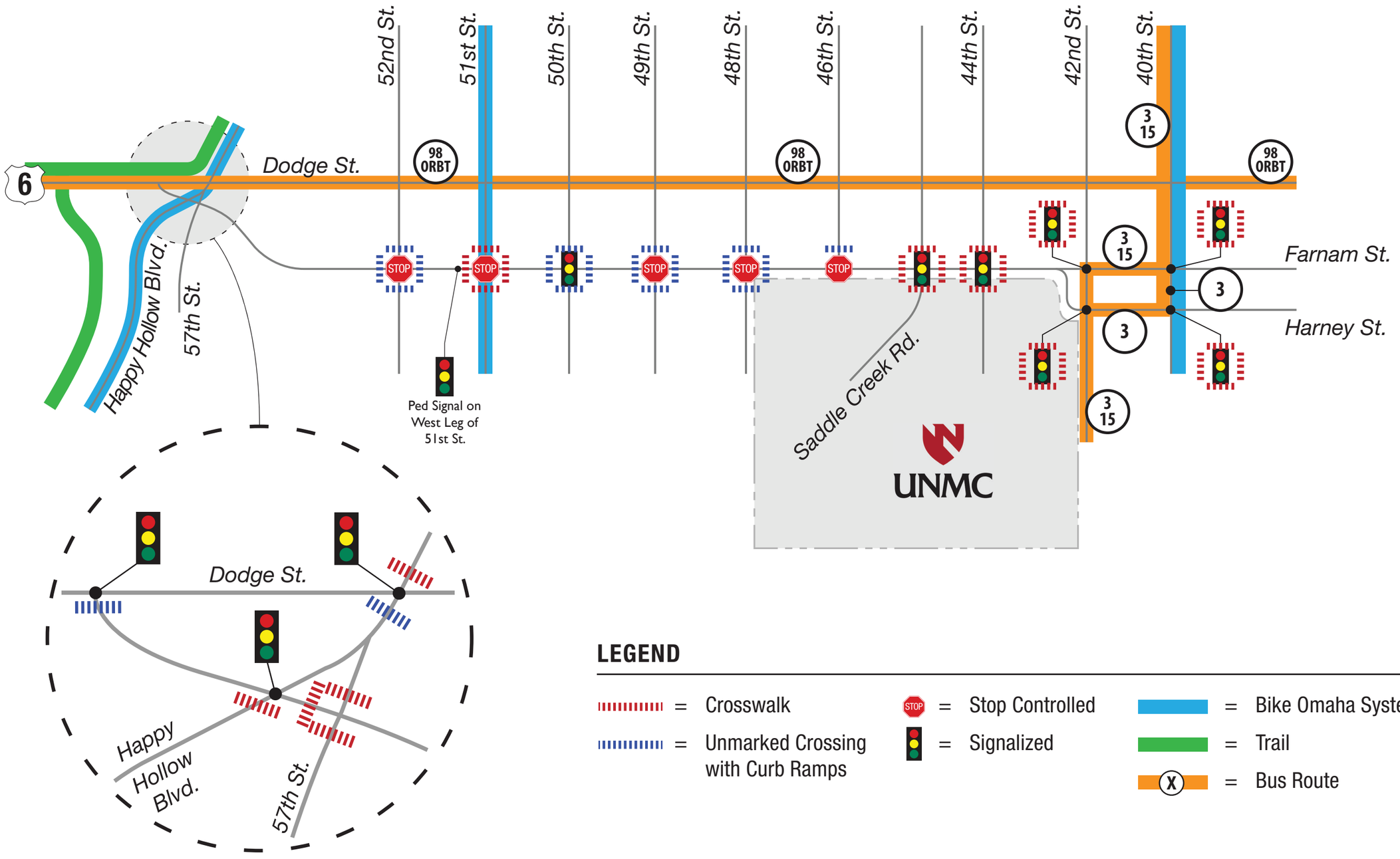
- 51st Street and 56th Street, south of Howard Street, are also classified as continuous low-volume streets.
- 38th Street, 46th Street, 48th Street, and 49th Street run north-south through the project study area, and they are all classified as continuous low-volume streets.

2.3 Education and Recreation Facilities

There are a number of schools in the project study area. The University of Nebraska Omaha (UNO) is located just west of the project study area along Dodge Street between 60th Street and 67th Street. The University of Nebraska Medical Center (UNMC) is located to the south of Farnam Street and east of Saddle Creek Road. Clarkson College is located on the southeast corner of the intersection of Dodge Street with 42nd Street.

Brownell-Talbot School is located north of the study area, situated on the east side of Memorial park, located on the southwest corner of the intersection of Happy Hollow Boulevard with Underwood Avenue. Dundee Elementary School is located on the northwest corner of the intersection of 51st Street with Davenport Street; this is just north of the study corridor.

Parks located in the study area include Memorial Park and Elmwood Park. These are located just west of the study corridor with Memorial Park being located on the north side of Dodge Street, and Elmwood Park being located on the south side of Dodge Street. There is a pool and golf course located within Elmwood Park.



LEGEND

- = Crosswalk
- = Unmarked Crossing with Curb Ramps
- = Stop Controlled
- = Signalized
- = Bike Omaha System
- = Trail
- = Bus Route

NORTH

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

FIGURE 2-1

Pedestrian, Bicycle, and Transit Facilities

Farnam Street Corridor Study 120-340-01 11/09/21

3. EXISTING TRAFFIC CONDITIONS

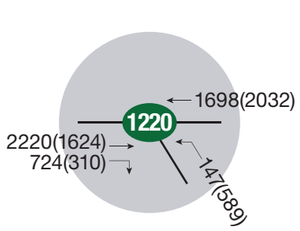
3.1 2021 Existing Traffic Volumes

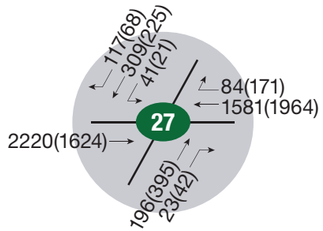
This study was conducted during the COVID-19 pandemic, which has considerably affected traffic patterns. Therefore, alternative methods of data synthesis were utilized, such as application of growth rates to historic counts, use of ADT data, and application of adjustment factors to estimate traffic volumes. Historic intersection turning movement counts (TMCs) were provided by the City of Omaha at the study intersections. Thirteen of the fourteen study intersections were counted before March 2020 (before COVID-19 travel restrictions which began on March 7, 2020). The count at the intersection of Farnam Street with 49th Street occurred after travel restrictions and was factored and balanced with adjacent intersections to account for the variations in count volumes. **Table 3-1** shows the date, duration, type, and source for each intersection count. **Appendix A** includes detailed turning movement data for each intersection.

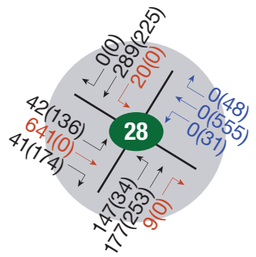
Table 3-1. Traffic Counts

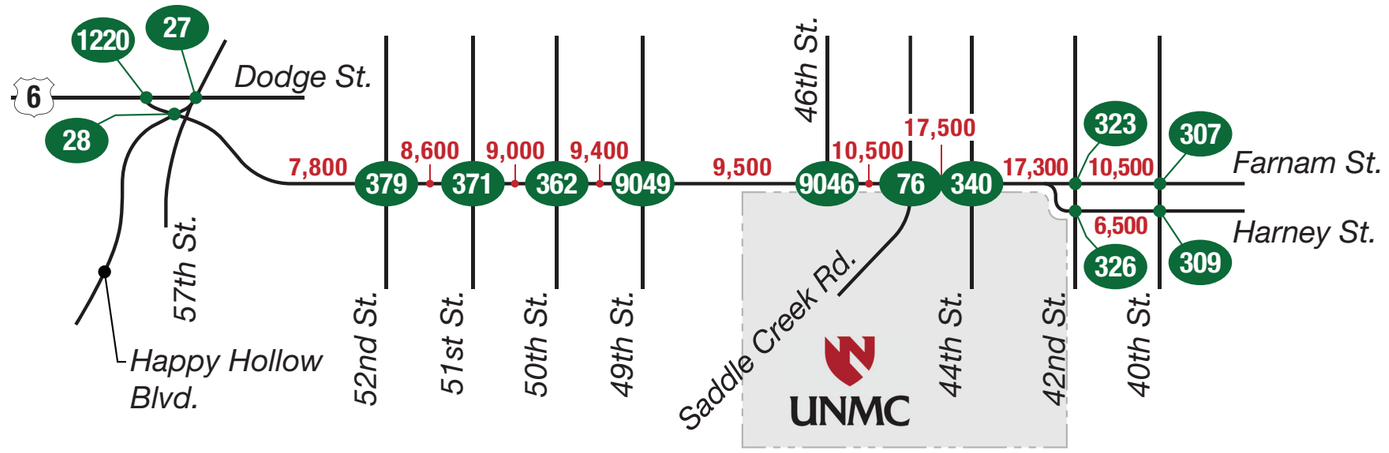
Location	Count Date	Bike	Ped	Cars	Trucks	Duration (hours)	Source
Dodge Street & Happy Hollow Boulevard	October 8, 2019		X			8	City
Farnam Street & Dodge Street	October 8, 2019		X			8	City
Farnam Street & Happy Hollow Boulevard	September 18, 2019		X			8	City
Farnam Street & 52nd Street	October 30, 2019		X			8	City
Farnam Street & 51st Street	May 14, 2018	X	X	X	X	24	FHU
Farnam Street & 50th Street	November 4, 2015		X			8	City
Farnam Street & 49th Street	March 2, 2021		X			8	City
Farnam Street & 46th Street	February 23, 2021		X			8	City
Farnam Street & Saddle Creek Road	August 6, 2019		X			8	City
Farnam Street & 44th Street	July 15, 2015		X			8	City
Farnam Street & 42nd Street	October 14, 2015		X			8	City
Farnam Street & 40th Street	June 11, 2018		X			8	City
Harney Street & 42nd Street	July 16, 2015		X			8	City
Harney Street & 40th Street	July 8, 2015		X			8	City

Vehicular traffic volumes for the study area intersections were compared to determine the study area peak hours, as shown in **Appendix A**. The AM peak hour was determined to be 7:30 AM to 8:30 AM, and the PM peak hour was 4:45 PM to 5:45 PM. **Figure 3-1** shows the 2021 Existing peak hour turning movements and average daily traffic (ADT) volumes.

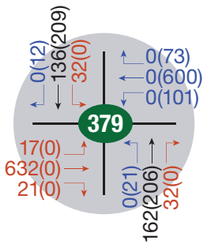


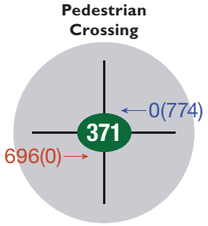


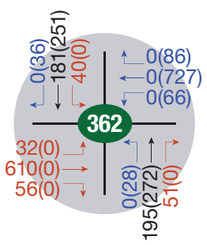


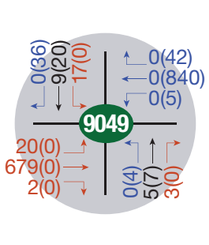


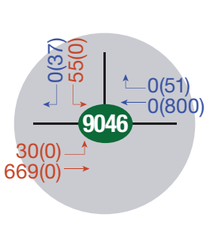
KEY MAP

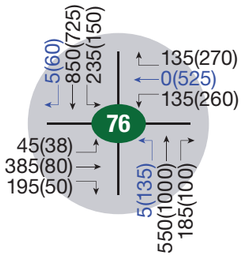


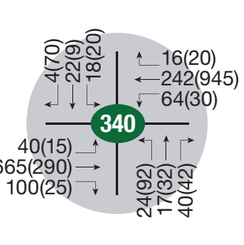


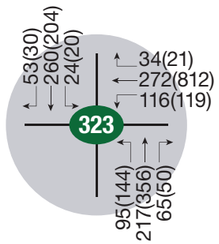


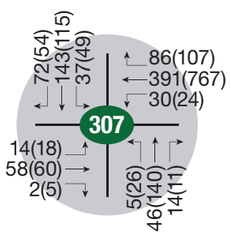


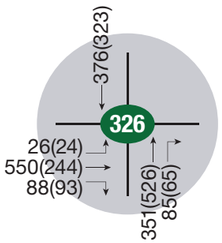


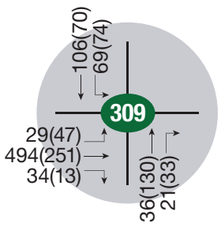












LEGEND

XXX(XXX)	=	AM(PM) Peak Hour Traffic Volumes
XXXX	=	Daily Traffic Volumes
	=	All Day Turning Movement
	=	AM Peak Turning Movement
	=	PM Peak Turning Movement

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

NORTH

FIGURE 3-1

Existing (2021) Traffic Volumes

Farnam Street Corridor Study 120-340-01 11/09/21

3.2 Traffic Operations Analysis

Traffic operations were analyzed for the study intersections using procedures documented in the *Highway Capacity Manual, Sixth Edition: A Guide for Multimodal Mobility Analysis (HCM)*, Transportation Research Board, October 2016. From the analyses, a key measure or "level of service" rating of the traffic operational condition was obtained. For intersection operations, LOS provides a qualitative assessment of traffic operational conditions within a traffic stream in terms of the average stopped delay per vehicle at a controlled intersection. Levels of service are described with a letter designation of A, B, C, D, E, or F, with LOS A representing essentially uninterrupted flow, and LOS F representing a breakdown of traffic flow with noticeable congestion and delay. For this study acceptable traffic operations follow the City of Omaha requirements that all signalized intersections to operate at LOS D or better overall and individual movements at stop-controlled or roundabouts to operate a LOS D or better in peak hour conditions

Synchro Version 10 (signalized and stop-controlled intersections) and SIDRA Intersection 8 (roundabouts) traffic analysis software were used to analyze traffic operations at the study intersections. **Table 3-2** summarizes LOS criteria for signalized intersections.

Table 3-2. Intersection Level of Service Criteria

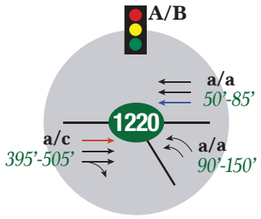
Level of Service	Average Control Delay (sec/veh)	
	Stop Sign/Roundabout Controlled Intersections	Signalized Intersections
A	≤ 10	≤ 10
B	> 10 to 15	> 10 to 20
C	> 15 to 25	> 20 to 35
D	> 25 to 35	> 35 to 55
E	> 35 to 50	> 55 to 80
F	> 50	> 80

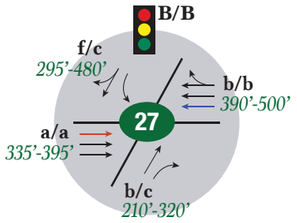
Source: HCM 6th Edition, Exhibit 18-4 & 19-8

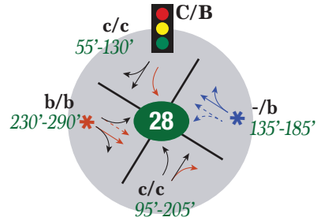
3.3 Existing Configuration Traffic Operations

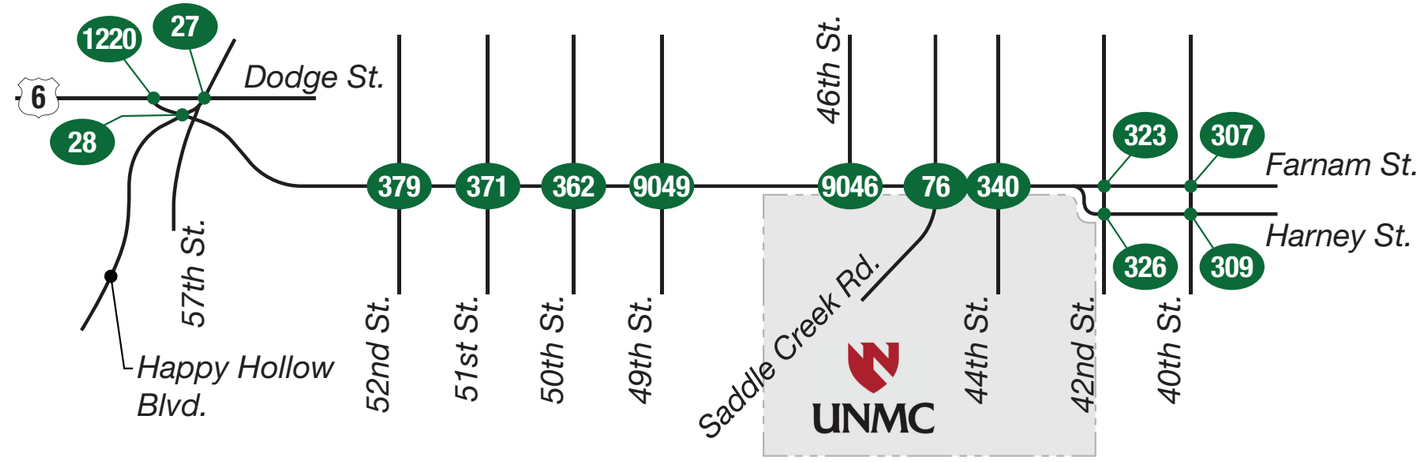
Traffic operations were analyzed for the AM and PM peak hours at the fourteen study intersections using the collected traffic volumes with existing intersection configurations. **Figure 3-2** shows the 2021 Existing operations.

All signalized study intersections operate at LOS C or better overall during the AM and PM peak hours under 2021 Existing traffic conditions. Both two-way stop-controlled intersections operate at LOS C or better for stop-controlled and yielding movements during the AM and PM peak hours under 2021 Existing traffic conditions. **Appendix F** provides additional information in the analysis software reports.

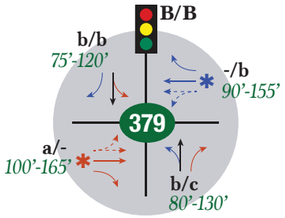


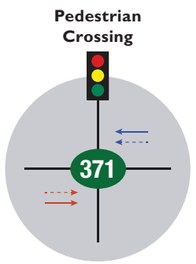


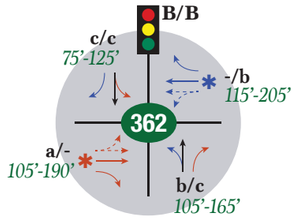


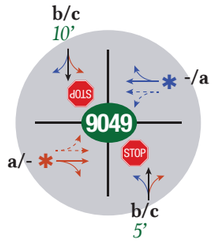


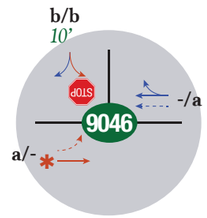
KEY MAP

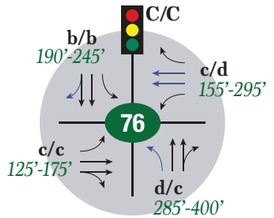


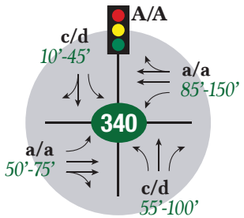


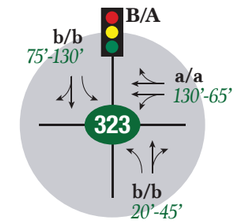


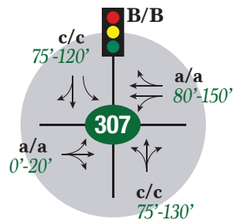


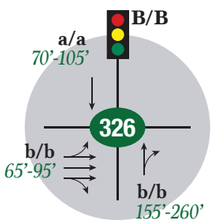


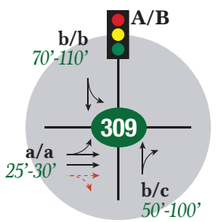












LEGEND

X/X	=	AM/PM Peak Hour Signalized Intersection Level of Service
x/x	=	AM/PM Peak Hour Unsignalized Intersection Level of Service
XXX' - XXX'	=	Critical 50th - 95th Percentile Queue Lenght (ft.)
	=	All Day Turning Movement
	=	AM Peak Turning Movement
	=	PM Peak Turning Movement
	=	Only AM Peak/Only PM Peak Turning Movement (Does Not Exist Rest of Day)
/	=	Shared Left-Turn Arrow Not Shown for Clarity
STOP	=	Stop Sign
	=	Traffic Signal

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

NORTH

FIGURE 3-2
Existing (2021) Traffic Operations

Farnam Street Corridor Study 120-340-01 11/09/21

4. CRASH ANALYSIS

4.1 Intersection Crash Summary

The City of Omaha provided crash data for twenty intersections and nineteen segments along the study corridors for the most recent six-year period available, January 2015 through December 2020. 2020 crash data was omitted due to COVID-19 impacting traffic volumes. The crash data was reviewed to identify existing crash types that will be used to develop and compare the safety performance of alternatives.

Findings for intersections are summarized in the following subsections and in **Table 4-1**, **Table 4-2**, and **Table 4-3**. Each of the tables describes different attributes of the crash patterns at the intersections, including the crash year, crash severity, and crash type. A visual overview of crash data is provided on **Figure 4-1**.

Table 4-1 includes the calculations for crash rates at intersections based on million entering vehicles (MEV) and have also been converted into equivalent property damage only (EPDO) to account for higher severity crashes. The EPDO rates use a multiplier of 12.1 for injury and fatal crashes. Crash rates above the City of Omaha average crash rate for the respective intersection type (based on FHWA classification) are highlighted.

Of the intersections with elevated crash rates, seven had a crash rate greater than 150% of the City of Omaha average crash rate. These intersections include:

- 42nd Street & Farnam Street
- Saddle Creek Road & Farnam Street
- 50th Street & Farnam Street
- 52nd Street & Farnam Street
- Happy Hollow Blvd & Farnam Street
- 41st Street & Harney Street

This list of intersections includes all the locations that are later discussed in the alternatives analysis. Additionally, 42nd Street with Harney Street has been added to the in-depth discussion in the next section due to its proximity to and operational relationship with 42nd Street with Farnam Street. **Chart 4-1** to **Chart 4-7** provide an overview of the crash types for the discussed intersections. **Appendix A** includes crash analysis summaries for each intersection.

Intersection crash occurrences and patterns of note not discussed later:

- 40th Street & Farnam Street:
  - 1 pedestrian crash that resulted in a possible injury
  - Occurred between 10:00 AM and 11:00 AM
- 44th Street & Farnam Street:
  - 1 disabling injury crash from an angle type collision
  - Occurred between 2:00 PM and 3:00 PM
  - Southbound vehicle ran the red light

Table 4-1. Intersection Crashes by Year & Crash Rates

Intersections (w/ Farnam Street)	2015	2016	2017	2018	2019	2020	Total	Daily EV	5-Year (MEV)*	Avg. Crash Rate+	Crash Rate / MEV
40th Street	7	4	8	2	0	2	21	15,800	28.85	0.51	**0.73**
41st Street^	1	1	4	0	1	0	7	13,500	24.65	0.23	**0.28**
42nd Street	13	5	9	7	3	4	37	21,600	39.44	0.60	**0.94**
44th Street	1	4	0	2	1	1	8	20,000	36.52	0.23	**0.22**
Saddle Creek Road	16	17	15	12	17	11	77	42,900	78.34	0.58	**0.98**
46th Street**	1	0	1	0	0	0	2	10,800	19.72	0.23	**0.10**
48th Street	4	1	2	3	2	2	12	10,300	18.81	0.55	**0.64**
49th Street**	2	2	2	2	0	3	8	10,200	18.63	0.23	**0.43**
50th Street	6	4	7	10	8	3	35	16,200	29.58	0.51	**1.18**
50th Avenue^	0	1	1	2	4	2	8	8,900	16.25	0.23	**0.49**
51st Street	0	1	1	0	1	0	3	9,100	16.62	0.23	**0.18**
51st Avenue^	0	1	1	0	0	1	2	8,900	16.25	0.23	**0.12**
52nd Street	5	6	4	4	6	5	25	14,100	25.75	0.51	**0.97**
53rd Street^	0	1	0	2	0	0	3	8,500	15.52	0.23	**0.19**
54th Street^	0	0	1	0	0	0	1	7,800	14.24	0.23	**0.07**
55th Street (East)^	2	1	0	0	1	0	4	8,000	14.61	0.23	**0.27**
56th Street^	1	0	0	2	0	0	3	7,800	14.24	0.23	**0.21**
57th Street^	0	0	0	0	1	0	1	7,800	14.24	0.23	**0.07**
Happy Hollow Blvd	10	8	5	4	9	0	36	15,600	28.49	0.51	**1.26**
40th Street & Harney Street	4	1	2	1	1	5	9	10,000	18.26	0.51	**0.49**
41st Street & Harney Street^	0	4	3	6	2	0	15	7,800	14.24	0.23	**1.05**
42nd Street & Harney Street	5	8	5	3	7	4	28	19,300	35.24	0.60	**0.79**
Total / Average	78	70	71	62	64	43	**345**	**13,400**	**24.48**	-	**0.53**

2020 Crash Data omitted in crash analysis due to COVID-19 and not included in the total.
*MEV = Million Entering Vehicles
**46th & 49th Street intersection volumes were adjusted to match rest of the corridor
^Counts were not available at this intersection, entering volumes were interpolated based on nearby intersections
+Omaha Citywide Intersection Average Crash Rates (per MEV) based on classification of intersecting roadways (2014-2017)

Table 4-2. Intersection Crashes by Severity

Intersections (w/ Farnam Street)	Fatal	Disabling	Visible	Possible	PDO	Total Crashes
40th Street	0	0	1	6	14	**21**
41st Street	0	0	1	0	6	**7**
42nd Street	0	0	4	10	23	**37**
44th Street	0	1	1	2	4	**8**
Saddle Creek Road	0	0	4	16	57	**77**
46th Street	0	0	1	0	1	**2**
48th Street	0	0	0	2	10	**12**
49th Street	0	0	0	2	6	**8**
50th Street	0	1	3	9	22	**35**
50th Avenue	0	0	2	2	4	**8**
51st Street	0	0	0	1	2	**3**
51st Avenue	0	0	1	0	1	**2**
52nd Street	2	0	3	5	15	**25**
53rd Street	0	0	0	2	1	**3**
54th Street	0	0	0	0	1	**1**
55th Street (East)	0	0	0	0	4	**4**
56th Street	0	0	0	0	3	**3**
57th Street	0	0	0	0	1	**1**
Happy Hollow Blvd	0	0	2	9	25	**36**
40th Street & Harney Street	0	0	1	3	5	**9**
41st Street & Harney Street	0	1	1	2	11	**15**
42nd Street & Harney Street	0	0	1	4	23	**28**
Total / Average	**2**	**3**	**26**	**75**	**239**	**345**

*If multiple crash severities occurred at the same crash event, the worst crash severity was the one counted.

Table 4-3. Intersection Crashes by Type

Intersections (w/ Farnam Street)	Angle	Sideswipe (Same)	Rear-end	Left-turn Leaving	Ran Off Road	Other^	Total Crashes
40th Street	14	2	3	0	0	2	**21**
41st Street	4	1	0	2	0	0	**7**
42nd Street	28	1	5	0	1	2	**37**
44th Street	3	1	1	3	0	0	**8**
Saddle Creek Road	11	8	28	24	1	5	**77**
46th Street	1	1	0	0	0	0	**2**
48th Street	9	2	0	0	1	0	**12**
49th Street	6	1	1	0	0	0	**8**
50th Street	18	11	3	1	0	2	**35**
50th Avenue	7	1	0	0	0	0	**8**
51st Street	2	1	0	0	0	0	**3**
51st Avenue	0	1	0	0	1	0	**2**
52nd Street	15	7	1	2	0	0	**25**
53rd Street	2	1	0	0	0	0	**3**
54th Street	1	0	0	0	0	0	**1**
55th Street (East)	0	2	0	0	1	1	**4**
56th Street	0	3	0	0	0	0	**3**
57th Street	1	0	0	0	0	0	**1**
Happy Hollow Blvd	22	2	3	7	1	1	**36**
40th Street & Harney Street	4	2	2	0	0	1	**9**
41st Street & Harney Street	14	1	0	0	0	0	**15**
42nd Street & Harney Street	12	6	9	0	0	1	**28**
Total / Average	**174**	**55**	**56**	**39**	**6**	**15**	**345**

^Other is made up of the remaining six crash types. Pedestrian type crashes are among these, consisting of four crashes total.

42nd Street with Farnam Street

Thirty-seven crashes were reported at the intersection of 42nd Street with Farnam Street during the study period. Of these crashes, fifteen of them were Injury crashes; the rest were Property Damage Only. The crash rate for the intersection is 0.94 acc/mev which is above the citywide average crash rate for Minor Arterial/Local streets. Thirty-two of the thirty-seven crashes were angle type crashes with eighteen of these crashes coming because of vehicles running a red light. None of the crashes resulted in fatal or disabling injuries.

One improvement that has proven effective at reducing these types of collisions is the conversion of the intersection to a roundabout. The roundabout would eliminate angle type vehicle crossings and reduce conflict points.

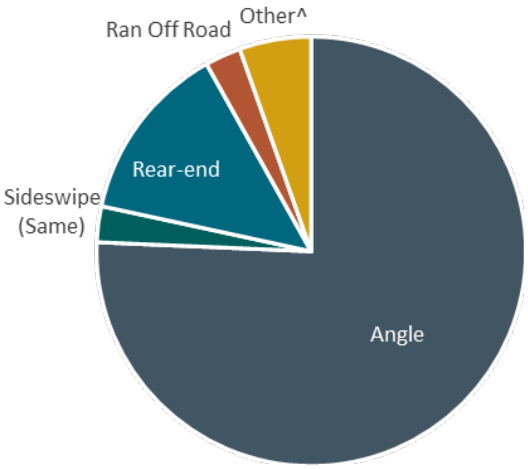


Chart 4-1. 42nd & Farnam Crashes

42nd Street with Harney Street

Twenty-eight crashes were reported (5 Injury, 23 Property Damage Only) at the intersection of 42nd Street with Farnam Street during the study period. The crash rate for the intersection is 0.79 acc/mev which is above the citywide average crash rate for Minor Arterial/Local streets. Twelve of the Twenty-eight crashes were angle type crashes that are attributed to vehicles running a red light. None of the crashes resulted in fatal or disabling injuries. A roundabout or decreasing the number of movements/restricting movements could reduce these types of collisions.

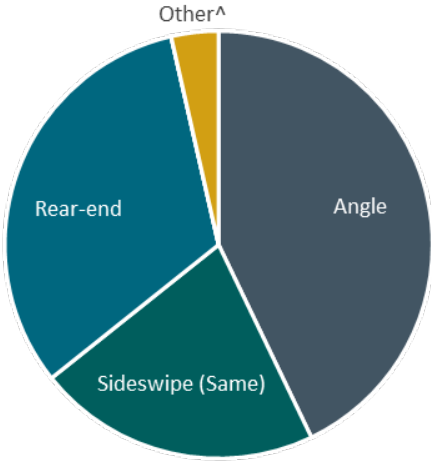


Chart 4-2. 42nd & Harney Crashes

Saddle Creek Road with Farnam Street

Seventy-seven crashes were reported (25 Injury, 52 Property Damage Only) at the intersection of Saddle Creek Road with Farnam Street during the study period. The crash rate for the intersection is 0.98 acc/mev which is above the citywide average crash rate for Minor Arterial/Minor Arterial streets. Thirty-three of the seventy-seven crashes were rear-end type crashes with all but two in the northbound/southbound directions. Another twenty-eight of the seventy-seven crashes were left-turn leaving type crashes.

It should be noted that two pedestrian crashes occurred at the intersection, both were possible injury severity and were due to left-turning vehicle not yielding. None of the crashes at the intersection resulted in fatal or disabling injuries. Adding auxiliary right-turn lanes could help reduce rear-end occurrences. Allowing only protected phasing for left-turning vehicles can lead to reductions in angle, left-turn, and pedestrian related crashes.

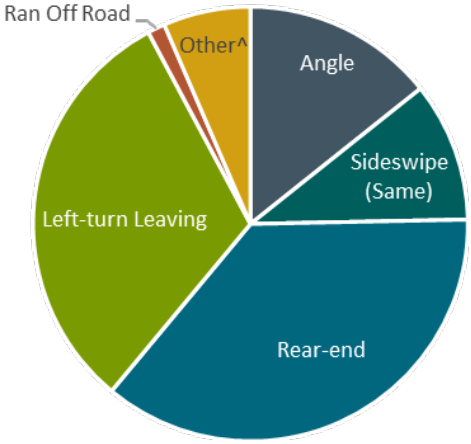


Chart 4-3. Saddle Creek & Farnam Crashes

50th Street with Farnam Street

Thirty-five crashes were reported (13 Injury, 22 Property Damage Only) at the intersection of 50th Street with Farnam Street during the study period. The crash rate for the intersection is 1.18 acc/mev which is well above the citywide average crash rate for Minor Arterial/Local streets. Eighteen of the thirty-five crashes were angle type crashes; another eleven of the thirty-five crashes were sideswipe (same) type crashes.

One of the three disabling crashes on the corridor occurred at 50th Street with Farnam Street. It took place between 5:00 PM and 6:00 PM on a Saturday. Two other injuries occurred at this incident, one visible and one possible. The contributing circumstance to the crash was northbound vehicle running a red light. This crash and other angle type crashes could be mitigated by a roundabout at this intersection.

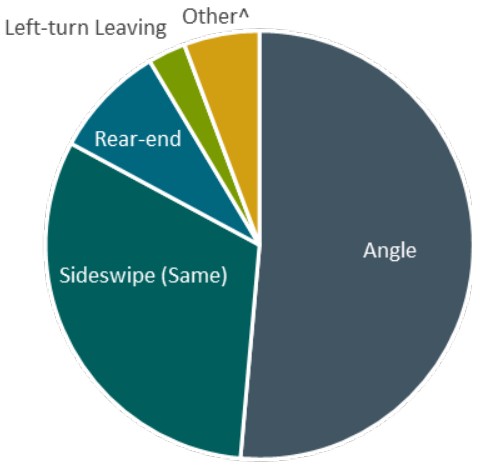


Chart 4-4. 50th & Farnam Crashes

52nd Street with Farnam Street

Twenty-five crashes were reported (10 Injury, 15 Property Damage Only) at the intersection of 52nd Street with Farnam Street during the study period. The crash rate for the intersection is 0.97 acc/mev which is above the citywide average crash rate for Minor Arterial/Local streets. Fifteen of the twenty-five crashes were angle type crashes, and eleven of the angle type crashes were due to vehicles running red lights.

Both fatal crashes of the two within the entire study area occurred at 52nd Street with Farnam Street. Moreover, both crashes included additional injured individuals. Both crashes occurred on weekdays between 5:00 PM and 6:00 PM. Both were northbound vehicles colliding with a westbound vehicle in an angle type crash. One of the occurrences had an unknown fault but the other involved a northbound vehicle passing another northbound vehicle and running the red light. These crashes and the other angle type crashes could be mitigated by a roundabout at this intersection.

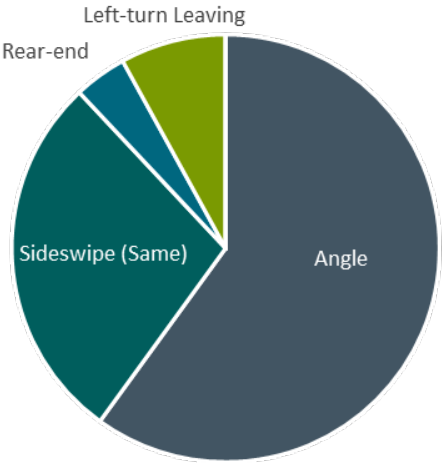


Chart 4-5. 52nd & Farnam Crashes

Happy Hollow Blvd with Farnam Street

Thirty-six crashes were reported (11 Injury, 25 Property Damage Only) at the intersection of Happy Hollow Blvd with Farnam Street during the study period. The crash rate for the intersection is 1.26 acc/mev which is well above the citywide average crash rate for Minor Arterial/Minor Arterial streets. Twenty-two of the thirty-six crashes were angle type crashes that are attributed to vehicles running a red light. There were no other identifiable crash patterns at this intersection. None of the crashes resulted in fatal or disabling injuries.

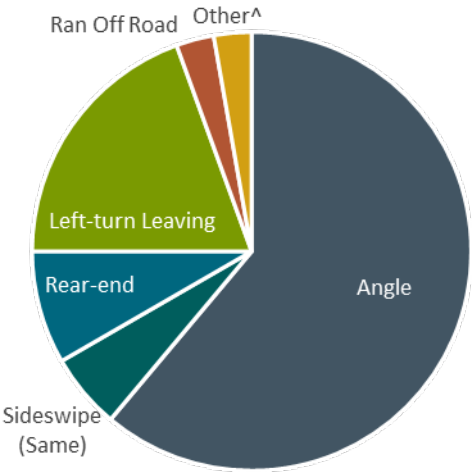


Chart 4-6. Happy Hollow & Farnam Crashes

41st Street with Harney Street

Fifteen crashes were reported (4 Injury, 11 Property Damage Only) at the intersection of Harney Street with 41st Street during the study period. The crash rate for the intersection is 1.05 acc/mev which exceeds the citywide average crash rate for Minor Arterial/Local streets. Fourteen of the Fifteen crashes were angle type crashes. There were no other identifiable crash patterns at this intersection. One of the three disabling crashes on the corridor occurred at 41st Street with Harney Street. It took place between 7:00 AM and 8:00 AM on a Thursday and was an angle type crash.

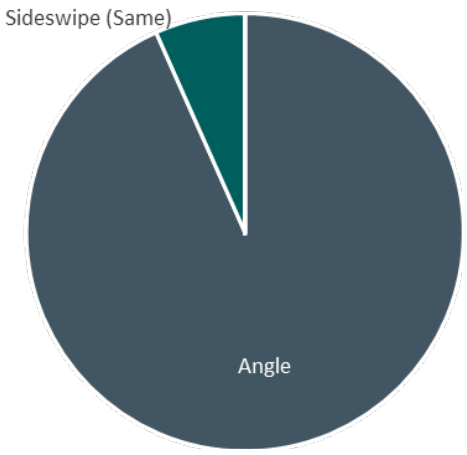


Chart 4-7. 41st & Harney Crashes

4.2 Segment Crash Summary

Calculations for crash rates at segments are based on million vehicle miles traveled (MVMT) and crash density per mile. Crash rates above the City of Omaha average crash rate for minor arterial are highlighted in yellow and crash densities above the City of Omaha citywide average for a minor arterial are also highlighted. Findings for segments are summarized in the following subsections and in **Table 4-4**, **Table 4-5**, and **Table 4-6**. Each of the tables describes different attributes of the crash patterns at the intersections, including the crash year, crash severity, and crash type. A visual overview of crash data is provided on **Figure 4-1**.

Nine of the fourteen segments had elevated crash density and/or rate greater than the City of Omaha average crash density/rate. These segments include:

- Farnam Street: 40th Street to 41st Street
- Farnam Street: 44th Street to Saddle Creek Road
- Farnam Street: Saddle Creek Road to 46th Street
- Farnam Street: 48th Street to 49th Street
- Farnam Street: 49th Street to 50th Street
- Farnam Street: 52nd Street to 57th Street
- Harney Street: 40th Street to 41st Street
- Harney Street: 41st Street to 42nd Street
- Harney Street: 42nd Street to Farnam Street

Chart 4-8 and **Chart 4-9** provide an overview of the crash types along Farnam Street and Harney Street, respectively, within the study area. **Appendix A** includes crash analysis summaries for each segment.

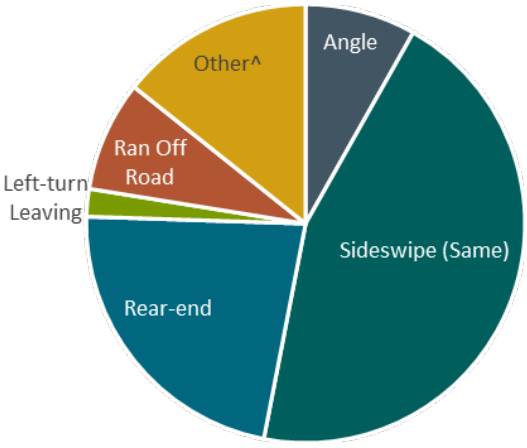


Chart 4-8. Farnam Street Segment Crashes

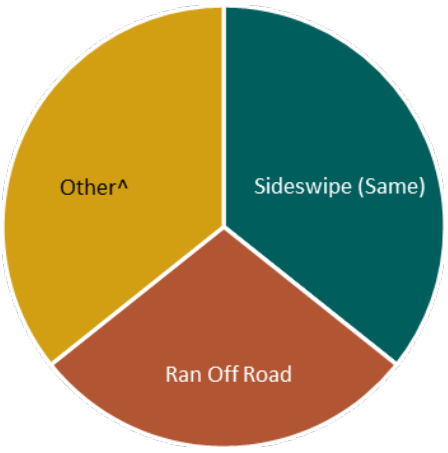


Chart 4-9. Harney Street Segment Crashes

Table 4-4. Segment Crashes by Year & Crash Rates

Segment (on Farnam Street)	2015	2016	2017	2018	2019	2020+	Total	Length (ft)	ADT*	5-Year (MVMT)**	Crash Density / Mile	Crash Rate / MVMT
40th St. - 41st St.	0	1	1	2	1	1	5	330	10,500	1.20	**16.00**	**4.17**
41st St. - 42nd St.	0	1	0	0	0	0	1	330	10,500	1.20	**3.20**	**0.83**
42nd St. - 44th St.	1	1	1	0	1	0	4	790	17,300	4.73	**5.35**	**0.85**
44th St. - Saddle Creek Rd.	0	3	0	0	1	0	4	500	17,500	3.03	**8.45**	**1.32**
Saddle Creek Rd. - 46th St.	0	3	2	2	1	1	8	640	10,500	2.32	**13.20**	**3.44**
46th St. - 48th St.	0	0	1	1	0	1	2	740	9,700	2.48	**2.85**	**0.81**
48th St. - 49th St.	0	1	2	2	2	0	7	660	9,400	2.15	**11.20**	**3.26**
49th St. - 50th St.	0	2	2	3	1	0	8	660	9,400	2.15	**12.80**	**3.73**
50th St. - 51st St.	0	0	0	0	0	1	0	660	9,000	2.05	**0.00**	**0.00**
51st St. - 52nd St.	0	1	1	0	0	0	2	660	8,600	1.96	**3.20**	**1.02**
52nd St. - 57th St.	3	2	0	1	2	2	8	1740	7,800	4.69	**4.86**	**1.70**
Harney St., 40th St. - 41st St.	0	2	1	1	1	0	5	330	6,400	0.73	**16.00**	**6.85**
Harney St., 41st St. - 42nd St.	2	0	1	0	1	0	4	330	6,600	0.75	**12.80**	**5.31**
Harney St., 42nd St. - Farnam St.	0	1	3	1	0	3	5	330	7,400	0.84	**16.00**	**5.92**
Total / Average	**6**	**18**	**15**	**13**	**11**	**9**	**63**	**700**	**10,900**	**2.54**	**7.37**	**1.92**

2020 Crash Data Omitted in Crash Analysis Due to COVID-19 and not included in the total.
*ADT = Average Daily Traffic
**MVMT = Million Vehicle Miles Traveled
+The Omaha Citywide average annual crash density and crash rate for Minor Arterials is 9.77 crashes/mi and 0.98 crashes/MVMT, respectively (2014-2017)

Table 4-5. Segment Crashes by Severity

Segments (on Farnam Street)	Fatal	Disabling	Visible	Possible	PDO	Total
40th St. - 41st St.	0	0	0	1	4	**5**
41st St. - 42nd St.	0	0	0	0	1	**1**
42nd St. - 44th St.	0	0	0	1	3	**4**
44th St. - Saddle Creek Rd.	0	0	0	0	4	**4**
Saddle Creek Rd. - 46th St.	0	0	0	3	5	**8**
46th St. - 48th St.	0	0	0	0	2	**2**
48th St. - 49th St.	0	0	0	0	7	**7**
49th St. - 50th St.	0	0	0	3	5	**8**
50th St. - 51st St.	0	0	0	0	0	**0**
51st St. - 52nd St.	0	0	0	0	2	**2**
52nd St. - 57th St.	0	0	0	0	8	**8**
Harney St., 40th St. - 41st St.	0	0	0	0	5	**5**
Harney St., 41st St. - 42nd St.	0	0	0	1	3	**4**
Harney St., 42nd St. - Farnam St.	0	0	0	0	5	**5**
Total / Average	**0**	**0**	**0**	**9**	**54**	**63**

*If multiple crash severities occurred at the same crash event, the worst crash severity was the one counted.

Table 4-6. Segment Crashes by Type

Segments (on Farnam Street)	Angle	Sideswipe (Same)	Rear-end	Left-turn Leaving	Ran Off Road	Other^	Total
40th St. - 41st St.	0	4	0	0	0	1	**5**
41st St. - 42nd St.	0	1	0	0	0	0	**1**
42nd St. - 44th St.	1	2	1	0	0	0	**4**
44th St. - Saddle Creek Rd.	0	1	2	0	0	1	**4**
Saddle Creek Rd. - 46th St.	0	4	2	0	0	2	**8**
46th St. - 48th St.	0	1	0	0	0	1	**2**
48th St. - 49th St.	1	1	3	1	0	1	**7**
49th St. - 50th St.	1	4	1	0	2	0	**8**
50th St. - 51st St.	0	0	0	0	0	0	**0**
51st St. - 52nd St.	0	2	0	0	0	0	**2**
52nd St. - 57th St.	1	2	2	0	2	1	**8**
Harney St., 40th St. - 41st St.	0	2	0	0	0	3	**5**
Harney St., 41st St. - 42nd St.	0	2	0	0	0	2	**4**
Harney St., 42nd St. - Farnam St.	0	1	0	0	4	0	**5**
Total / Average	**4**	**27**	**11**	**1**	**8**	**12**	**63**

*If multiple crash severities were present at crash event, the worst crash severity was counted.
^Other is made up of the remaining six crash types.

Farnam Street: 40th Street to 41st Street

Five crashes were reported (1 Injury, 4 Property Damage Only) between 40th Street and 41st Street during the study period. The crash rate for this segment of Farnam Street is 4.17 accidents per million vehicle miles traveled (acc/mvmt) which is above the citywide crash rate of 0.98 acc/mvmt for minor arterials. The crash density per mile for this segment was found to be 16.00; this exceeds the citywide crash density of 9.77 for minor arterials. It should be noted that three of four crashes on this segment were Sideswipe (same) crashes.

Farnam Street: 44th Street to Saddle Creek Road

Four crashes were reported (0 Injury, 4 Property Damage Only) between 44th Street and Saddle Creek Road during the study period. The crash rate for this segment of Farnam Street is 1.32 acc/mvmt which is above the citywide crash rate for minor arterials. The crash density per mile for this segment was found to be 8.45; this does not exceed the citywide crash density.

Farnam Street: Saddle Creek Road to 46th Street

Eight crashes were reported (3 Injury, 5 Property Damage Only) between Saddle Creek Road and 46th Street during the study period. The crash rate for this segment of Farnam Street is 3.44 acc/mvmt which is above the citywide crash rate for minor arterials. The crash density per mile for this segment was found to be 13.20; this exceeds the citywide crash density. Four of the eight crashes were Sideswipe (same) type crashes that resulted from westbound traffic lane changes.

Farnam Street: 48th Street to 49th Street

Seven crashes were reported (0 Injury, 7 Property Damage Only) between 48th Street and 49th Street during the study period. The crash rate for this segment of Farnam Street is 3.26 acc/mvmt; this is above the citywide crash rate for minor arterials. The crash density per mile for this segment was found to be 11.20 which exceeds the citywide crash density.

Farnam Street: 49th Street to 50th Street

Eight crashes were reported (3 Injury, 5 Property Damage Only) between 49th Street and 50th Street during the study period. The crash rate for this segment of Farnam Street is 3.73 acc/mvmt which is above the citywide crash rate for minor arterials. The crash density per mile for this segment was found to be 12.80; this is above the citywide crash density. It should be noted that four of the eight crashes were Sideswipe (same) type crashes that resulted from westbound traffic changing lanes.

Farnam Street: 52nd Street to 57th Street

Eight crashes were reported (0 Injury, 8 Property Damage Only) between 52nd Street and 57th Street during the study period. The crash rate for this segment of Farnam Street is 1.70 acc/mvmt which is above the citywide crash rate for minor arterials. The crash density per mile for this segment was found to be 4.86; short of the citywide crash density.

Harney Street: 40th Street to 41st Street

Five crashes were reported (0 Injury, 5 Property Damage Only) between 40th Street and 41st Street during the study period. The crash rate for this segment of Harney Street is 6.85 acc/mvmt which is well above the citywide crash rate for minor arterials. The crash density per mile for this segment was found to be 16.00; this is well above the citywide crash density.

Harney Street: 41st Street to 42nd Street

Four crashes were reported (1 Injury, 3 Property Damage Only) between 41st Street and 42nd Street during the study period. The crash rate for this segment of Harney Street is 5.31 acc/mvmt which is above the citywide crash rate for minor arterials. The crash density per mile for this segment was found to be 12.80; this exceeds the citywide crash density. Two of the crashes were Sideswipe (same) type crashes caused by vehicles changing lanes.

Harney Street: 42nd Street to Farnam Street

Eight crashes were reported (0 Injury, 8 Property Damage Only) between 42nd Street and Farnam Street during the study period. The crash rate for this segment of Harney Street is 5.92 acc/mvmt which is above the citywide crash rate for minor arterials. The crash density per mile for this segment is 16.00 which exceeds the citywide crash density. Seven of the eight crashes were Ran Off Road type crashes with four of these involving DUI's.

4.3 One-way vs. Two-way Crash Summary

As mentioned previously the section of Farnam Street between Happy Hollow Blvd and Saddle Creek Road switches between one-way and two-way operations on Monday to Friday via variable lane assignment. During the morning commuter hour (7:00 AM to 9:00 AM), Farnam Street operates as a one-way roadway in the eastbound direction, and during the evening commuter hour (4:00 PM to 6:00 PM), traffic flows one-way in the westbound direction. The remaining hours and on the weekends Farnam Street two-way, with one lane in each direction carrying traffic.

The four hours of the day that Farnam Street operates as one-way carries approximately 30% of weekday traffic on Farnam Street. Comparatively, 61% of all crashes on Farnam Street (from Happy Hollow Blvd – Saddle Creek Road) occur during One-Way operations. **Table 4-3** and **Table 4-4** display the breakdown by crash type and crash severity. **Chart 4-10** to **Chart 4-11** provide a visual comparison of the types of crashes occurring all-day verses during one-way operations. **Chart 4-12** to **Chart 4-13** compares these two scenarios from a crash severity perspective.

The data includes only Monday-Friday crashes, excludes 2020 data due to Covid-19, and the crashes at the intersection of Happy Hollow Blvd with Farnam Street but not Saddle Creek Road with Farnam Street. The Saddle Creek Road intersection functions essentially as two-way operations throughout the day and serves as a book-end to the one-way operations study area.

Table 4-4. One-Way vs. Two-Way Crash Type Breakdown

Crash Type	All-Day	One-Way Operations*
Angle	68	29
Sideswipe (Same)	47	43
Rear-end	15	7
Left-turn Leaving	7	1
Ran Off Road	3	3
Other^	9	3
Total	**149**	**86**

*One-Way operations are from 7:00-9:00 AM and 4:00-6:00 PM, Monday-Friday
^Other includes the remaining six crash types

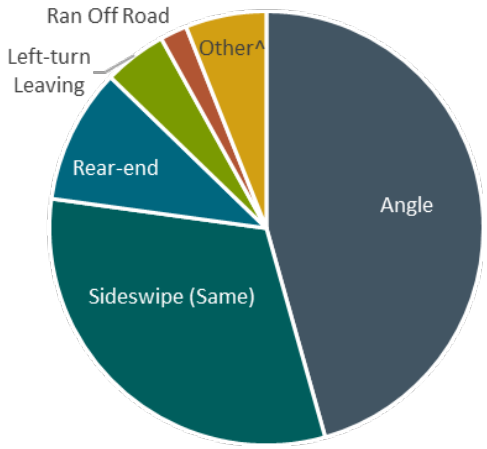


Chart 4-10. All-Day Crashes by Type

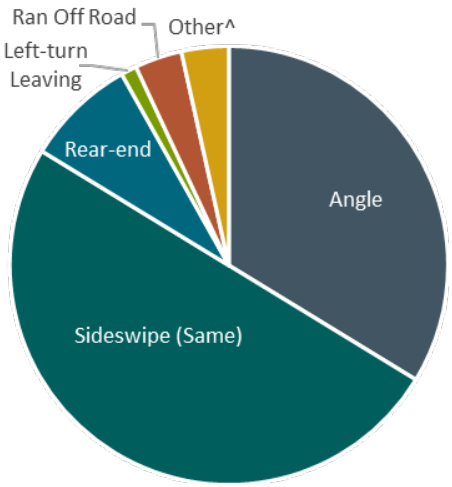


Chart 4-11. One-Way Operations Crashes by Type

Table 4-5. One-Way vs. Two-Way Crash Severity Breakdown

Crash Severity	All-Day	One-Way Operations*
Fatal	2	2
Disabling	1	1
Visible	9	5
Possible	36	15
PDO	101	63
Total	**149**	**86**

*One-Way operations are from 7:00-9:00 AM and 4:00-6:00 PM, Monday-Friday

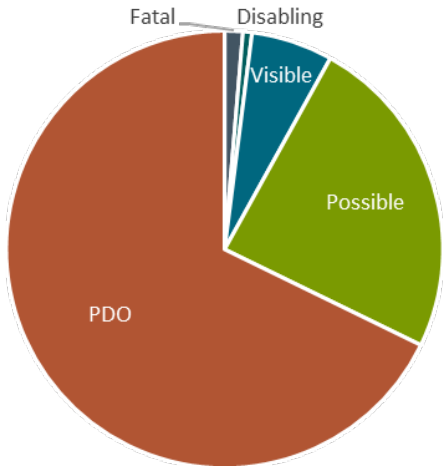


Chart 4-12. All-Day Crashes by Severity

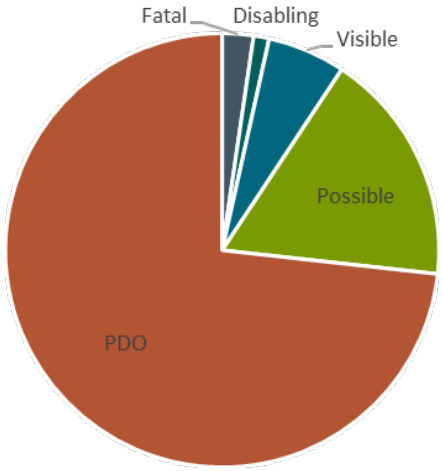


Chart 4-13. One-Way Operations Crashes by Severity

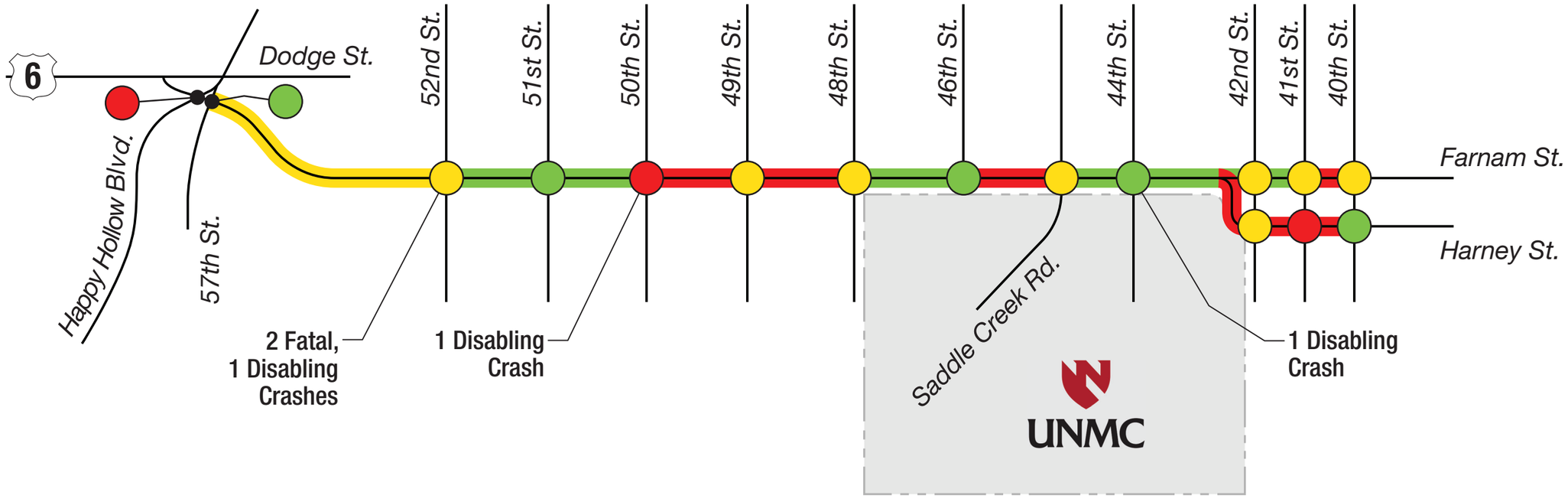
Farnam Street has a transitional period when switching between one-way and two-way operations, closing the lane that will be switched in order to clear out traffic in that direction. The north lane clearance occurs during the AM peak hour and south lane clearance occurs during the PM peak hour. The north lane clearance occurs from 6:50 AM to 7:00 AM and from 8:50 AM to 9:00 AM. The south lane clearance occurs from 3:50 PM to 4:00 PM and from 5:50 PM to 6:00 PM.

Crash rates during the transitional time periods are well below the transitional time's share of the peak periods. Crashes make up only 6% of total crashes, whereas the transitional period is over 15% of the time during the peak period. **Table 4-5** summarized one-way vs. two-way crashes by year as well as the transitional period crashes. A visual overview of crash data is provided on **Figure 4-1**.

Table 4-6. One-Way vs. Two-Way Crash Breakdown by Year

Crashes by Year	All-Day	One-Way Operations*	One-way % of Total	Transitional Period	Transitional Period % of One-way
2015	28	20	71%	1	5%
2016	26	16	62%	1	6%
2017	31	15	48%	2	1%
2018	30	16	53%	0	0%
2019	34	19	56%	1	5%
2020+	14	5	36%	0	0%
Total	**149**	**86**	**56%**	**5**	**6%**

*One-Way operations are from 7:00-9:00 AM and 4:00-6:00 PM, Monday-Friday



LEGEND

= Less than City-wide Average Crash Rate

= Between 1x and 2x City-wide Average Crash Rate

= Greater than 2x City-wide Average Crash Rate

NOTES

* = City-wide Crash Averages listed in Report and Appendix.

** = Crash Data was Collected from a 5-Year Period from 2015-2019.
2020 Crash Data was omitted due to COVID-19 Impacts.

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

NORTH

FIGURE 4-1

Crash Data Overview

Farnam Street Corridor Study 120-340-01 11/09/21

5. TWO-WAY TRAFFIC VOLUME DEVELOPMENT

5.1 Two-way Traffic Volume Development

Farnam Street from 46th Street to Happy Hollow Boulevard is currently one-way eastbound during the AM peak period and one-way westbound during the PM peak period. In order to analyze converting this stretch of Farnam Street from one-way to two-way during the AM and PM peak periods, the one-way volumes were converted to two-way volumes. The balanced Existing (2021) traffic volumes were converted to two-way traffic volumes by adding traffic in the counterflow direction, diverting traffic from the primary flow direction due to the lane reduction, and assigning side-street traffic and turning movements based on existing land use and local traffic patterns.

The counterflow traffic was generally assumed to be 60% of the peak direction based on existing counts in the area. This ratio varies throughout the corridor based on traffic generators in the area adding or removing traffic from the corridor. Primary flow direction traffic diverted from the corridor was initially assumed to be zero percent to examine a worst-case scenario. However, to account for the reduction in capacity, and to ensure that volume data matched the UNMC traffic study, a small diversion of 5% during the AM Peak and 10% during the PM Peak was assumed. The diverted traffic was assumed to take Dodge Street and was added to the respective Dodge Street movements included in the study area. Side-street traffic and turning movements were developed based on existing turning movement percentages and adjusted Farnam Street traffic volumes.

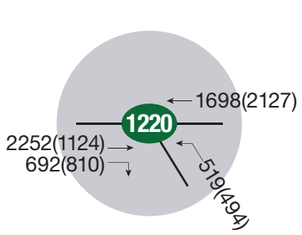
In addition to the two-way conversion, a connection for eastbound Farnam Street traffic to continue eastbound on Farnam Street at 42nd Street is being studied. It was assumed approximately 25% of eastbound traffic will take the connection to the single eastbound lane on Farnam Street while the remaining 75% will proceed on the current alignment to Harney Street. **Figure 5-1** shows the two-way (2021) traffic volumes.

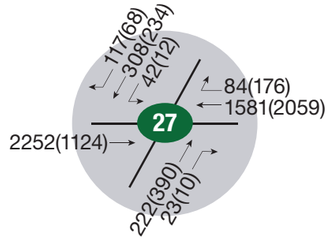
5.2 Two-way (2021) Traffic Operations

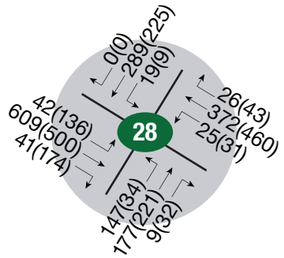
Traffic operations were analyzed for the AM and PM peak hours at the fourteen study intersections using the collected traffic volumes with intersection configurations adjusted for two-way traffic flow. **Figure 5-2** shows the two-way (2021) traffic operations.

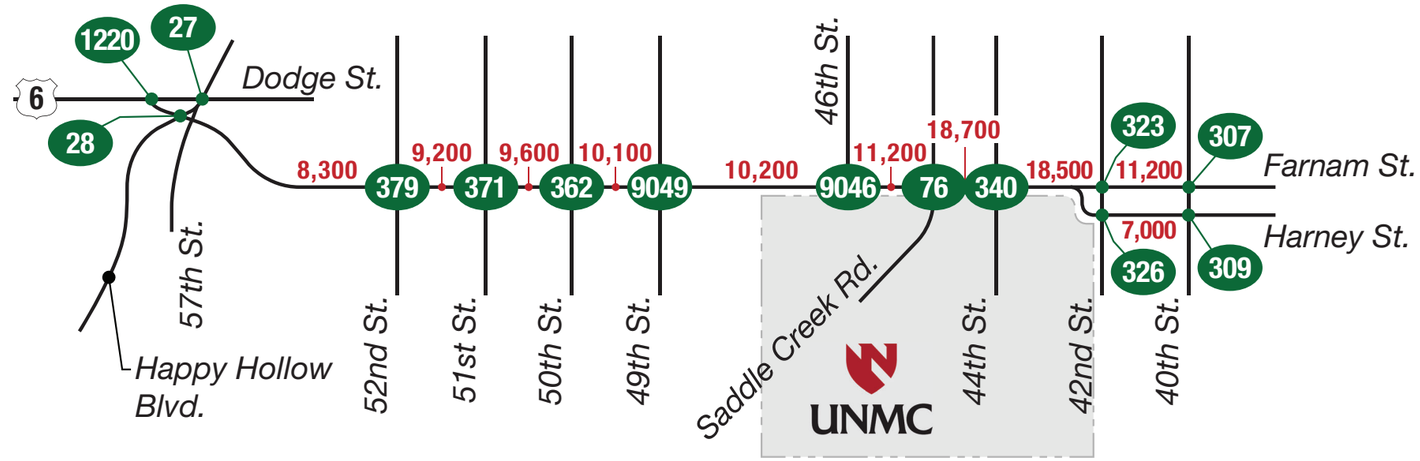
All signalized study intersections operate at LOS D or better overall during the AM and PM peak hours under 2021 two-way traffic conditions with the exception of the intersection of Farnam Street with 50th Street. This intersection operates at LOS E during the AM peak hour and LOS F during the PM peak hour.

Both two-way stop-controlled intersections operate at LOS D or better for stop-controlled and yielding movements during the AM and PM peak hours under 2021 Existing two-way traffic conditions. **Appendix F** provides additional information on the analysis software reports.

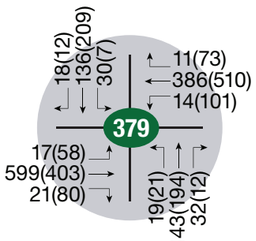


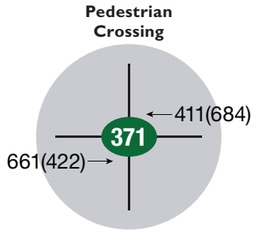


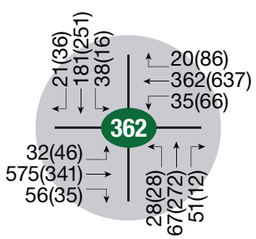


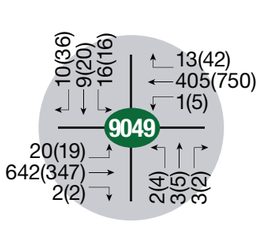


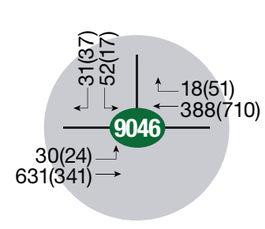
KEY MAP

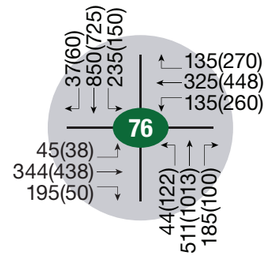


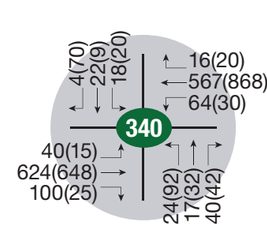


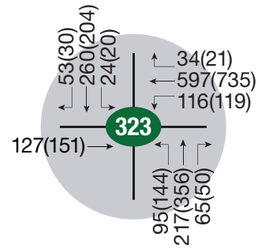


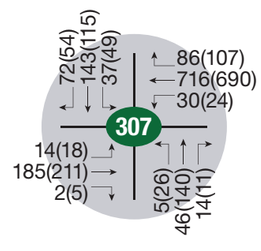


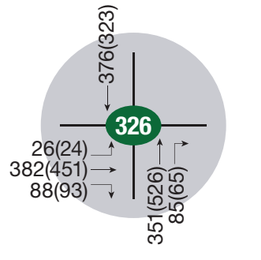


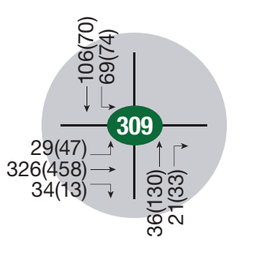












LEGEND

XXX(XXX)	=	AM(PM) Peak Hour Traffic Volumes
XXXX	=	Daily Traffic Volumes
	=	All Day Turning Movement

NORTH

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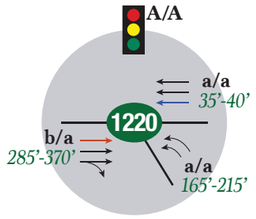
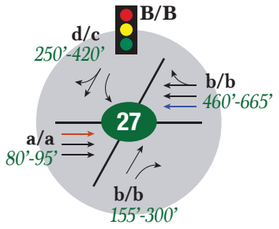
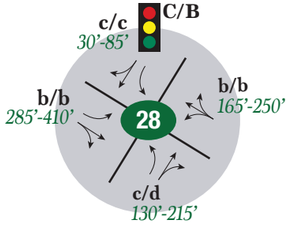
NOTE: Drawing Not to Scale

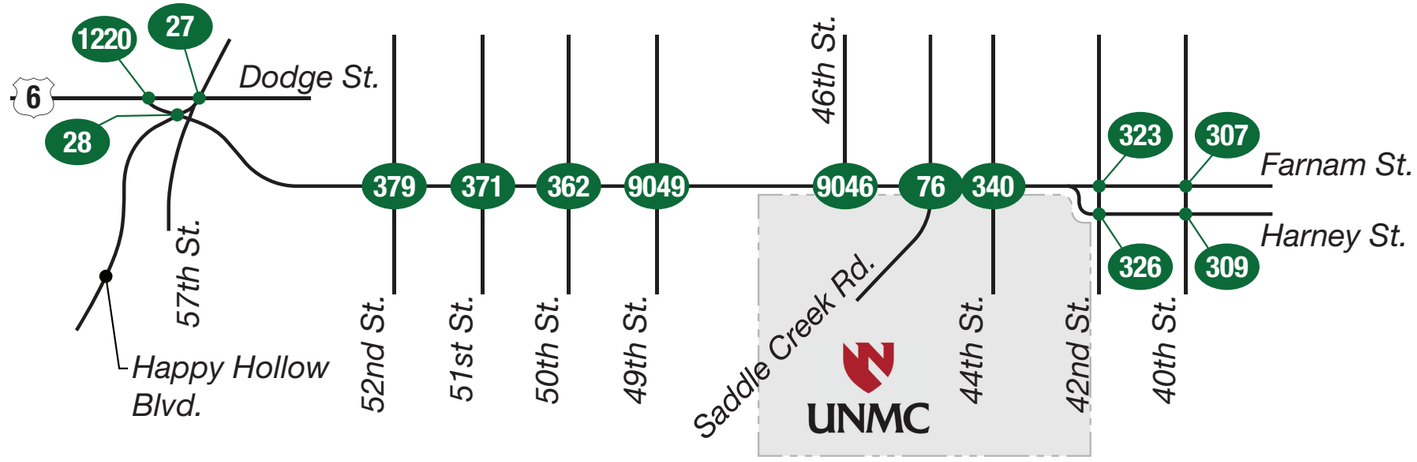
FIGURE 5-1
Two-Way (2021) Traffic Volumes

Farnam Street Corridor Study 120-340-01 11/09/21

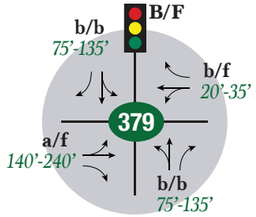


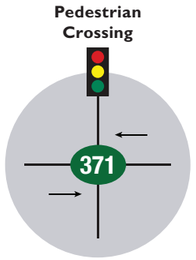


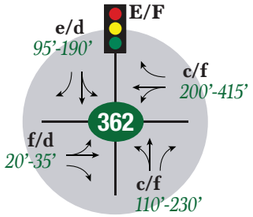


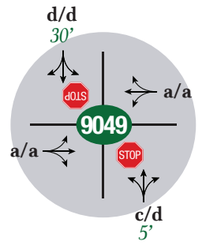


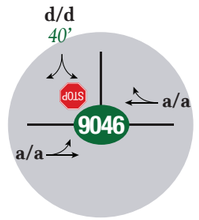
KEY MAP

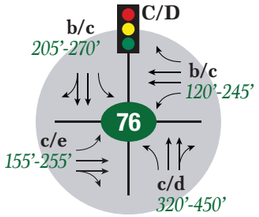


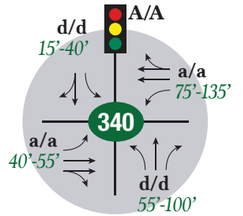


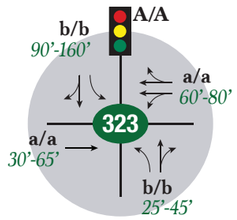


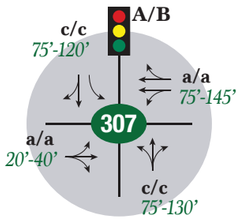


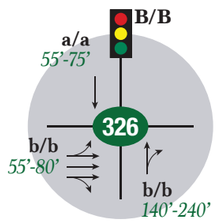


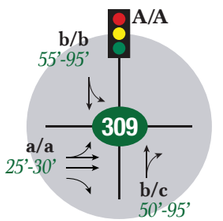












LEGEND

X/X	=	AM/PM Peak Hour Signalized Intersection Level of Service
x/x	=	AM/PM Peak Hour Unsignalized Intersection Level of Service
XXX' - XXX'	=	Critical 50th - 95th Percentile Queue Lenght (ft.)
	=	All Day Turning Movement
	=	AM Peak Turning Movement
	=	PM Peak Turning Movement
STOP	=	Stop Sign
	=	Traffic Signal

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NOTE: Drawing Not to Scale

NORTH

FIGURE 5-2

Two-Way (2021) Traffic Operations

Farnam Street Corridor Study 120-340-01 11/09/21

5.3 2040 Forecast Traffic Volumes

The Metropolitan Area Planning Agency (MAPA) provided ADT projections for the study intersections from their 2040 travel demand model. The MAPA model uses TransCad software, and it provides ADT forecasts on network links for the base year (2010) and the future year (2040). These forecasts are provided in **Appendix B**.

The 2010 and 2040 model output from MAPA were used to determine the annual growth rates for each leg of the study intersections. Growth rates and projected ADT values were validated by comparing with available ADT values collected between 2010 and 2021. The growth rates varied from 0.1% to 2.1% across the corridor. The average annual growth rate in the study area from 2010 to 2040 is approximately 0.8%. The growth rates were applied to the estimated 24-hour counts collected as part of the project to develop 2040 forecast ADT volumes. **Figure 5-3** shows the 2040 ADT one-way values and **Figure 5-5** shows the 2040 ADT two-way values for the study area. A detailed analysis of ADT values and growth rates can be found in **Appendix B**.

Estimated peak hour turning movements for 2040 were developed for study area intersections based on guidelines and methodologies documented in *NCHRP Report 255* and *NCHRP Report 765*, evaluating existing traffic counts, MAPA projections for 2040, and adjusting for local travel patterns. **Figure 5-3** shows the 2040 projected turning movement volumes maintaining one-way traffic and **Figure 5-5** shows the anticipated two-way traffic volumes.

5.4 One-way (2040) Traffic Operations

Traffic operations were analyzed for the future year 2040 AM and PM peak hours at the fourteen study intersections using MAPA growth rates to determine future one-way traffic flow. **Figure 5-4** shows the one-way (2040) traffic operations.

All signalized study intersections operate at LOS D or better overall during the AM and PM peak hours under 2040 one-way traffic conditions, except for the intersection of Farnam Street with Saddle Creek Road; during the AM peak hour, the intersection operates at LOS E.

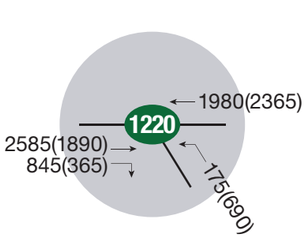
Both two-way stop-controlled intersections operate at LOS D or better for stop-controlled and yielding movements during the AM and PM peak hours under 2040 one-way traffic conditions. **Appendix F** provides additional information on the analysis software reports.

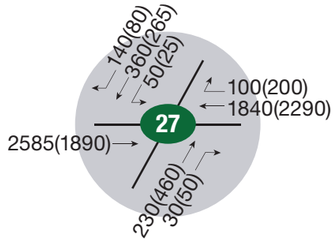
5.5 Two-way (2040) Traffic Operations

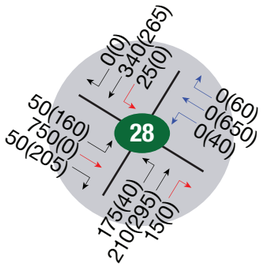
Traffic operations were analyzed for the future year 2040 AM and PM peak hours using the developed traffic volumes with intersection configurations adjusted for two-way traffic flow. **Figure 5-6** shows the two-way (2040) traffic operations.

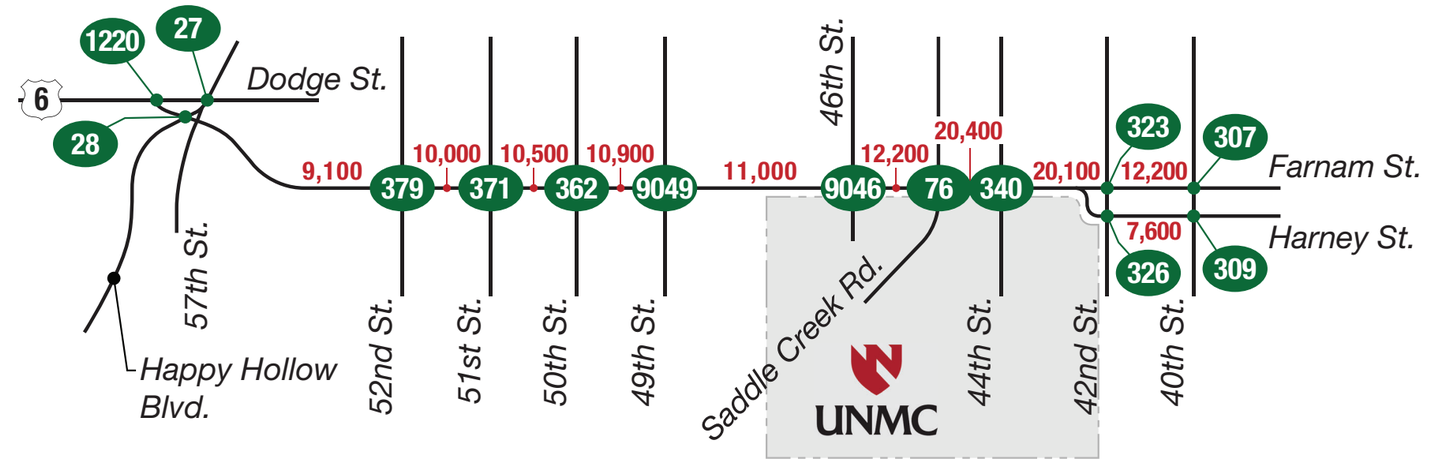
All but three signalized study intersections operate at LOS D or better overall during the AM and PM peak hours under 2040 two-way traffic conditions. At the intersection of Farnam Street with 52nd Street, the PM peak hour operates at LOS F. During both the AM and PM peak hour, the intersection of Farnam Street with 50th Street operates at LOS F as well. The final exception is the intersection of Farnam Street with Saddle Creek Road; during the PM peak hour, the intersection operates at LOS E.

At the two-way stop-controlled intersection of Farnam Street with 49th Street, the northbound and southbound movements operate LOS E and F during the AM and PM peak hours under 2040 two-way traffic conditions. However, it is not uncommon for side street movements at stop-controlled intersection to operate at LOS E or F during the peak periods. **Appendix F** provides additional information on the analysis software reports.

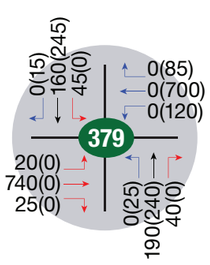


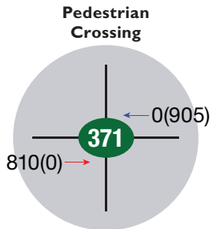


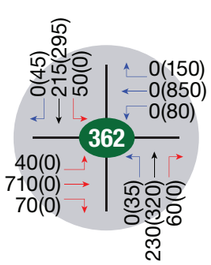


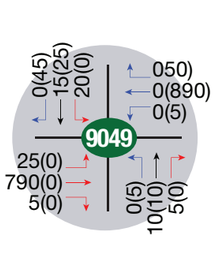


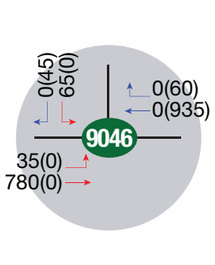
KEY MAP

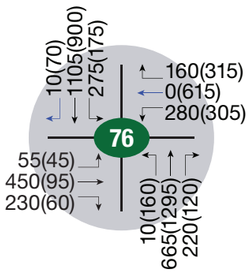


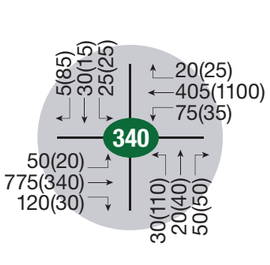


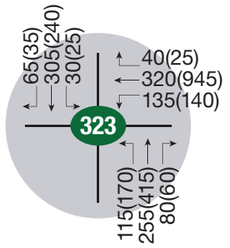


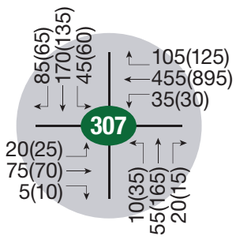


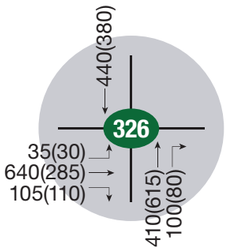


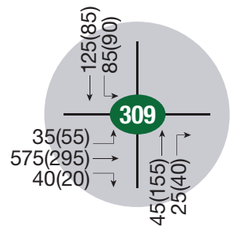












LEGEND

XXX(XXX)	=	AM(PM) Peak Hour Traffic Volumes
XXXX	=	Daily Traffic Volumes
	=	All Day Turning Movement
	=	AM Peak Turning Movement
	=	PM Peak Turning Movement

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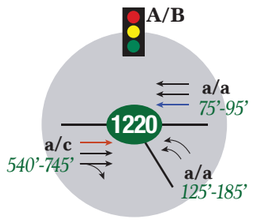
NOTE: Drawing Not to Scale

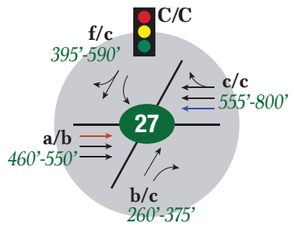
NORTH

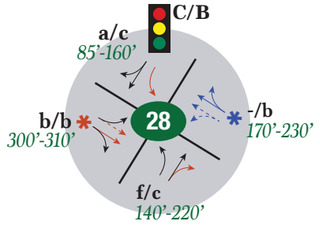
FIGURE 5-3

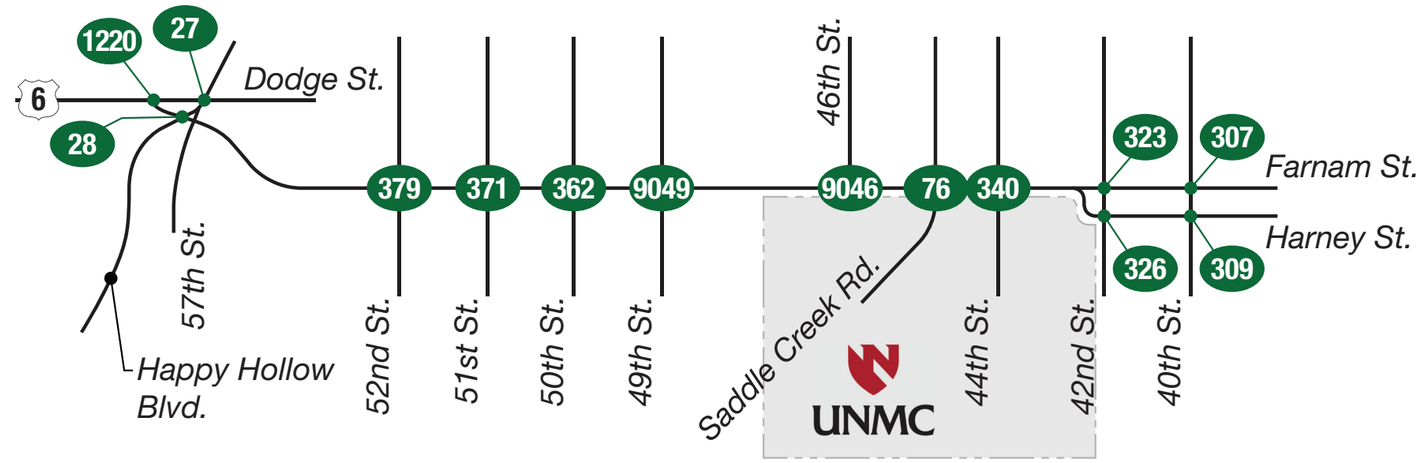
One-Way (2040) Traffic Volumes

Farnam Street Corridor Study 120-340-01 11/09/21

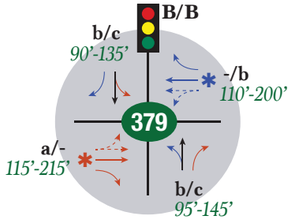


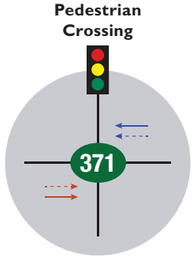


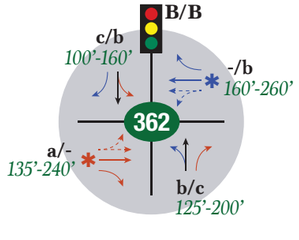


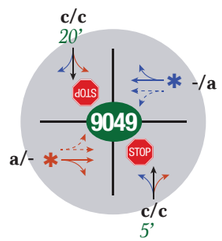


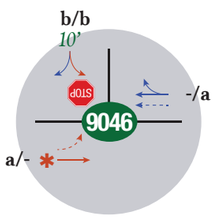
KEY MAP

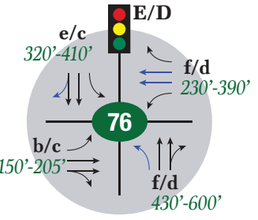


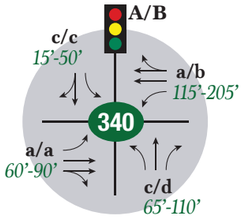






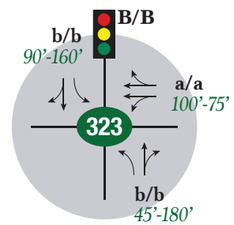


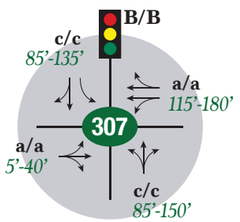


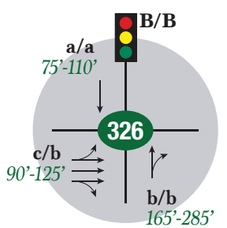


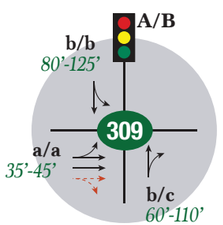
LEGEND

X/X	=	AM/PM Peak Hour Signalized Intersection Level of Service
x/x	=	AM/PM Peak Hour Unsignalized Intersection Level of Service
XXX' - XXX'	=	Critical 50th - 95th Percentile Queue Lenght (ft.)
	=	All Day Turning Movement
	=	AM Peak Turning Movement
	=	PM Peak Turning Movement
	=	Only AM Peak/Only PM Peak Turning Movement (Does Not Exist Rest of Day)
/	=	Shared Left-Turn Arrow Not Shown for Clarity
STOP	=	Stop Sign
	=	Traffic Signal









FELSBURG HOLT & ULLEVIG

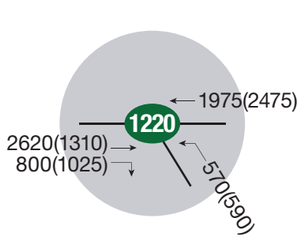
NOTE: Drawing Not to Scale

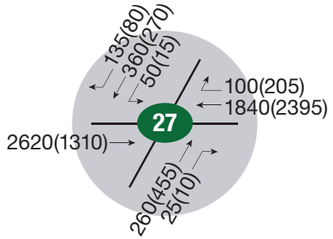
NORTH

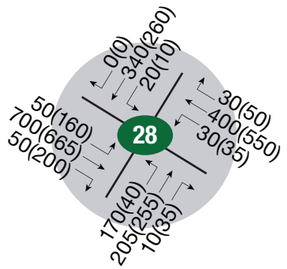
FIGURE 5-4

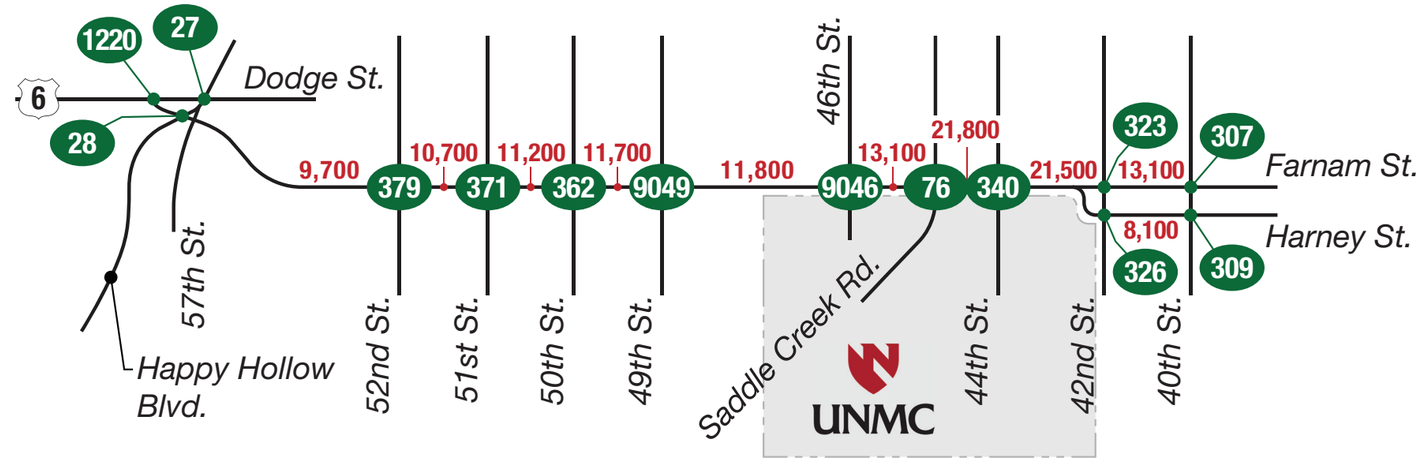
One-Way (2040) Traffic Operations

Farnam Street Corridor Study 120-340-01 11/09/21

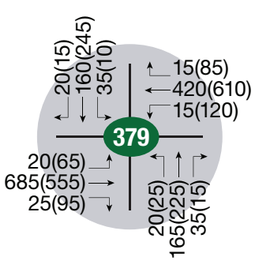


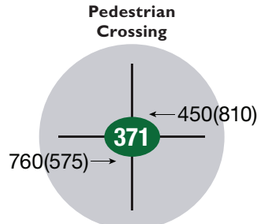


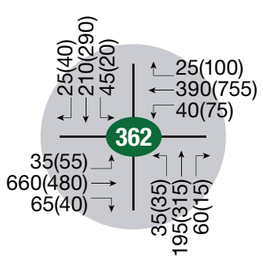


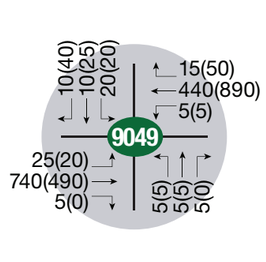


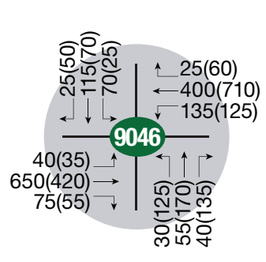
KEY MAP

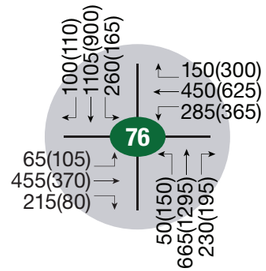


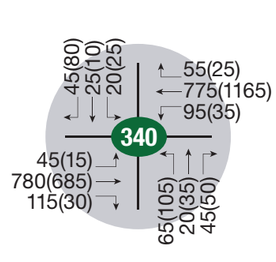


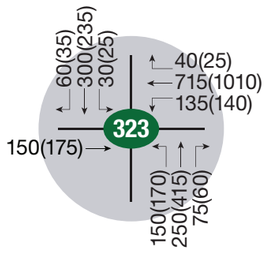


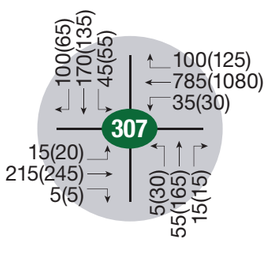


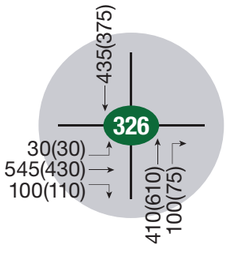


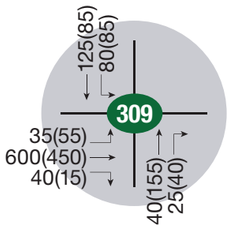












LEGEND

XXX(XXX)	=	AM(PM) Peak Hour Traffic Volumes
XXXX	=	Daily Traffic Volumes
	=	All Day Turning Movement

FELSBURG HOLT & ULLEVIG

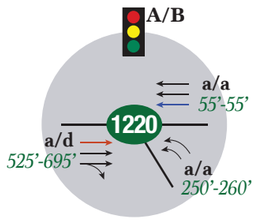
NOTE: Drawing Not to Scale

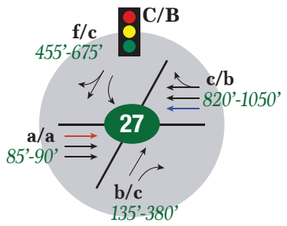
NORTH

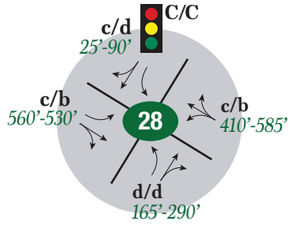
FIGURE 5-5

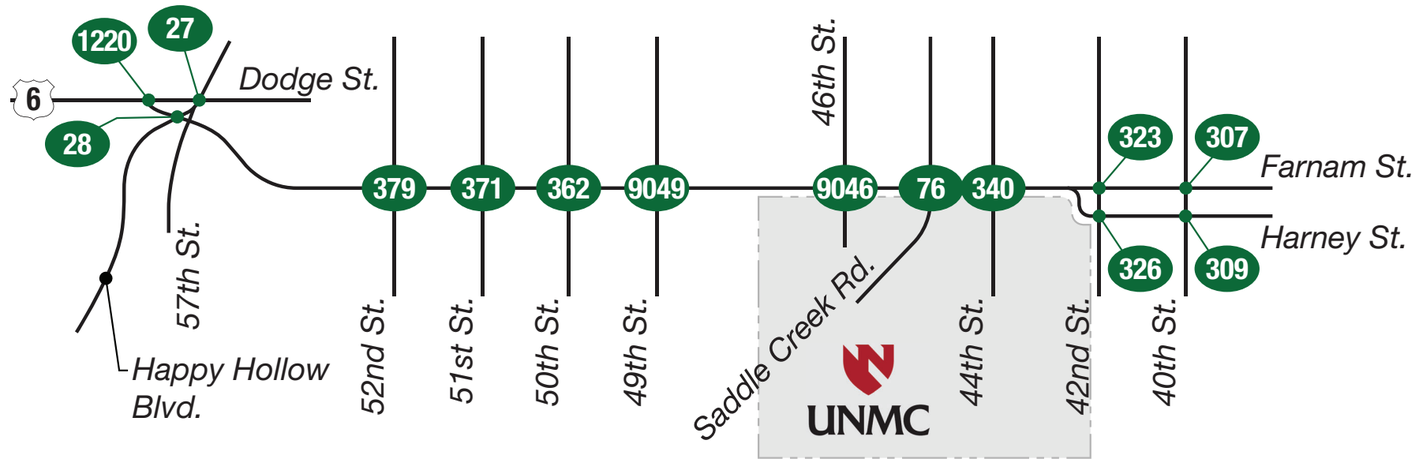
Two-Way (2040) Traffic Volumes

Farnam Street Corridor Study 120-340-01 11/09/21

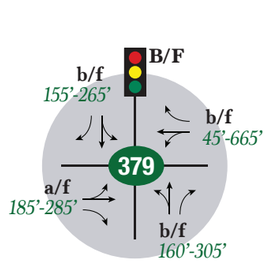


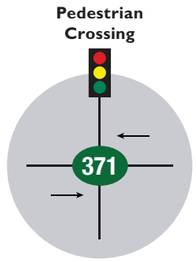


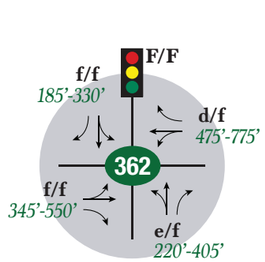


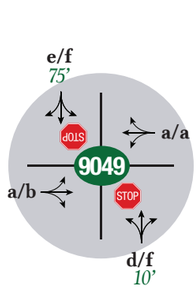


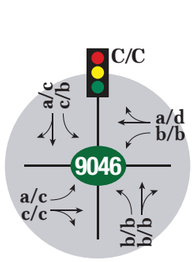
KEY MAP



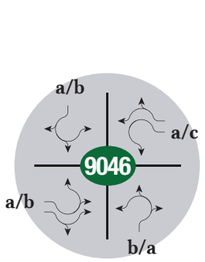




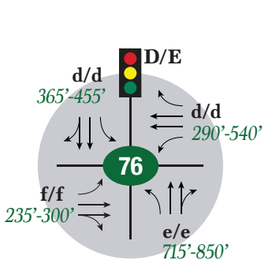


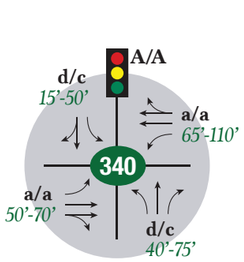


Traffic Signal



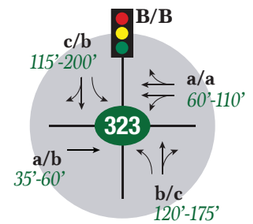
Roundabout

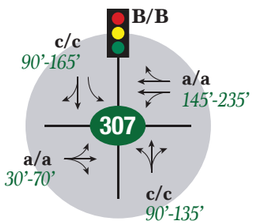


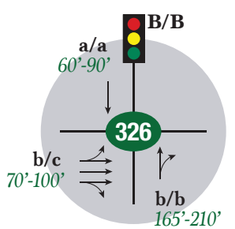


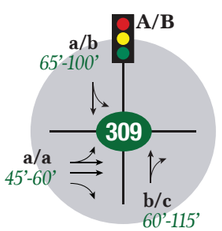
LEGEND

X/X	=	AM/PM Peak Hour Signalized Intersection Level of Service
x/x	=	AM/PM Peak Hour Unsignalized Intersection Level of Service
XXX' - XXX'	=	Critical 50th - 95th Percentile Queue Lenght (ft.)
	=	All Day Turning Movement
	=	AM Peak Turning Movement
	=	PM Peak Turning Movement
STOP	=	Stop Sign
	=	Traffic Signal









FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

NORTH

FIGURE 5-6

Two-Way (2040) Traffic Operations

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5.6 MUTCD Signal Warrants Analysis

A review was performed to determine if traffic signals are anticipated to be warranted in the 2040 Future year two-way traffic conditions based on the Manual on Uniform Traffic Control Devices (MUTCD) at each study intersection. Warrant 1 – Eight-Hour Vehicular Volume, Warrant 2 – Four-Hour Vehicular Volume, and Warrant 3 – Peak Hour were considered in the analysis **Table 5-1** summarizes the results of the traffic control device warrant analysis. Detailed results are provided in **Appendix D**. 46th Street with Farnam Street was not included due to the intersection being previously analyzed in the *UNMC Steel Casting Site Traffic Study*.

Table 5-1. MUTCD Signal Warrant Summary

Intersection (w/ Farnam Street)	Existing Traffic Control	Warrant 1			Warrant 2	Warrant 3
		A	B	A&B		
52nd Street	Signal	NO	YES	NO	YES	NO
50th Street	Signal	NO	NO	YES	YES	NO
49th Street	TWSC	NO	NO	NO	NO	NO
44th Street	Signal	NO	NO	NO	YES	NO
42nd Street	Signal	NO	NO	YES	YES	NO
42nd Street & Harney Street	Signal	NO	NO	YES	YES	NO

- = Warrants not analyzed/applicable
TWSC = Two-Way Stop Controlled

All existing signalized intersection met warrants and the intersection of 49th Street with Farnam Street which is currently stop-controlled does not meet MUTCD signal warrants. All locations not included in the table were not reviewed.

5.7 Auxiliary Turn-Lane Analysis

The National Cooperative Highway Research Program (NCHRP) has developed guidance to determine if an auxiliary left or right-turn lane is warranted on the major road or if two lanes should be considered for the minor-street approaches of a two-way stop-controlled intersection. These guidelines are published in *NCHRP Report 457: Evaluating Intersection Improvements*. The methodologies are based on an evaluation of the operating and collision costs associated with the turning maneuver relative to the cost of constructing a turn lane. Additional measures considered for each analysis are detailed below.

Auxiliary Left-turn Lanes

- Major road 85th percentile speed (posted speed can be used if data is unavailable)
- Percent of left-turns in advancing volume
- Major road peak hour advancing and opposing traffic volumes

Auxiliary Right-turn Lanes

- Major road 85th percentile speed (posted speed can be used if data is unavailable)
- Major road peak hour approaching traffic volumes
- Right-turn traffic volumes

Minor-street Approaches

- Major road peak hour traffic volumes (total of both directions)
- Minor road peak hour approaching traffic volumes
- Right-turn traffic volumes
- Percentage of right-turns

NCHRP Report 457 guidelines were used to analyze auxiliary lanes for all the two-way stop-controlled study intersections under 2040 Future year two-way traffic volumes. **Table 5-2** summarizes the results of the auxiliary turn lane and minor approach analyses. Detailed results are provided in **Appendix E**.

Table 5-2. Auxiliary Turn-Lane Analysis Summary

Intersection	Two-lane Minor Approach		Left-Turn Lane		Right-Turn Lane	
	Northbound	Southbound	Eastbound	Westbound	Eastbound	Westbound
49th Street	NO	NO	NO	NO	NO	NO

Based on the NCHRP guidance warrants are not met at the intersection of 49th Street with Farman Street. It should be noted that the intersection of 46th Street with Farnam Street was not included due to the intersection being previously analyzed in the *UNMC Steel Casting Site Traffic Study*.

6. ALTERNATIVES ANALYSIS

As part of the City of Omaha's Complete Streets policy the selection of preferred alternatives were the result of an iterative alternatives analysis process with the goal of determining the best improvements for all modes of transportation for this project. Farnam Street is classified as General Urban west of 46th Street and Urban Connector to the east of 46th Street based on the Complete Street classification system. This section describes the alternative analysis methodology and procedures. Screening criteria were developed to evaluate the transportation improvement options to identify a preferred alternative. The analysis was based on various factors such as:

- Vehicle Safety
- Pedestrian Safety
- Project Cost
- Minimizing Right-of-Way Impacts
- Traffic Operations
- Access Management

Vehicle safety was based on crash modification factors (CMF) from the CMF Clearinghouse or the change in number of conflict points from geometric and/or traffic control changes. Pedestrian safety weighing was based on whether crossings distances increased/decreased, the presence of pedestrian refuge islands, signal phasing improved pedestrian safety, or if pedestrians had to cross more traffic movements. Project cost and ROW impacts were both based on the roadway design estimates. Traffic operational impacts are based on analysis of both LOS and queueing. Lastly, access management scoring is based on whether the alternatives eliminated accesses, reduced movements, or consolidated access points.

6.1 Description of Alternatives

No alternative roadway cross-sections were evaluated for Farnam Street. It is recommended that the existing cross-section be utilized with modifications to lane arrangements and pavement markings when needed to match intersection alternatives and to accommodate the removal of one-way operation during the peak commuter hours. At intersections, traffic control options such as signalization, roundabouts, and other alternative intersection types were evaluated. Intersection alternatives also include geometric improvements such as auxiliary turn lanes.

6.2 Farnam Street One-way to Two-way Conversion

The feasibility of converting Farnam Street to two-way traffic operations was a main purpose of this study. Since Farnam Street operates as a two-way street most of the time, the majority of the conversion can occur through restriping and the removal of the overhead lane assignment signals. In addition, intersections improvements will also be required at the intersections of Farnam Street with 52nd Street, 50th Street and 46th Street.

Operations

Acceptable (LOS D or better) traffic operations are anticipated under 2040 AM and PM peak hour two-way traffic volumes with the permanent two-way conversion with the exception of the intersections of 52nd Street, 50th Street, and 46th Street with Farnam Street. In order to permanently convert to two-way traffic and provide acceptable traffic operations, improvements to the intersections listed above must be made in addition to the removing the lane assignment signals and signing and striping.

Safety

Based on the crash analysis, specifically the one-way vs. two-way analysis, a disproportionate number of crashes were observed during the transition period and one-way times. Although it is recognized that additional conflict points would be added due to all day two-way traffic and some conflicts may become more prevalent, such as left-turn leaving. On the other hand, some types of crashes may reduce, such as side-swipe (same direction). The previous chapter discusses in-depth the safety of the corridor and the implications of the street conversion.

Concept and Cost Estimate

Figure C-1 through **Figure C-10** in **Appendix C** show the proposed layout of the permanent two-way conversion of Farnam Street.

Conceptual level cost estimates were developed using current unit prices from the City of Omaha's most recent bid tabulations. Based on a planning level cost estimate for removing the lane assignment signals and permanent two-way signing and striping, excluding additional intersection improvements, is estimated at approximately **$71,280**. A detailed cost estimate is shown in **Appendix C.** This cost does not include the needed improvements to the intersections of 52nd Street ($1,500,000), 50th Street ($1,500,000), and 46th Street ($2,800,000) with Farnam Street which are discussed in more detail in the following sections. In total, it is estimated that the permanent two-way conversion of Farnam Street would cost approximately **$5,900,000**. No right-of-way (ROW) acquisition is anticipated as part of the conversion.

6.3 52nd Street with Farnam Street Alternatives

The intersection of 52nd Street with Farnam Street is currently signalized with right-turn lanes provided on all approaches. The current configuration is anticipated to result in a LOS F by Future (2040). To address operations, safety, and pedestrian concerns several intersection improvement alternatives were evaluated and are discussed in detail below. They include:

1. Signalized with Eastbound and Westbound Left-turn Lanes
2. Signalized with Eastbound and Westbound Left & Right-turn Lanes
3. Single-lane Roundabout
4. Single-lane Roundabout with Eastbound and Westbound Right-turn Lanes

6.3.1 Alternative 1 - Signal with EB and WB Left-turn Lanes

Alternative 1 consists of keeping the intersection signalized, adding eastbound and westbound left-turn lanes (permitted phasing), and removing the eastbound and westbound right-turn lanes at the intersection. The northbound and southbound right-turn lanes would remain.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 1, as compared to a No-build scenario where operations is converted to two-way but no improvements are made. The signalized intersection is anticipated to operate at LOS B in the AM peak hour and LOS C in the PM peak hour. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

There were 25 crashes over the 5-year crash analysis period at this intersection. 15 of which were angle type crashes, seven were sideswipes, two were left-turn leaving crashes, and one was a rear-end crash. The addition of left-turn lanes creates an expectation for turning vehicles, addressing the angle-type crashes, and would remove vehicles from the shared through lane stopping to turn, helping to prevent rear-end crashes. Based on CMF Clearinghouse database of the transportation safety research (CMF ID: 270), adding left-turn lanes to both major approaches would lead to a general crash reduction of 19% at the intersection.

6.3.2 Alternative 2 - Signal with EB and WB Left & Right-turn Lanes

Alternative 2 consists of keeping the intersection as signalized, adding eastbound and westbound left-turn lanes (permitted phasing), and keeping eastbound and westbound right-turn lanes at the intersection. The northbound and southbound right-turn lanes would remain.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 2. The signalized intersection is anticipated to operate at LOS B in the AM peak hour and LOS B in the PM peak hour. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As discussed in Alternative 1, the addition of left-turn lanes creates an expectation for turning vehicles, removing vehicles from the shared through lane, addressing the angle-type crashes. Additionally, right-turn lanes would help prevent rear end crashes and create an expectation of turning vehicles for drivers and pedestrians crossing the intersection. Based on CMF Clearinghouse research (CMF ID: 270) adding left-turn lanes to both major approaches would lead to a general crash reduction of 19% at the intersection. Adding extra turn-lanes, increasing pedestrian crossing distance, would increase exposure of high-risk users.

6.3.3 Alternative 3 - Single-lane Roundabout

Alternative 3 consists of reconstructing the intersection as a single-lane regular sized roundabout.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 3. The roundabout is anticipated to operate at LOS B in the AM peak hour and LOS D in the PM peak hour. Individual movements at the roundabout operate at LOS D or better during both peak hours, except for the westbound movement during the PM peak hour, where it operates at LOS E. The 50th and 95th percentile queuing was also examined at the roundabout and included on **Figure 6-1**.

Safety

Many studies have proven that roundabouts are safer than stop-controlled and/or signalized intersections. The Federal Highway Administration has shown that roundabout on average reduce overall crash rates by 37%, injury type crashes by 75%, fatal type crashes by 90%, and pedestrian related crashes by 40%. These benefits are due to lower travel speeds, reduction of the number of conflict points, and the elimination of angle type conflicts totally. Based on CMF Clearinghouse research (CMF ID: 4194) converting a signalized intersection to a roundabout would lead to a general crash reduction of 21% at the intersection. The primary crash pattern at this intersection is angle-type crashes and therefore the crash reduction rate may be higher due to the elimination of angle conflicts. It should also be noted that both fatalities were angle-type crashes. Pedestrian crossings are provided with two-stage crossing and a pedestrian refuge island.

6.3.4 Alternative 4 - Single-lane Roundabout with Right-turn Lanes

Alternative 4 is similar to Alternative 3 and consists of reconstructing the intersection as a single-lane roundabout with the addition eastbound and westbound right-turn lanes. The turn lanes were added to improve operations and queuing issues identified with the single-lane roundabout.

Alternative 4 was not carried forward for future consideration due to City of Omaha input, improbability of buildout, and concerns with ROW impact. Further, and more in-depth, examination of this option can be done as part of another study if a roundabout option is pursued at this location. No concept or cost estimate was developed for this alternative. The alternative was analyzed to determine traffic operations only.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 4. The roundabout is anticipated to operate at LOS B in the AM peak hour and LOS C in the PM peak hour. Individual movements at the roundabout operate at LOS C or better during both peak hours. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As stated for Alternative 3, many studies have proven that roundabouts are safer than stop-controlled and/or signalized intersections. The Federal Highway Administration has shown that roundabout on average reduce overall crash rates by 37%, injury type crashes by 75%, fatal type crashes by 90%, and pedestrian related crashes by 40%. These benefits are due to lower travel speeds, reduction of the number of conflict points, and the elimination of angle type conflicts. Based on CMF Clearinghouse research (CMF ID: 4194) converting a signalized intersection to a roundabout would lead to a general intersection crash reduction of 21%. The primary crash pattern at this intersection is angle-type crashes and therefore the crash reduction rate may be higher due to the elimination of angle conflicts. Both fatalities were angle-type crashes. Pedestrian crossings are provided with two-stage crossing and a pedestrian refuge island; however, the addition of turn lanes at the roundabout require an additional lane to cross and more vehicle exposure.

6.3.5 Alternatives Summary

Concepts and Cost / ROW Impact

Figure C-3 through **Figure C-5** in **Appendix C** show the proposed layouts for the 52nd Street with Farnam Street alternatives. **Table 6-1** shows the estimated costs and right-of-way impacts for each alternative. Detailed cost estimates are shown in **Appendix C** immediately after the proposed layouts**.** A summary of turn lane lengths table is provided in **Appendix E** for all alternatives.

Table 6-1. 52nd Street and Farnam Street Costs & ROW Impact

Intersection	Alternative	Project Cost ($)	ROW Impact (Sq. ft.)
52nd Street & Farnam Street	No-Build	$ -	-
	Alt 1. - Left Turn Lanes	$ 1,341,000	120
	Alt 2. - Left/Right Turn Lanes	$ 1,504,000	2,540
	Alt 3. - Roundabout	$ 781,000	1,765

Alternatives Matrix

Alternatives 1 through 3, and a no-build option, have been visually summarized into a matrix format shown in **Table 6-2.** A quantitative version of the matrix is also provided in **Appendix C.** Alternative 4 was not carried forward for future consideration. Based on the results of the operations and safety analysis it is recommended that Alternative 3 be constructed with the permanent two-way conversion of Farnam Street.

Table 6-2. 52nd Street and Farnam Street Matrix

Intersection	Alternative	Vehicle Safety	Pedestrian Safety	Project Cost	Minimize ROW Impacts	Traffic Operations	Access Management
52nd Street & Farnam Street	No-Build	○	◑	●	●	○	○
	Alt 1. - Left Turn Lanes	◑	◑	○	●	◑	○
	Alt 2. - Left/Right Turn Lanes	◑	○	○	○	●	○
	Alt 3. - Roundabout	●	●	◑	◑	◑	◑

● = Best ◑ = Good ○ = Fair

6.4 50th Street with Farnam Street Alternatives

The intersection of 50th Street with Farnam Street is currently signalized with right-turn lanes provided on all approaches. The current configuration is anticipated to result in a LOS F by Future (2040). To address operations, safety, and pedestrian concerns several intersection alternatives were evaluated and are discussed in detail below. They include:

1. Signalized with Eastbound and Westbound Left-turn Lanes
2. Signalized with Eastbound and Westbound Left & Right-turn Lanes
3. Single-lane Roundabout
4. Single-lane Roundabout with Eastbound and Westbound Right-turn Lanes

6.4.1 Alternative 1 - Signal with EB and WB Left-turn Lanes

Alternative 1 consists of keeping the intersection as signalized, adding eastbound and westbound left-turn lanes, and removing the eastbound and westbound right-turn lanes at the intersection. The northbound and southbound right-turn lanes would remain.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 1. The signalized intersection is anticipated to operate at LOS D in the AM peak hour and LOS E in the PM peak hour. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

There were 35 crashes over the 5-year crash analysis period at this intersection. 18 of which were angle type crashes, 11 were sideswipes (same direction), one was a left-turn leaving crash, three were rear-end crashes, and two were categorized as other. The addition of left-turn lanes creates an expectation for turning vehicles, addressing the angle-type crashes, and would remove vehicles from the shared through lane stopping to turn, helping to prevent rear-end crashes. Based on CMF Clearinghouse research (CMF ID: 270), adding left-turn lanes to both major approaches would lead to a general crash reduction of 19% at the intersection.

6.4.2 Alternative 2 - Signal with EB and WB Left & Right-turn Lanes

Alternative 2 consists of keeping the intersection as signalized, adding eastbound and westbound left-turn lanes, and keeping eastbound and westbound right-turn lanes at the intersection. The northbound and southbound right-turn lanes would remain.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 2. The signalized intersection is anticipated to operate at LOS D in the AM peak hour and LOS D in the PM peak hour. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As discussed in Alternative 1, the addition of left-turn lanes creates an expectation for turning vehicles, removing vehicles from the shared through lane, addressing the angle-type crashes. Additionally, right-turn lanes would help prevent rear end crashes and create an expectation of turning vehicles for drivers and pedestrians crossing the intersection. Based on CMF Clearinghouse research (CMF ID: 270) adding left-turn lanes to both major approaches would lead to a general crash reduction of 19% at the intersection. Adding extra turn-lanes, increasing pedestrian crossing distance, would increase exposure of high-risk users.

6.4.3 Alternative 3 - Single-lane Roundabout

Alternative 3 consists of reconstructing the intersection as a single-lane regular sized roundabout.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 3. The roundabout is anticipated to operate at LOS C in the AM peak hour and LOS E in the PM peak hour. Individual movements at the roundabout operate at LOS D or better during both peak hours, except for the westbound movement during the PM peak hour, where it operates at LOS F. The 50th and 95th percentile queues were examined and included on **Figure 6-1**. It should be noted that the driveway on the southeast corner of the intersection would need to be converted to right-in right-out operations as part of this alternative.

Safety

As stated, and shown previously, it is known that roundabouts are safer than stop-controlled and/or signalized intersection. Based on CMF Clearinghouse research (CMF ID: 4194) converting a signalized intersection to a roundabout would lead to a general intersection crash reduction of 21%. Pedestrian crossings are provided with two-stage crossing and a pedestrian refuge island.

6.4.4 Alternative 4 - Single-lane Roundabout with Right-turn Lanes

Alternative 4 is similar to Alternative 3 and consists of reconstructing the intersection as a single-lane roundabout with the addition of a westbound right-turn lanes. The turn lane was added to improve operations and queuing issues identified with the single-lane roundabout.

No concept or cost estimate was developed for this alternative. The alternative was analyzed to determine traffic operations only. Further, and more in-depth, examination of this option can be done as part of another study if a roundabout option is pursued at this location. Alternative 4 was not carried forward for future consideration due to City of Omaha input, improbability of buildout, and concerns with ROW impact.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 4. The roundabout is anticipated to operate at LOS C in the AM peak hour and LOS D in the PM peak hour. Individual movements at the roundabout operate at LOS D or better during both peak hours, except for the westbound movement during the PM peak hour, where it operates at LOS F. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As stated, and shown previously, it is known that roundabouts are safer than stop-controlled and/or signalized intersection. Based on CMF Clearinghouse research (CMF ID: 4194) converting a signalized intersection to a roundabout would lead to a general intersection crash reduction of 21%. Pedestrian crossings are provided with two-stage crossing and a pedestrian refuge island; however, the addition of turn lanes at the roundabout require an additional lane to cross and more vehicle exposure.

6.4.5 Alternatives Summary

Concepts and Cost / ROW Impact

Figure C-6 through **Figure C-8** in **Appendix C** show the proposed layouts for the 50th Street with Farnam Street alternatives. **Table 6-2** shows the estimated costs and right-of-way impacts for each alternative. Detailed cost estimates are shown in **Appendix C** immediately after the proposed layouts**.** A summary of turn lane lengths table is provided in **Appendix E** for all alternatives.

Table 6-3. 50th Street and Farnam Street Costs & ROW Impact

Intersection	Alternative	Project Cost ($)	ROW Impact (Sq. ft.)
50th Street & Farnam Street	No-Build	$ -	-
	Alt 1. - Left Turn Lanes	$ 1,356,000	175
	Alt 2. - Left/Right Turn Lanes	$ 1,501,000	1,565
	Alt 3. - Roundabout	$ 777,000	1,025

Alternatives Matrix

Alternatives 1 through 3, and a no-build option, have been visually summarized into a matrix format shown in **Table 6-4.** A quantitative version of the matrix is also provided in **Appendix C.** Alternative 4 was not carried forward for future consideration. Based on the results of the operations and safety analysis it is recommended that Alternative 3 be constructed with the permanent two-way conversion of Farnam Street.

Table 6-4. 50th Street and Farnam Street Matrix

Intersection	Alternative	Vehicle Safety	Pedestrian Safety	Project Cost	Minimize ROW Impacts	Traffic Operations	Access Management
50th Street with Farnam Street	No-Build	○	◑	●	●	○	○
	Alt 1. - Left Turn Lanes	◑	◑	○	●	◑	○
	Alt 2. - Left/Right Turn Lanes	◑	○	○	○	●	○
	Alt 3. - Roundabout	●	●	◑	◑	○	◑

● = Best ◑ = Good ○ = Fair

6.5 Saddle Creek Road with Farnam Street Alternatives

The intersection of Saddle Creek Road with Farnam Street is currently signalized with left-turn lanes on each approach and a right-turn lane on the westbound approach. To address operations, safety, and pedestrian concerns several intersection alternatives were evaluated and are discussed in detail below. They include:

1. Signalized with EB & NB Right-turn Lanes and One WB Thru Lane
2. Signalized with Dual EB & WB Left-turn Lanes and NB Right-turn Lane
3. Multi-lane Roundabout
4. Multi-lane Roundabout with Right-turn Lanes on All Approaches

6.5.1 Alternative 1 - Signal w/ EB & NB Right-turn Lanes and One WB Thru Lane

Alternative 1 consists of keeping the intersection signalized, adding eastbound and northbound right-turn lanes, and removing one of the westbound thru lanes at the intersection.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 1. The signalized intersection is anticipated to operate at LOS D in the AM peak hour and LOS E in the PM peak hour. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

There were 77 crashes over the 5-year crash analysis period at this intersection. The crashes ranged widely in type. The addition of right-turn lanes removes vehicles from the shared through lane stopping to turn and helps to reduce rear-end crashes. Based on CMF Clearinghouse research (CMF ID: 286) install a right-turn lane on one approach at a signalized intersection would lead to a general intersection crash reduction of 4%. This crash rate cannot necessarily be doubled, but adding multiple approach turn lanes would net higher crash reduction. Additionally, adding extra turn-lanes and increasing pedestrian crossing distance would increase exposure of high-risk users.

6.5.2 Alternative 2 - Signal w/ Dual EB & WB Left-turn Lanes and NB Right-turn Lane

Alternative 2 consists of keeping the intersection as signalized, adding eastbound and westbound dual left-turn lanes, and adding northbound right-turn lanes at the intersection.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 2. The signalized intersection is anticipated to operate at LOS C in the AM peak hour and LOS D in the PM peak hour. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As discussed in Alternative 1, the addition of right-turn lanes removes vehicles from the shared through lane stopping to turn and helps to reduce rear-end crashes. Based on CMF Clearinghouse research (CMF ID: 286) install a right-turn lane on one approach at a signalized intersection would lead to a general intersection crash reduction of 4%. Adding dual left-turn lanes would require protected-only phasing for the left-turns. Based on CMF clearinghouse research (CMF ID: 334) converting permissive or permissive/protected left-turn phasing to protect only results in a 1% crash reduction overall. Additionally, adding extra turn-lanes and increasing pedestrian crossing distance would increase exposure of high-risk users.

6.5.3 Alternative 3 - Multi-lane Roundabout

Alternative 3 consists of reconstructing the intersection as a multi-lane roundabout.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 3. The roundabout is anticipated to operate at LOS F in the AM and PM peak hours. Individual movements at the roundabout operate at LOS F or worse during most peak hours. Queuing was also examined at the roundabout. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

Many studies have proven that roundabouts are safer than stop-controlled and/or signalized intersection. The Federal Highway Administration has shown that roundabout on average reduce overall crash rates by 37%, injury type crashes by 75%, fatal type crashes by 90%, and pedestrian related crashes by 40%. These benefits are due to lower travel speeds, reduction of the number of conflict points, and the elimination of angle type conflicts totally. Based on CMF Clearinghouse research (CMF ID: 4194) converting a signalized intersection to a roundabout would lead to a general intersection crash reduction of 21%.

6.5.4 Alternative 4 - Multi-lane Roundabout w/ Right-turn Lanes

Alternative 4 is similar to Alternative 3 and consists of reconstructing the intersection as a multi-lane roundabout with the addition of a right-turn lanes on all approaches. The turn lanes were added to provide additional capacity to the roundabout and attempt to alleviate the operations and queuing issues identified with the multi-lane roundabout.

No concept or cost estimate was developed for this alternative. The alternative was analyzed to determine traffic operations only. Alternative 4 was not carried forward for future consideration due to City of Omaha input, improbability of buildout, unacceptable operations and queueing, and concerns with ROW impact.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 4. The roundabout is anticipated to operate at LOS F in the AM and PM peak hours. Individual movements at the roundabout operate at LOS F or worse during most peak hours. Queuing was also examined at the roundabout. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As stated, and shown previously, it is known that roundabouts are safer than stop-controlled and/or signalized intersection. Based on CMF Clearinghouse research (CMF ID: 4194) converting a signalized intersection to a roundabout would lead to a general intersection crash reduction of 21%.

6.5.5 Alternatives Summary

Concepts and Cost / ROW Impact

Figure C-9 through **Figure C-13** in **Appendix C** show the proposed layouts for the Saddle Creek Road with Farnam Street alternatives. **Table 6-5** shows the estimated costs and right-of-way impacts for each alternative. Detailed cost estimates are shown in **Appendix C** immediately after the proposed layouts**.** A summary of turn lane lengths table is provided in **Appendix E** for all alternatives.

Table 6-5. Saddle Creek Road and Farnam Street Costs & ROW Impact

Intersection	Alternative	Project Cost ($)	ROW Impact (Sq. ft.)
Saddle Creek Road & Farnam Street	No-Build	$ -	-
	Alt 1. - Left Turn Lanes	$ 2,661,259	7,365
	Alt 2. - Dual Left Turn Lanes	$ 3,004,000	15,260
	Alt 3. - Roundabout	$ 2,730,000	12,600

Alternatives Matrix

Alternatives 1 through 3, and a no-build option, have been summarized into a matrix format shown in **Table 6-6.** A quantitative version of the matrix is also provided in **Appendix C.** Alternative 4 was not carried forward for future consideration. Based on the results of the analysis, there is a tie between the No-build alternative, Alternative 2, and Alternative 3. Each alternative prioritizes a different aspect of the evaluation matrix. The No-Build option is best when keeping project costs and ROW impacts at a minimum. Alternative 2 prioritizes traffic operations and access management. Alternative 3, a roundabout, is anticipated to lead to the best outcomes for vehicle and pedestrian safety.

Based on the No-build and Alternative 3 options anticipated to experience LOS F operations as well as extensive queueing, it is recommended that Alternative 2 be constructed with the permanent two-way conversion of Farnam Street to effectively move vehicles at this intersection. Farnam Street is a Minor Arterial and Saddle Creek Road is an Other Principal Arterial and the capability to move vehicles effectively through this intersection is a top priority.

Table 6-6. Saddle Creek Road and Farnam Street Matrix

Intersection	Alternative	Vehicle Safety	Pedestrian Safety	Project Cost	Minimize ROW Impacts	Traffic Operations	Access Management
Saddle Creek Road & Farnam Street	No-Build	○	◑	●	●	○	◑
	Alt 1. - Left Turn Lanes	◑	◑	◑	◑	◑	○
	Alt 2. - Dual Left Turn Lanes	◑	○	◑	○	●	●
	Alt 3. - Roundabout	●	●	◑	○	○	◑

● = Best ◑ = Good ○ = Fair

6.6 42nd Street with Farnam/Harney Street Alternatives

The intersections of 42nd Street with Farnam Street and 42nd Street with Harney Street, are currently signalized. To address operations, safety, and pedestrian concerns several intersection alternatives were evaluated and are discussed in detail below. They include:

1. Grid Network and Remove Signal at 42nd Street with Harney Street
    a. Two-way 41st Street & One-way Harney Street
    b. One-way 41st Street & One-way Harney Street
    c. Two-way 41st Street & Two-way Harney Street
2. S-Curve East of 42nd Street and Remove Signal at 42nd Street with Harney Street
3. S-Curve at the Intersection of 42nd Street with Farnam Street
4. Multi-lane Roundabout with 5-Legs
5. Peanut Roundabout with 5-Legs

6.6.1 Alternative 1 - Grid Network and Remove Signal at 42nd Street w/ Harney Street

Alternative 1 consists of eliminating the S-curve west of 42nd Street, reestablishing a grid network, and removing the west leg and signal at 42nd Street with Harney Street. 42nd Street with Farnam Street would have a full-movement eastbound approach. Additionally, this alternative could function with Harney Street and 41st Street being either one-way or two-way, with essentially new signing and pavement striping being the only change to make the switch. All alternatives (1a, b, and c) are shown in **Appendix C**.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 1. The signalized intersection of 42nd Street with Farnam Street is anticipated to operate at LOS B in the AM and PM peak hours. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

There were 65 crashes over the 5-year crash analysis period at the two intersections, 37 crashes at 42nd Street with Farnam Street and 28 crashes at 42nd Street with Harney Street. The crashes were mostly angel type crashes, with sideswipe (same direction) and rear-end crashes also common. Consolidating movements from two intersection to one intersection has the potential to decrease crashes. Additionally, re-establishing a grid pattern within the street network will simplify movements and create consistency for driver expectations.

CMFs were not used to quantify the safety benefits of this alternative due to the alternative being non-conventional. Unlike changes in traffic control or lane arrangements, which are one-for-one replacement and/or addition, these are unique improvement not easily quantifiable by CMFs. Looking at the reduction or increase in conflict points at each intersection, 42nd Street with Farnam Street would increase from 19 conflict points to 32, a 68% increase. 42nd Street with Harney Street would decrease its conflict points from 9 to 1, an 89% decrease. Applying the percent factors to the total crashes at each intersection, there would not be a change in the total crashes between Alternative 1 and the no-build option. There would also be a net increase of 5 angle type crash conflict points at 42nd Street with Farnam Street and Harney Street.

6.6.2 Alternative 2 - East S-Curve and Remove Signal at 42nd Street w/ Harney Street

Alternative 2 consists of eliminating the S-curve west of 42nd Street, creating a new S-curve east of 42nd Street, closing 41st Street between Farnam Street and Harney Street, and removing the west leg and signal at 42nd Street with Harney Street. 42nd Street with Farnam Street would have a full-movement eastbound approach.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 2. The signalized intersection of 42nd Street with Farnam Street is anticipated to operate at LOS B in the AM and PM peak hours. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As discussed in Alternative 1, consolidating movements from two intersections to one intersection reduces the overall conflict points where crashes can occur. Additionally, the new S-curve would be only one lane instead of two. This would eliminate the possibility of sideswipe (same direction) crashes occurring during the S-curve maneuver. The S-curve would create an additional crossing for pedestrians and bicyclists, increasing their exposure to vehicle traffic. Additionally, slip lanes are not conducive to pedestrian crossings.

CMFs were not used to quantify the safety benefits of this alternative due to the alternative being non-conventional. Unlike changes in traffic control or lane arrangements, which are one-for-one replacement and/or addition, these are unique improvement not easily quantifiable by CMFs. Looking at the reduction or increase in conflict points at each intersection, 42nd Street with Farnam Street would increase from 19 conflict points to 32, a 68% increase. 42nd Street with Harney Street would decrease its conflict points from 9 to 1, an 89% decrease. Additional conflict points, merge and diverge, would occur at the S-curve. There would also be a net increase of 5 angle type crash conflict points at 42nd Street with Farnam Street and Harney Street.

6.6.3 Alternative 3 - 42nd Street w/ Farnam Street West S-Curve

Alternative 3 consists of reconstructing the intersection of 42nd Street with Farnam Street as a 5-leg intersection, the 5th leg being an S-curve that connects with Harney Street. This alternative would include the removal existing S-curve west of 42nd Street, closing the west leg of 42nd Street with Harney Street, and establishing a full-movement eastbound approach at 42nd Street with Farnam Street.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 1. The signalized intersection of 42nd Street with Farnam Street is anticipated to operate at LOS B in the AM and PM peak hours and the intersection of 42nd Street with Harney Street is anticipated to operate at LOS A in the AM peak hour and LOS B in the PM peak hour. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As discussed in Alternative 1, consolidating movements from two intersections to one intersection reduces the overall conflict points where crashes can occur. The addition though of fifth leg to 42nd Street with Farnam Street would increase the No-build scenario's 28 conflict points to 44 conflict points, a 57% increase, in the Alternative 3 scenario. Most of the increases in conflict points would be crossing type conflicts.

6.6.4 Alternative 4 - Multi-lane Roundabout w/ 5-Legs

Alternative 4 consists of reconstructing both intersections of 42nd Street with Farnam Street and Harney Street as one 5-legged multi-lane roundabout. This alternative has many benefits, such as operations and safety, but the grades to the east and west of 42nd Street would make construction difficult. Additionally, two options of this alternative are proposed. Alternative 4a as a traditional roundabout and Alternative 4b as "Peanut" shaped roundabout.

Operations

Figure 6-1 shows the anticipated traffic operations under 2040 two-way traffic conditions for Alternative 4. The roundabout is anticipated to operate at LOS C in the AM and PM peak hours. Individual movements at the roundabout operate at LOS D or better during most peak hours, except for the southbound movement which operates at LOS E for both AM and PM peak hours. The 50th and 95th percentile queues were examined and included on **Figure 6-1**.

Safety

As shown previously, it is known that roundabouts are safer than stop-controlled and signalized intersections. Based on CMF Clearinghouse research (CMF ID: 4194) converting a signalized intersection to a roundabout would lead to a general intersection crash reduction of 21%. Additionally, conflict points would reduce from 28 total between the two intersections in a No-Build scenario to just 10 conflict points at a 5-leg roundabout.

6.6.5 Alternatives Summary

Concepts and Cost / ROW Impact

Figure C-14 through **Figure C-20** in **Appendix C** show the proposed layouts for the 42nd Street with Farnam/Harney Streets alternatives. **Table 6-7** shows the estimated costs and right-of-way impacts for each alternative. Detailed cost estimates are shown in **Appendix C** immediately after the proposed layouts**.** A summary of turn lane lengths table is provided in **Appendix E** for all alternatives.

Table 6-7. 42nd Street & Farnam/Harney Streets Costs & ROW Impact

Intersection	Alternative	Project Cost ($)	ROW Impact (Sq. ft.)
42nd Street & Farnam/Harney Streets	No-Build	$ -	-
	Alt 1. a, b, c - Grid Network	$ 3,530,000	10,925
	Alt 2. - East "S" Curve	$ 3,477,000	21,695
	Alt 3. - West "S" Curve	$ 3,614,000	26,750
	Alt 4. a, b - Roundabout / Peanut	$ 3,548,000	28,725

**If multiple options listed, highest Cost/ROW is listed. Detailed output included in Appendix.*

Alternatives Matrix

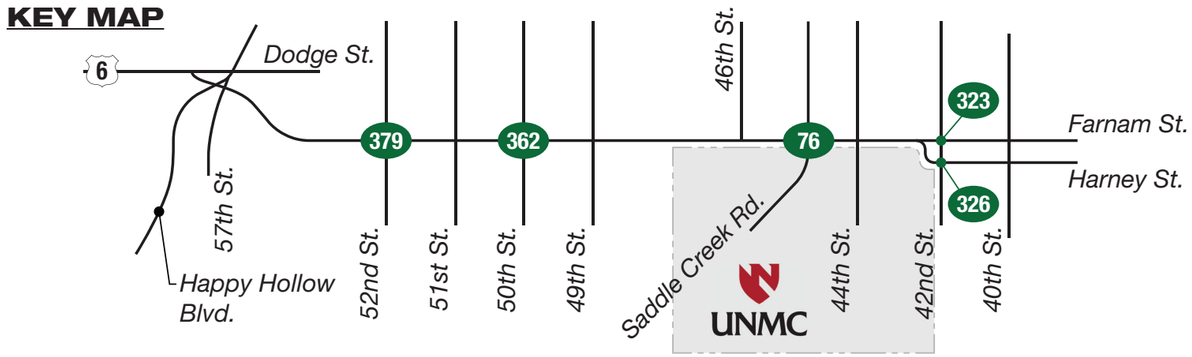
Each alternative, and a no-build option, have been summarized into a matrix format shown in **Table 6-8.** A quantitative version of the matrix is also provided in **Appendix C.** Based on the results of the analysis, there is a tie between the No-build and Alternative 1. The No-build option would keep project costs and ROW impacts at a minimum. Whereas, Alternative 1 would address operational, access management, and pedestrian safety concerns. Although, the No-build option does not address the desired to convert Farnam Street from one-way to two-way. Therefore, Alternative 1 is recommended to be constructed, in one of its variations. It is recommended that the City work with UNMC when the NExT development begins to take shape to determine the future configuration of this area.

Table 6-8. 42nd Street & Farnam/Harney Streets Matrix

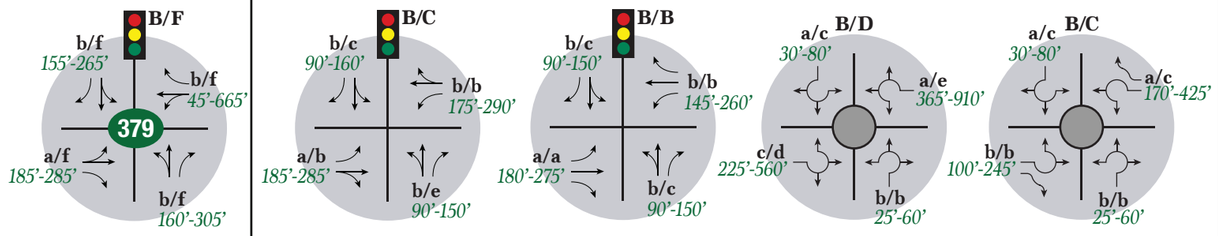
Intersection	Alternative	Vehicle Safety	Pedestrian Safety	Project Cost	Minimize ROW Impacts	Traffic Operations	Access Management
42nd Street & Farnam/Harney Streets	No-Build	◑	◑	●	●	◑	○
	Alt 1. a, b, c - Grid Network	◑	●	○	◑	●	◑
	Alt 2. - East "S" Curve	○	○	○	○	◑	◑
	Alt 3. - West "S" Curve	○	○	○	○	◑	◑
	Alt 4. a, b - Roundabout / Peanut	●	◑	○	○	○	●

● = Best ◑ = Good ○ = Fair

KEY MAP



52nd Street & Farnam Street



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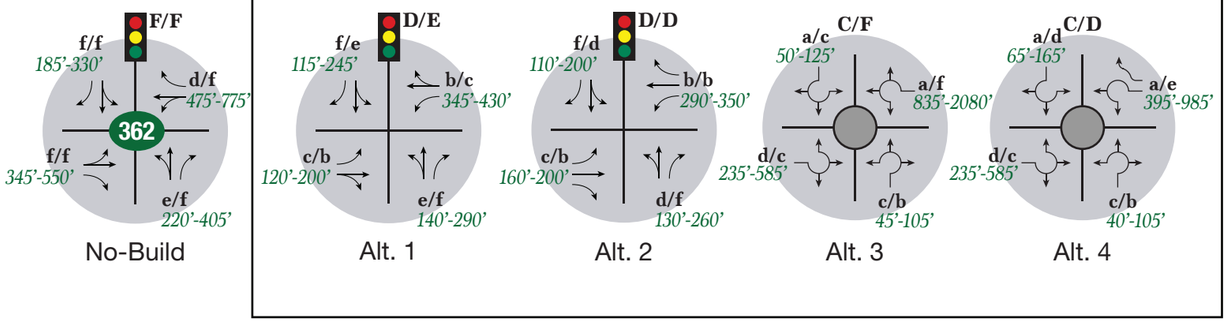
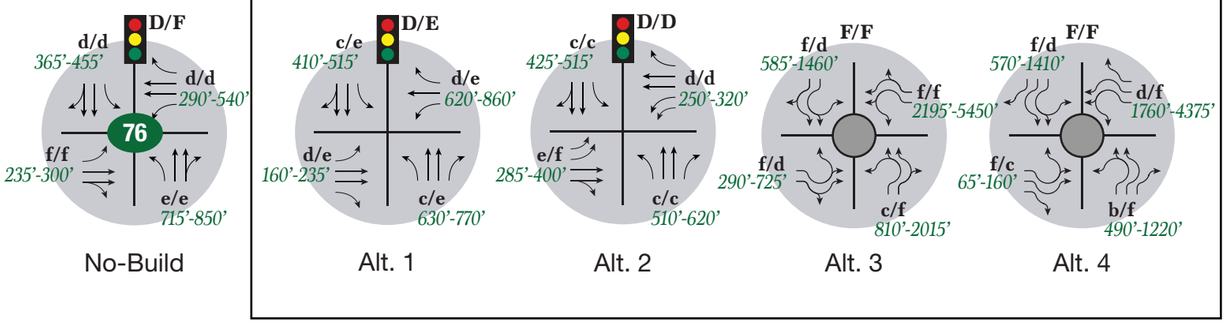
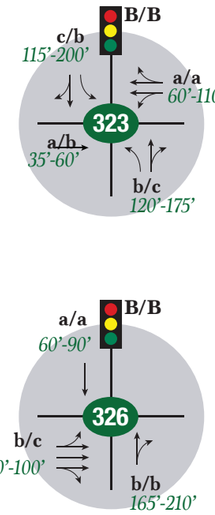
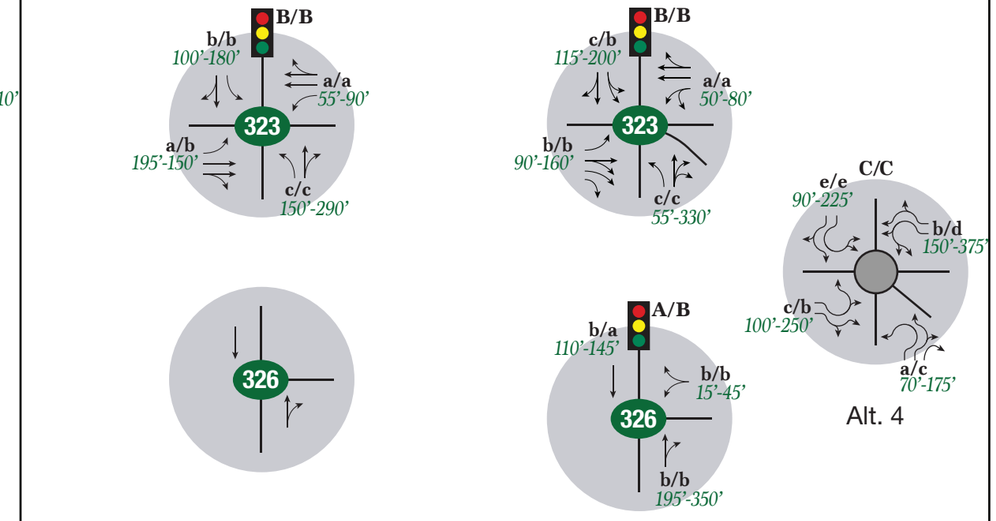


Saddle Creek Road & Farnam Street





42nd Street & Farnam/Harney Streets



LEGEND

X/X	=	AM/PM Peak Hour Signalized Intersection Level of Service
x/x	=	AM/PM Peak Hour Unsignalized Movement Level of Service
XXX'-XXX'	=	Critical 50th - 95th Percentile Queue Lenght (ft.)
STOP	=	Stop Sign
	=	Traffic Signal
	=	Roundabout

NORTH

FELSBURG HOLT & ULLEVIG

NOTE: Drawing Not to Scale

FIGURE 6-1
Proposed Alternatives (2040)
Traffic Operations

7. ACCESS MANAGEMENT

Access management principles should be followed where feasible along the Farnam Street corridor and at adjacent intersections throughout the study area. The *2012 City of Omaha Guidelines and Regulations for Driveway Location, Design and Construction Manual* and the Land Use Element of the *City of Omaha Master Plan* provide guidelines for commercial access requirements onto public streets and should be referenced when new commercial access is requested.

Along the Farnam Street corridor, there are several locations where existing driveways and side streets are in close proximity to signalized intersections. This type of access spacing degrades progression on arterial streets and introduces conflict points, thereby increasing the potential for crashes.

With the residential nature of Farnam Street from Dodge Street to 46th Street, access management will be difficult due to residential driveways onto Farnam Street that provide the only access to the resident and garage.

On Farnam Street between 46th Street and 44th Street, there are several direct business accesses and parking lots accesses. Along the north side of Farnam Street, opportunities for consolidated accesses and restricted access to RIRO should be evaluated with the design of the 46th Street and Saddle Creek Road improvements. Access to Farnam Street will be limited with the proposed UNMC Steel Casting Site redevelopment on the south side with only a full access at 46th Street.

East of 44th Street, there are several parking lots with access onto Farnam Street. On the north side, alternative access is provided via a back alleyway, and the two access onto Fanam Street could be eliminated. On the south side, as the NExT project begins to take shape, access locations should be evaluated and consolidated if possible.

8. PUBLIC INVOLVEMENT

A stakeholder meeting was held for the Farman Street Two-way Conversion: 50th and 52nd Street intersection Improvements (OPW 53944) on April 25, 2022, at the Barbara Weitz Community Engagement Center on the campus of the University of Nebraska at Omaha. The meeting was held in room 220 and ran from 3:00 PM to 4:30 PM. The stakeholders include property owners on the four corners of the 50th and 52nd Street intersections as well as representatives from the neighborhood association.

A public open house meeting was held for the Farman Street Two-way Conversion: 50th and 52nd Street intersection Improvements (OPW 53944) on April 25, 2022, at the Barbara Weitz Community Engagement Center on the campus of the University of Nebraska at Omaha following the stakeholders meeting. The meeting was held in rooms 201/205/209 and ran from 5:00 PM to 7:00 PM. The presentation is included in **Appendix G.**

The open house began with a 20-minute presentation presenting the results of the study. There was no question-and-answer session following the presentation. This was followed by an open house format with several stations spread throughout the room, staffed by City officials and FHU staff to answer public questions and take comments.

The meeting had 53 attendees listed on the sign-in sheet. There were several who declined to sign-in and several additional representatives from the City of Omaha, FHU, and local media outlets were present. In summary, there were an estimated 75 people in attendance.

8.1 Comments

Several opportunities and methods to solicit comments were provided to the citizens. Comment forms were provided at the public open house and online via the Keep Omaha Moving website (http://www.keepomahamoving.com/projects/farnam-street-two-way-conversion-50th-and-52nd-street-intersection-improvements-opw-53844). Additional comments were also provided to the City of Omaha via email and phone conversations. The comments received are included in **Appendix G.**

A total of 92 comments were received for the project, and the breakdown by media type is below:

- Online – 63 comments
- Comment Forms – 6 comments
- Email or Phone – 23 comments

8.2 Summary

All comments were cataloged and separated into the following categories: Safety, Access, Traffic Flow, Traffic Operations, Pedestrians, Drainage, Pavement, Suggestion, and Other. Please note that some comments were split into multiple categories. The table below summarizes the number of comments by category.

Table 8-1. Public Comments Summary by Category

Topic	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Total
Total Commented per Topic Category	25	2	7	11	11	0	0	29	12	**97**

Most comments were in favor of converting Farman Street to two-way traffic all-day, every-day, and acknowledged that addressing safety (crashes and speeds) for vehicles and pedestrians was important. However, there was a divide on what additional improvements are required.

Several comments noted wanting the conversion but without any additional improvements to the intersections of 50th Street and 52nd Street. The City indicated that completing the conversion without additional improvements is not an alternative due to the current safety issues.

The second theme favored of the conversion with safety as the top priority for pedestrians and vehicles. Many of these comments noted the roundabout as the safest option; however, there were a few that indicated roundabouts were not safe for pedestrians. Studies have shown that a single-lane roundabout provides a safer pedestrian crossing than a traffic signal.

8.3 Recommendation from Public Meeting

Based on the consensus of the comments received, it is recommended that Farnam Street be converted to two-way traffic, and Alternative 3 – Roundabouts is the recommended lane configuration for the intersections of 50th Street and 52nd Street.

9. SUMMARY AND RECOMMENDATIONS

Key findings and recommendations of this study are summarized as follows:

- For the study area intersections, the AM peak hour was determined to be 7:30 AM to 8:30 AM and the PM peak hour is 4:45 PM to 5:45 PM.
- A crash analysis was completed for the study area intersections and roadway segments. Of the twenty study area intersections all but four had a crash rate above the statewide intersection crash rate for similar facilities. Seven of the nineteen roadway segments had crash densities above the citywide average for similar facilities.
- One-way operations during the AM and PM peak periods, from Dodge Street to Saddle Creek Road, carry 30% of the daily traffic on Farnam Street whereas the same 4-hour period accounts for 58% of all crashes throughout the day. The most common crash type during this period was sideswipe (same direction) and the most common severity were property damage only.
- MUTCD signal warrants were examined at the study intersections. All existing signals were warranted along the corridor.
- NCHRP 457 auxiliary turn lane warrants were examined at the unsignalized intersections along the study corridor. No recommendations were made as part of this analysis.
- Queuing analysis was completed for all study area intersections and is shown on **Figure 5-2**, **Figure 5-4**, **Figure 5-6**, and **Figure 6-1**. For the alternatives that recommend additional turn lanes, recommended storage lane lengths and tapers are described in **Appendix E**. In addition to queues, other context sensitive design considerations such as not tapering through intersections, ROW constraints, and utility avoidance were used to determine acceptable turn lane lengths.
- The alternatives analysis included the examination of increasing volumes, operations, safety, and costs for a total of 12 intersection options and 1.5 miles of street segment. Based on this analysis it is feasible to convert Farnam Street, between Dodge Street and 40th Street, to two-way operations all day. If converted the following conclusions can be made:
    - Traffic operations along most of the corridor would function at acceptable levels. An alternative's analysis was completed at intersections that would need addition improvements to provide acceptable levels of service with permanent two-way traffic.
    - Intersection improvements are recommended to the intersections of 52nd Street, 50th Street, 46th Street (not analyzed as part of this study), Saddle Creek Road, and between 42nd Street and 40th Street.
    - Based on the safety analysis along the corridor, conversion of Farnam Street from one-way to two-way operations all day is anticipated to result in a safer roadway due to consistent traffic flow expectancy along the corridor for both drivers and pedestrians. Although it is recognized that additional conflict points would be added due to all day two-way traffic and some conflicts may become more prevalent, such as left-turn leaving.
- Based on the alternatives analysis, input from the stakeholders, and comments from the open house meeting, a recommendation matrix was created to summarize the recommended alternatives at each intersection. **Table 9-1** displays the results of the alternatives analysis. Exact geometrics of the recommended alternatives may change once moved to design.

Table 9-1. Alternatives Analysis Summary

Intersection	Alternative 1	Alternative 2	Alternative 3	Alternative 4
52nd Street & Farnam Street	Left-turn Lanes	Left/Right-turn Lanes	Roundabout	Roundabout w/ Right-turn Lanes
50th Street & Farnam Street	Left-turn Lanes	Left/Right-turn Lanes	Roundabout	Roundabout w/ Right-turn Lanes
Saddle Creek Road & Farnam Street	Left-turn Lanes	Dual Left-turn Lanes	Roundabout	Roundabout w/ Right-turn Lanes
42nd Street & Farnam/Harney Streets	Grid Network	East S-Curve	West S-Curve	Roundabout

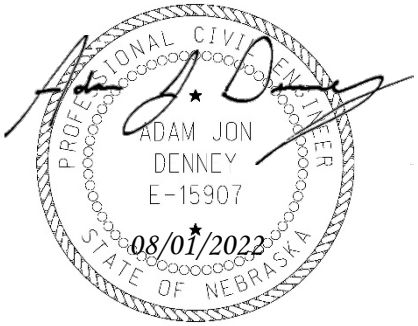
- The no-build/do nothing alternative is not a feasible alternative to consider with the conversion of Farnam Street to two-way traffic all-day due to the following reasons:
    - With two-way traffic during the peak hours, under the existing lane configurations, LOS F operations are anticipated during the PM peak hours at the signalized intersections of 50th Street and 52nd Street. This is anticipated with both existing and future two-way traffic volumes.
    - The existing safety concerns, angle type collisions and red light running at the signalized intersections of 50th Street and 52nd Street, are not addressed if they remain in their existing configuration. It is anticipated that these types of collisions would continue to occur if no change is made. Additionally, rear-end type crashes could potentially increase since traffic is restricted to one-lane and no left-turn lanes are provided at the intersections.
- Pedestrian, bicycle, and transit facilities were reviewed along the corridor. If two-way conversion of Farnam Street is pursued, rearrangement of bus stops, pedestrian crossings, bicycle facilities may need to be altered. Additionally, efforts need to be made to educate the public of the new traffic patterns, this can be done with public meetings, marketing, and roadway signage.
- The total cost of the project to convert Farnam Street to permanent two-way operations, with the recommended intersection improvements identified in this study, would be **$7,995,657**. With the addition of the 46th Street with Farnam Steet intersection (estimated at $2,762,848), the total cost becomes **$10,758,505**. The total project costs are summarized in **Table 9-2** below.

Table 9-2. Cost Breakdown Summary

Location	Recommended Alternative	Cost
Farnam Street One-way to Two-way conversion	Lane Assignment Signals Removals & Signing and Striping	$79,794
52nd Street & Farnam Street	Roundabout	$781,312
50th Street & Farnam Street	Roundabout	$777,017
46th Street & Farnam Street*	Roundabout or Traffic Signal	$2,762,848
Saddle Creek Road & Farnam Street	Dual Left-turn Lanes	$3,003,711
42nd Street & Farnam/Harney Streets	Grid Network	$3,353,823
Total:	-	**$10,758,505**

*The intersection of 46th Street with Farnam Street was analyzed as part of the *UNMC Steel Casting Site Traffic Study*.

- With several ongoing redevelopment projects and roadway improvements required to accommodate this development and the conversion of Farnam Street to permanent two-way traffic, the following outlines a recommended implementation plan to turn this vision from a study into reality:
    - Phase 1 – Complete the design and construction of the recommended improvements to the intersections of Farnam Street with 46th Street and Saddle Creek Road. These improvements will be completed concurrently with the redevelopment of the UNMC Steel Casting Site. These improvements are anticipated for construction from 2023-2024.
    - Phase 2 – Converted Farnam Street to permanent two-way traffic. This could be completed with the removal of the overhead lane assignment signs and signing and striping. This would be an interim condition until safety and operational improvements to 52nd Street and 50th Street are completed. This provides a temporary two-way Farnam Street from Dodge Street to the S-curve until permanent improvements are made. This will need to occur concurrently with the construction/opening of the 46th Street with Farnam Street intersection.
    - Phase 3 – Complete the design and construction of the recommended improvements to the intersections of Farnam Street with 52nd Street and 50th Street. Once these improvements are constructed, Farnam Street will become a permanent two-way street from Dodge Street to the S-curve. Construction for these improvements is anticipated in 2023-2024. If possible, construction of Phases 1, 2 & 3 should occur concurrently. This would require project schedules from UNMC and the City to align as well as extensive contractor coordination.
    - Phase 4 – The final piece of the full conversion to two-way traffic is the segment of Farnam Street between the S-curve and 42nd Street. The timing of the NExT redevelopment will heavily influence when this piece of the conversion occurs. With this final piece, the transformation of Farnam Street to permanent two-way traffic will be complete.



APPENDIX A. TRAFFIC COUNT AND CRASH DATA

Location: 40th Street & Farnam Street
Date: 6/11/2018

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	107	-	-	-	-	-	-	0	51	0	158
6:30	-	-	-	-	-	-	0	214	-	-	-	-	-	-	0	108	0	322
6:45	-	-	-	-	-	-	0	352	-	-	-	-	-	-	0	190	0	542
7:00	1	10	0	3	78	15	107	492	1	14	1	9	16	10	51	271	158	763
7:15	1	10	0	4	73	19	107	538	0	6	2	7	26	16	57	301	164	839
7:30	3	12	0	10	92	21	138	**581**	1	12	3	11	37	18	82	**317**	220	**898**
7:45	5	12	0	4	102	17	140	538	0	11	4	9	39	18	81	276	221	814
8:00	2	14	1	12	95	29	153	462	3	13	5	11	34	15	81	253	234	715
8:15	4	20	1	4	102	19	150	407	1	10	2	6	33	21	73	227	223	634
8:30	1	13	0	4	69	8	95	358	2	11	2	1	19	6	41	211	136	569
8:45	1	8	0	3	45	7	64	368	4	18	3	0	7	26	58	222	122	590
9:00	1	7	1	6	69	14	98	437	0	17	1	5	22	10	55	210	153	647
9:15	0	8	1	5	73	14	101	447	2	16	1	8	17	13	57	202	158	649
9:30	2	7	0	4	79	13	105	465	2	9	1	8	14	18	52	182	157	647
9:45	1	6	1	7	86	32	133	450	0	8	3	6	17	12	46	168	179	618
10:00	6	13	0	14	58	17	108	459	0	11	1	6	14	15	47	163	155	622
10:15	0	7	0	10	81	21	119	351	0	10	1	3	14	9	37	116	156	467
10:30	3	8	0	7	62	10	90	232	2	12	2	3	11	8	38	79	128	311
10:45	4	18	1	7	85	27	142	142	3	6	2	9	9	12	41	41	183	183
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	35	173	6	104	1249	283	1850		21	184	34	102	329	227	897		2747	**PHF**
peak (7:30 - 8:30)	**14**	**58**	**2**	**30**	**391**	**86**	**581**		**5**	**46**	**14**	**37**	**143**	**72**	**317**		**898**	**0.96**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	106	-	-	-	-	-	-	0	70	0	176
13:30	-	-	-	-	-	-	0	254	-	-	-	-	-	-	0	135	0	389
13:45	-	-	-	-	-	-	0	365	-	-	-	-	-	-	0	188	0	553
14:00	4	4	1	1	81	15	106	516	1	17	4	8	26	14	70	250	176	766
14:15	3	13	0	4	109	19	148	545	6	15	6	7	15	16	65	254	213	799
14:30	1	12	0	3	81	14	111	574	5	9	4	5	18	12	53	258	164	832
14:45	5	14	2	3	109	18	151	641	3	20	4	2	16	17	62	264	213	905
15:00	3	8	0	6	99	19	135	678	2	15	4	9	20	24	74	273	209	951
15:15	1	12	1	9	131	23	177	703	2	11	9	8	23	16	69	263	246	966
15:30	6	13	0	4	142	13	178	747	1	17	7	7	9	18	59	252	237	999
15:45	6	15	1	4	140	22	188	778	6	24	4	10	14	13	71	275	259	1053
16:00	1	16	2	5	116	20	160	839	6	20	2	8	17	11	64	309	224	1148
16:15	2	11	2	6	169	31	221	926	5	18	2	14	8	11	58	345	279	1271
16:30	1	9	2	6	168	23	209	980	5	20	3	9	35	10	82	376	291	1356
16:45	2	16	1	1	190	39	249	**981**	6	49	2	8	31	9	105	**395**	354	**1376**
17:00	8	11	0	10	195	23	247	900	11	32	3	9	29	16	100	364	347	1264
17:15	5	17	3	5	222	23	275		4	28	4	15	23	15	89		364	
17:30	3	16	1	8	160	22	210		5	31	2	17	32	14	101		311	
17:45	3	15	0	9	125	16	168		3	20	1	2	25	23	74		242	
Total	54	202	16	84	2237	340	2933		71	346	61	138	341	239	1196		4129	**PHF**
peak (16:45 - 17:45)	**18**	**60**	**5**	**24**	**767**	**107**	**981**		**26**	**140**	**11**	**49**	**115**	**54**	**395**		**1376**	**0.95**

Location: 40th Street & Harney Street
Date: 7/8/2015

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	80	-	-	-	-	-	-	0	29	0	109
6:30	-	-	-	-	-	-	0	190	-	-	-	-	-	-	0	67	0	257
6:45	-	-	-	-	-	-	0	318	-	-	-	-	-	-	0	114	0	432
7:00	3	76	1	0	0	0	80	481	0	5	0	14	10	0	29	173	109	654
7:15	7	89	14	0	0	0	110	557	0	5	1	17	15	0	38	202	148	759
7:30	8	112	8	0	0	0	128	**557**	0	11	2	18	16	0	47	**221**	175	**778**
7:45	9	143	11	0	0	0	163	522	0	6	6	18	29	0	59	225	222	747
8:00	8	141	7	0	0	0	156	454	0	10	5	16	27	0	58	209	214	663
8:15	4	98	8	0	0	0	110	409	0	6	8	17	26	0	57	191	167	600
8:30	9	80	4	0	0	0	93	335	0	7	6	23	15	0	51	170	144	505
8:45	4	70	21	0	0	0	95	297	0	5	4	20	14	0	43	140	138	437
9:00	8	92	11	0	0	0	111	258	0	14	2	11	13	0	40	127	151	385
9:15	3	29	4	0	0	0	36	192	0	7	0	9	20	0	36	116	72	308
9:30	9	41	5	0	0	0	55	213	0	2	1	5	13	0	21	104	76	317
9:45	4	46	6	0	0	0	56	190	0	7	1	5	17	0	30	108	86	298
10:00	6	35	4	0	0	0	45	191	0	4	0	10	15	0	29	97	74	288
10:15	5	52	0	0	0	0	57	146	0	7	2	4	11	0	24	68	81	214
10:30	1	21	10	0	0	0	32	89	0	9	0	4	12	0	25	44	57	133
10:45	7	47	3	0	0	0	57	57	0	4	1	7	7	0	19	19	76	76
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	95	1172	117	0	0	0	1384		0	109	39	198	260	0	606		1990	**PHF**
peak (7:30 - 8:30)	**29**	**494**	**34**	**0**	**0**	**0**	**557**		**0**	**33**	**21**	**69**	**98**	**0**	**221**		**778**	**0.88**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	63	-	-	-	-	-	-	0	29	0	92
13:30	-	-	-	-	-	-	0	128	-	-	-	-	-	-	0	71	0	199
13:45	-	-	-	-	-	-	0	197	-	-	-	-	-	-	0	101	0	298
14:00	17	40	6	0	0	0	63	263	0	9	0	11	9	0	29	143	92	406
14:15	8	54	3	0	0	0	65	278	0	11	1	20	10	0	42	143	107	421
14:30	8	60	1	0	0	0	69	285	0	9	3	11	7	0	30	137	99	422
14:45	4	61	1	0	0	0	66	300	0	22	3	9	8	0	42	147	108	447
15:00	8	67	3	0	0	0	78	310	0	9	6	8	6	0	29	145	107	455
15:15	5	67	0	0	0	0	72	302	0	13	2	11	10	0	36	161	108	463
15:30	12	71	1	0	0	0	84	305	0	13	2	11	14	0	40	176	124	481
15:45	11	63	2	0	0	0	76	285	0	7	2	18	13	0	40	190	116	475
16:00	15	54	1	0	0	0	70	287	0	19	2	10	14	0	45	207	115	494
16:15	8	63	4	0	0	0	75	292	0	23	3	13	12	0	51	213	126	505
16:30	9	50	5	0	0	0	64	306	0	16	3	23	12	0	54	223	118	529
16:45	12	63	3	0	0	0	78	**311**	0	27	7	9	14	0	57	**223**	135	**534**
17:00	11	61	3	0	0	0	75	304	0	17	7	21	6	0	51	205	126	509
17:15	13	73	3	0	0	0	89		0	18	13	21	9	0	61		150	
17:30	11	54	4	0	0	0	69		0	12	6	23	13	0	54		123	
17:45	9	59	3	0	0	0	71		0	12	3	12	12	0	39		110	
Total	161	960	43	0	0	0	1164		0	237	63	231	169	0	700		1864	**PHF**
peak (16:45 - 17:45)	**47**	**251**	**13**	**0**	**0**	**0**	**311**		**0**	**74**	**33**	**74**	**42**	**0**	**223**		**534**	**0.89**

Location: 42nd Street & Farnam Street
Date: 10/14/2015

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	79	-	-	-	-	-	-	0	138	0	217
6:30	-	-	-	-	-	-	0	129	-	-	-	-	-	-	0	250	0	379
6:45	-	-	-	-	-	-	0	222	-	-	-	-	-	-	0	388	0	610
7:00	0	0	0	28	48	3	79	331	19	30	22	5	52	10	138	561	217	892
7:15	0	0	0	22	27	1	50	368	12	31	15	3	44	7	112	610	162	978
7:30	0	0	0	28	62	3	93	422	17	36	18	4	53	10	138	676	231	1098
7:45	0	0	0	28	72	9	109	**439**	23	63	17	9	55	6	173	**666**	282	**1105**
8:00	0	0	0	28	74	14	116	410	24	57	19	6	59	22	187	674	303	1084
8:15	0	0	0	32	64	8	104	398	31	61	11	5	55	15	178	627	282	1025
8:30	0	0	0	25	80	5	110	387	19	47	11	2	47	2	128	575	238	962
8:45	0	0	0	24	50	6	80	356	29	57	18	4	63	10	181	578	261	934
9:00	0	0	0	31	65	8	104	376	32	52	8	3	34	11	140	541	244	917
9:15	0	0	0	23	63	7	93	366	16	44	15	2	43	6	126	542	219	908
9:30	0	0	0	13	62	4	79	372	19	41	10	1	54	6	131	556	210	928
9:45	0	0	0	28	66	6	100	391	19	62	10	2	45	6	144	554	244	945
10:00	0	0	0	28	62	4	94	391	29	52	12	1	41	6	141	562	235	953
10:15	0	0	0	25	69	5	99	297	19	52	6	0	52	11	140	421	239	718
10:30	0	0	0	24	65	9	98	198	28	50	6	1	40	4	129	281	227	479
10:45	0	0	0	23	70	7	100	100	31	53	6	3	55	4	152	152	252	252
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	0	0	0	410	999	99	1508		367	788	204	51	792	136	2338		3846	**PHF**
peak (7:45 - 8:45)	**0**	**0**	**0**	**113**	**290**	**36**	**439**		**97**	**228**	**58**	**22**	**216**	**45**	**666**		**1105**	**0.91**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	111	-	-	-	-	-	-	0	157	0	268
13:30	-	-	-	-	-	-	0	231	-	-	-	-	-	-	0	326	0	557
13:45	-	-	-	-	-	-	0	369	-	-	-	-	-	-	0	492	0	861
14:00	0	0	0	23	81	7	111	491	31	62	14	5	40	5	157	656	268	1147
14:15	0	0	0	36	78	6	120	512	22	70	8	4	52	13	169	668	289	1180
14:30	0	0	0	26	101	11	138	549	30	69	9	4	49	5	166	683	304	1232
14:45	0	0	0	27	89	6	122	600	38	61	15	2	45	3	164	683	286	1283
15:00	0	0	0	23	108	1	132	649	19	75	11	3	56	5	169	719	301	1368
15:15	0	0	0	20	132	5	157	698	36	79	9	1	53	6	184	717	341	1415
15:30	0	0	0	37	144	8	189	743	23	70	6	6	53	8	166	710	355	1453
15:45	0	0	0	37	133	1	171	755	35	74	17	5	61	8	200	723	371	1478
16:00	0	0	0	34	138	9	181	809	24	79	7	4	48	5	167	719	348	1528
16:15	0	0	0	41	151	10	202	861	28	84	9	3	47	6	177	774	379	1635
16:30	0	0	0	30	166	5	201	905	33	80	11	2	51	2	179	802	380	1707
16:45	0	0	0	32	187	6	225	**952**	34	91	10	5	50	6	196	**804**	421	**1756**
17:00	0	0	0	23	206	4	233	932	39	96	14	5	57	11	222	769	455	1701
17:15	0	0	0	27	212	7	246		32	93	12	7	56	5	205		451	
17:30	0	0	0	37	207	4	248		39	76	14	3	41	8	181		429	
17:45	0	0	0	23	174	8	205		28	66	12	4	43	8	161		366	
Total	0	0	0	476	2307	98	2881		491	1225	178	63	802	104	2863		5744	**PHF**
peak (16:45 - 17:45)	**0**	**0**	**0**	**119**	**812**	**21**	**952**		**144**	**356**	**50**	**20**	**204**	**30**	**804**		**1756**	**0.96**

Location: 42nd Street & Harney Street
Date: 7/16/2015

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	128	-	-	-	-	-	-	0	129	0	257
6:30	-	-	-	-	-	-	0	280	-	-	-	-	-	-	0	280	0	560
6:45	-	-	-	-	-	-	0	451	-	-	-	-	-	-	0	470	0	921
7:00	2	96	30	0	0	0	128	651	0	54	15	0	60	0	129	675	257	1326
7:15	2	129	21	0	0	0	152	674	0	67	15	0	69	0	151	735	303	1409
7:30	9	135	27	0	0	0	171	**664**	0	88	18	1	83	0	190	**779**	361	**1443**
7:45	12	165	23	0	0	0	200	649	0	83	16	0	106	0	205	754	405	1403
8:00	3	129	19	0	0	0	151	580	0	76	23	0	90	0	189	692	340	1272
8:15	2	121	19	0	0	0	142	556	0	71	28	0	96	0	195	634	337	1190
8:30	8	112	36	0	0	0	156	509	0	73	16	0	76	0	165	587	321	1096
8:45	4	105	22	0	0	0	131	427	0	61	14	0	68	0	143	555	274	982
9:00	2	97	28	0	0	0	127	398	0	64	12	0	55	0	131	568	258	966
9:15	1	66	28	0	0	0	95	354	0	70	11	0	67	0	148	593	243	947
9:30	2	51	21	0	0	0	74	349	0	55	9	0	69	0	133	605	207	954
9:45	4	69	29	0	0	0	102	347	0	58	14	0	84	0	156	642	258	989
10:00	5	56	22	0	0	0	83	328	0	61	22	0	73	0	156	678	239	1006
10:15	5	58	27	0	0	0	90	245	0	69	16	1	74	0	160	522	250	767
10:30	4	44	24	0	0	0	72	155	0	87	15	1	67	0	170	362	242	517
10:45	3	56	24	0	0	0	83	83	0	104	17	0	71	0	192	192	275	275
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	68	1489	400	0	0	0	1957		0	1141	261	3	1208	0	2613		4570	**PHF**
peak (7:30 - 8:30)	**26**	**550**	**88**	**0**	**0**	**0**	**664**		**0**	**318**	**85**	**1**	**375**	**0**	**779**		**1443**	**0.89**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	86	-	-	-	-	-	-	0	204	0	290
13:30	-	-	-	-	-	-	0	187	-	-	-	-	-	-	0	387	0	574
13:45	-	-	-	-	-	-	0	278	-	-	-	-	-	-	0	598	0	876
14:00	2	63	21	0	0	0	86	392	0	113	6	0	85	0	204	799	290	1191
14:15	10	68	23	0	0	0	101	390	0	98	23	0	62	0	183	815	284	1205
14:30	5	71	15	0	0	0	91	372	0	103	23	0	85	0	211	825	302	1197
14:45	3	84	27	0	0	0	114	379	0	112	15	3	71	0	201	829	315	1208
15:00	5	51	28	0	0	0	84	364	0	128	17	0	75	0	220	839	304	1203
15:15	4	52	27	0	0	0	83	355	0	109	21	1	62	0	193	827	276	1182
15:30	1	59	38	0	0	0	98	347	0	128	17	1	69	0	215	853	313	1200
15:45	8	64	27	0	0	0	99	324	0	126	12	0	73	0	211	856	310	1180
16:00	3	48	24	0	0	0	75	318	0	109	16	0	83	0	208	883	283	1201
16:15	5	54	16	0	0	0	75	329	0	128	20	0	71	0	219	905	294	1234
16:30	5	55	15	0	0	0	75	344	0	122	19	0	77	0	218	896	293	1240
16:45	9	67	17	0	0	0	93	**361**	0	132	25	0	81	0	238	**884**	331	**1245**
17:00	4	60	22	0	0	0	86	349	0	141	14	2	73	0	230	824	316	1173
17:15	5	59	26	0	0	0	90		0	122	13	0	75	0	210		300	
17:30	6	58	28	0	0	0	92		0	125	13	0	68	0	206		298	
17:45	5	56	20	0	0	0	81		0	106	20	1	51	0	178		259	
Total	80	969	374	0	0	0	1423		0	1902	274	8	1161	0	3345		4768	**PHF**
peak (16:45 - 17:45)	**24**	**244**	**93**	**0**	**0**	**0**	**361**		**0**	**520**	**65**	**2**	**297**	**0**	**884**		**1245**	**0.94**

Location: 44th Street & Farnam Street
Date: 7/15/2015

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	174	-	-	-	-	-	-	0	15	0	189
6:30	-	-	-	-	-	-	0	391	-	-	-	-	-	-	0	42	0	433
6:45	-	-	-	-	-	-	0	595	-	-	-	-	-	-	0	62	0	657
7:00	11	95	19	15	29	5	174	833	5	0	5	1	4	0	15	87	189	920
7:15	12	145	17	9	30	4	217	891	4	2	10	2	7	2	27	109	244	1000
7:30	5	135	20	6	37	1	204	933	4	2	5	6	3	0	20	125	224	1058
7:45	8	129	30	15	49	7	238	949	4	6	6	3	5	1	25	155	263	1104
8:00	13	119	23	15	56	6	232	**931**	7	2	12	6	8	2	37	**194**	269	**1125**
8:15	14	138	24	28	53	2	259	865	9	7	17	3	6	1	43	198	302	1063
8:30	15	114	24	13	45	9	220	756	8	4	18	1	13	6	50	181	270	937
8:45	9	107	22	16	61	5	220	709	18	16	15	2	10	3	64	172	284	881
9:00	6	69	19	13	52	7	166	680	15	5	11	3	6	1	41	137	207	817
9:15	7	58	18	9	50	8	150	665	5	2	9	5	2	3	26	130	176	795
9:30	3	67	13	12	74	4	173	703	10	4	14	8	3	2	41	132	214	835
9:45	6	81	5	24	68	7	191	714	9	2	10	5	0	3	29	129	220	843
10:00	8	54	12	12	64	1	151	701	9	5	11	3	2	4	34	147	185	848
10:15	6	70	10	18	82	2	188	550	4	2	17	1	3	1	28	113	216	663
10:30	11	66	12	4	88	3	184	362	4	5	22	4	2	1	38	85	222	447
10:45	2	72	11	10	74	9	178	178	9	3	16	7	4	8	47	47	225	225
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	136	1519	279	219	912	80	3145		124	67	198	60	78	38	565		3710	**PHF**
peak (8:00 - 9:00)	**51**	**478**	**93**	**72**	**215**	**22**	**931**		**42**	**29**	**62**	**12**	**37**	**12**	**194**		**1125**	**0.93**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	201	-	-	-	-	-	-	0	40	0	241
13:30	-	-	-	-	-	-	0	408	-	-	-	-	-	-	0	72	0	480
13:45	-	-	-	-	-	-	0	615	-	-	-	-	-	-	0	109	0	724
14:00	9	60	7	6	114	5	201	866	6	5	13	8	1	7	40	162	241	1028
14:15	5	76	7	5	111	3	207	893	9	3	11	1	0	8	32	169	239	1062
14:30	7	77	10	12	95	6	207	905	5	3	9	5	2	13	37	172	244	1077
14:45	2	88	13	12	131	5	251	981	17	4	13	7	4	8	53	215	304	1196
15:00	4	68	11	7	132	6	228	1012	10	7	12	7	0	11	47	230	275	1242
15:15	7	58	8	14	126	6	219	1029	9	3	10	5	3	5	35	230	254	1259
15:30	10	76	12	15	164	6	283	1100	27	9	21	7	5	11	80	258	363	1358
15:45	3	62	13	13	185	6	282	1148	24	11	16	3	7	7	68	257	350	1405
16:00	4	49	2	11	177	2	245	1188	14	6	11	7	1	8	47	265	292	1453
16:15	7	41	8	7	219	8	290	1274	20	4	10	10	3	16	63	284	353	1558
16:30	5	54	5	10	252	5	331	**1336**	24	8	20	5	5	17	79	**284**	410	**1620**
16:45	3	52	7	7	246	7	322	1279	20	10	8	5	3	30	76	265	398	1544
17:00	3	66	6	8	242	6	331	1209	24	8	13	3	1	17	66	238	397	1447
17:15	6	72	7	7	255	5	352		20	7	13	4	4	15	63		415	
17:30	3	54	5	8	202	2	274		28	7	8	8	1	8	60		334	
17:45	7	62	9	7	165	2	252		25	5	7	1	1	10	49		301	
Total	85	1015	130	149	2816	80	4275		282	100	195	86	41	191	895		5170	**PHF**
peak (16:30 - 17:30)	**17**	**244**	**25**	**32**	**995**	**23**	**1336**		**88**	**33**	**54**	**17**	**13**	**79**	**284**		**1620**	**0.98**

Location: 46th Street & Farnam Street
Date: 2/22/2012

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	155	-	-	-	-	-	-	0	3	0	158
6:30	-	-	-	-	-	-	0	348	-	-	-	-	-	-	0	9	0	357
6:45	-	-	-	-	-	-	0	593	-	-	-	-	-	-	0	15	0	608
7:00	4	151	0	0	0	0	155	800	0	0	0	3	0	0	3	32	158	832
7:15	6	187	0	0	0	0	193	827	0	0	0	6	0	0	6	38	199	865
7:30	7	238	0	0	0	0	245	**837**	0	0	0	6	0	0	6	**38**	251	**875**
7:45	7	200	0	0	0	0	207	741	0	0	0	17	0	0	17	38	224	779
8:00	3	179	0	0	0	0	182	652	0	0	0	8	0	1	9	33	191	685
8:15	7	196	0	0	0	0	203	625	0	0	0	6	0	0	6	33	209	658
8:30	8	141	0	0	0	0	149	550	0	0	0	6	0	0	6	32	155	582
8:45	5	113	0	0	0	0	118	521	0	0	0	12	0	0	12	40	130	561
9:00	5	116	0	0	31	3	155	534	0	0	0	6	0	3	9	34	164	568
9:15	7	84	0	0	32	5	128	498	0	0	0	4	0	1	5	29	133	527
9:30	5	73	0	0	41	1	120	482	0	0	0	11	0	3	14	31	134	513
9:45	2	69	0	0	55	5	131	486	0	0	0	5	0	1	6	21	137	507
10:00	3	56	0	0	57	3	119	456	0	0	0	4	0	0	4	24	123	480
10:15	1	56	0	0	52	3	112	337	0	0	0	6	0	1	7	20	119	357
10:30	4	68	0	0	48	4	124	225	0	0	0	1	0	3	4	13	128	238
10:45	1	64	0	0	34	2	101	101	0	0	0	8	0	1	9	9	110	110
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	75	1991	0	0	350	26	2442		0	0	0	109	0	14	123		2565	**PHF**
peak (7:30 - 8:30)	**24**	**813**	**0**	**0**	**0**	**0**	**837**		**0**	**0**	**0**	**37**	**0**	**1**	**38**		**875**	**0.87**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	148	-	-	-	-	-	-	0	8	0	156
13:30	-	-	-	-	-	-	0	304	-	-	-	-	-	-	0	20	0	324
13:45	-	-	-	-	-	-	0	440	-	-	-	-	-	-	0	28	0	468
14:00	4	57	0	0	79	8	148	607	0	0	0	5	0	3	8	37	156	644
14:15	3	55	0	0	94	4	156	634	0	0	0	8	0	4	12	35	168	669
14:30	2	62	0	0	63	9	136	679	0	0	0	5	0	3	8	30	144	709
14:45	2	51	0	0	105	9	167	706	0	0	0	6	0	3	9	31	176	737
15:00	3	63	0	0	96	13	175	727	0	0	0	3	0	3	6	35	181	762
15:15	3	52	0	0	138	8	201	710	0	0	0	4	0	3	7	32	208	742
15:30	2	49	0	0	103	9	163	700	0	0	0	6	0	3	9	31	172	731
15:45	1	31	0	0	149	7	188	729	0	0	0	6	0	7	13	32	201	761
16:00	0	0	0	0	151	7	158	796	0	0	0	0	0	3	3	30	161	826
16:15	0	0	0	0	178	13	191	860	0	0	0	1	0	5	6	36	197	896
16:30	0	0	0	0	174	18	192	926	0	0	0	1	0	9	10	43	202	969
16:45	0	0	0	0	244	11	255	**942**	0	0	0	1	0	10	11	**49**	266	**991**
17:00	0	0	0	0	211	11	222	854	0	0	0	2	0	7	9	48	231	902
17:15	0	0	0	0	245	12	257		0	0	0	1	0	12	13		270	
17:30	0	0	0	0	201	7	208		0	0	0	2	0	14	16		224	
17:45	0	0	0	0	160	7	167		0	0	0	1	0	9	10		177	
Total	20	420	0	0	2391	153	2984		0	0	0	52	0	98	150		3134	**PHF**
peak (16:45 - 17:45)	**0**	**0**	**0**	**0**	**901**	**41**	**942**		**0**	**0**	**0**	**6**	**0**	**43**	**49**		**991**	**0.92**

Location: 46th Street & Farnam Street
Date: 11/30/2017

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	139	-	-	-	-	-	-	0	7	0	146
6:30	-	-	-	-	-	-	0	307	-	-	-	-	-	-	0	9	0	316
6:45	-	-	-	-	-	-	0	500	-	-	-	-	-	-	0	25	0	525
7:00	3	136	0	0	0	0	139	696	0	0	0	7	0	0	7	36	146	732
7:15	6	162	0	0	0	0	168	**712**	0	0	0	1	0	1	2	**45**	170	**757**
7:30	7	185	0	0	0	1	193	701	0	0	0	16	0	0	16	55	209	756
7:45	6	189	0	0	0	1	196	649	0	0	0	11	0	0	11	52	207	701
8:00	12	143	0	0	0	0	155	597	0	0	0	16	0	0	16	46	171	643
8:15	5	152	0	0	0	0	157	547	0	0	0	12	0	0	12	36	169	583
8:30	6	135	0	0	0	0	141	483	0	0	0	12	0	1	13	28	154	511
8:45	6	138	0	0	0	0	144	436	0	0	0	4	0	1	5	19	149	455
9:00	2	68	0	0	28	7	105	400	0	0	0	3	0	3	6	19	111	419
9:15	3	53	0	0	31	6	93	404	0	0	0	3	0	1	4	18	97	422
9:30	1	55	0	0	33	5	94	396	0	0	0	2	0	2	4	17	98	413
9:45	2	61	0	0	39	6	108	382	0	0	0	3	0	2	5	18	113	400
10:00	3	62	0	0	41	3	109	400	0	0	0	3	0	2	5	16	114	416
10:15	3	48	0	0	33	1	85	291	0	0	0	2	0	1	3	11	88	302
10:30	2	35	0	0	39	4	80	206	0	0	0	4	0	1	5	8	85	214
10:45	2	56	0	0	61	7	126	126	0	0	0	3	0	0	3	3	129	129
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	69	1678	0	0	305	41	2093		0	0	0	102	0	15	117		2210	**PHF**
peak (7:15 - 8:15)	**31**	**679**	**0**	**0**	**0**	**2**	**712**		**0**	**0**	**0**	**44**	**0**	**1**	**45**		**757**	**0.91**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	113	-	-	-	-	-	-	0	7	0	120
13:30	-	-	-	-	-	-	0	249	-	-	-	-	-	-	0	19	0	268
13:45	-	-	-	-	-	-	0	397	-	-	-	-	-	-	0	26	0	423
14:00	5	36	0	0	68	4	113	540	0	0	0	4	0	3	7	32	120	572
14:15	3	57	0	0	65	11	136	605	0	0	0	8	0	4	12	29	148	634
14:30	0	62	0	0	85	1	148	629	0	0	0	5	0	2	7	25	155	654
14:45	2	59	0	0	74	8	143	680	0	0	0	4	0	2	6	25	149	705
15:00	3	49	0	0	117	9	178	704	0	0	0	3	0	1	4	27	182	731
15:15	3	40	0	0	107	10	160	667	0	0	0	6	0	2	8	31	168	698
15:30	3	41	0	0	149	6	199	663	0	0	0	3	0	4	7	33	206	696
15:45	1	19	0	0	137	10	167	669	0	0	0	3	0	5	8	34	175	703
16:00	0	0	0	0	136	5	141	704	0	0	0	0	0	8	8	37	149	741
16:15	1	0	0	0	145	10	156	804	0	0	0	1	0	9	10	42	166	846
16:30	0	0	0	0	199	6	205	**845**	0	0	0	1	0	7	8	**44**	213	**889**
16:45	0	0	0	0	187	15	202	815	0	0	0	3	0	8	11	49	213	864
17:00	0	0	0	0	228	13	241	783	0	0	0	2	0	11	13	45	254	828
17:15	0	0	0	0	185	12	197		0	0	0	1	0	11	12		209	
17:30	2	0	0	0	162	11	175		0	0	0	6	0	7	13		188	
17:45	0	3	0	0	155	12	170		0	0	0	5	0	2	7		177	
Total	23	366	0	0	2199	143	2731		0	0	0	55	0	86	141		2872	**PHF**
peak (16:30 - 17:30)	**0**	**0**	**0**	**0**	**799**	**46**	**845**		**0**	**0**	**0**	**7**	**0**	**37**	**44**		**889**	**0.88**

Location: 46th Street & Farnam Street
Date: 2/23/2021

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	61	-	-	-	-	-	-	0	5	0	66
6:30	-	-	-	-	-	-	0	139	-	-	-	-	-	-	0	12	0	151
6:45	-	-	-	-	-	-	0	249	-	-	-	-	-	-	0	16	0	265
7:00	1	60	-	-	0	0	61	380	0	0	0	5	-	0	5	24	66	404
7:15	1	77	-	-	0	0	78	415	0	0	0	6	-	1	7	28	85	443
7:30	6	104	-	-	0	0	110	**448**	0	0	0	4	-	0	4	**28**	114	**476**
7:45	9	122	-	-	0	0	131	412	0	0	0	8	-	0	8	27	139	439
8:00	4	92	-	-	0	0	96	335	0	0	0	9	-	0	9	23	105	358
8:15	4	107	-	-	0	0	111	308	0	0	0	6	-	1	7	16	118	324
8:30	4	70	-	-	0	0	74	255	0	0	0	3	-	0	3	12	77	267
8:45	2	49	-	-	1	2	54	234	0	0	0	3	-	1	4	12	58	246
9:00	1	51	-	-	16	1	69	232	0	0	0	2	-	0	2	14	71	246
9:15	3	37	-	-	18	0	58	221	0	0	0	1	-	2	3	14	61	235
9:30	1	29	-	-	21	2	53	237	0	0	0	3	-	0	3	12	56	249
9:45	2	20	-	-	30	0	52	240	0	0	0	4	-	2	6	10	58	250
10:00	3	34	-	-	21	0	58	259	0	0	0	0	-	2	2	6	60	265
10:15	6	29	-	-	36	3	74	201	0	0	0	1	-	0	1	4	75	205
10:30	1	23	-	-	25	7	56	127	0	0	0	1	-	0	1	3	57	130
10:45	2	32	-	-	30	7	71	71	0	0	0	2	-	0	2	2	73	73
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	50	936	0	0	198	22	1206		0	0	0	58	0	9	67		1273	**PHF**
peak (7:30 - 8:30)	**23**	**425**	**0**	**0**	**0**	**0**	**448**		**0**	**0**	**0**	**27**	**0**	**1**	**28**		**476**	**0.86**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	92	-	-	-	-	-	-	0	4	0	96
13:30	-	-	-	-	-	-	0	189	-	-	-	-	-	-	0	11	0	200
13:45	-	-	-	-	-	-	0	292	-	-	-	-	-	-	0	16	0	308
14:00	2	40	-	-	43	7	92	387	0	0	0	2	-	2	4	19	96	406
14:15	0	33	-	-	52	12	97	404	0	0	0	2	-	5	7	26	104	430
14:30	4	40	-	-	53	6	103	415	0	0	0	2	-	3	5	26	108	441
14:45	6	39	-	-	45	5	95	434	0	0	0	1	-	2	3	28	98	462
15:00	6	38	-	-	64	1	109	436	0	0	0	7	-	4	11	35	120	471
15:15	2	26	-	-	72	8	108	427	0	0	0	4	-	3	7	32	115	459
15:30	5	29	-	-	82	6	122	417	0	0	0	3	-	4	7	33	129	450
15:45	2	14	-	-	71	10	97	422	0	0	0	3	-	7	10	31	107	453
16:00	2	1	-	-	91	6	100	456	0	0	0	2	-	6	8	32	108	488
16:15	0	0	-	-	87	11	98	489	0	0	0	0	-	8	8	37	106	526
16:30	0	0	-	-	120	7	127	**513**	0	0	0	1	-	4	5	**33**	132	**546**
16:45	0	0	-	-	117	14	131	489	0	0	0	2	-	9	11	31	142	520
17:00	0	1	-	-	124	8	133	437	0	0	0	4	-	9	13	22	146	459
17:15	0	0	-	-	113	9	122		0	0	0	0	-	4	4		126	
17:30	0	1	-	-	98	4	103		0	0	0	1	-	2	3		106	
17:45	0	1	-	-	71	7	79		0	0	0	0	-	2	2		81	
Total	29	263	0	0	1303	121	1716		0	0	0	34	0	74	108		1824	**PHF**
peak (16:30 - 17:30)	**0**	**1**	**0**	**0**	**474**	**38**	**513**		**0**	**0**	**0**	**7**	**0**	**26**	**33**		**546**	**0.93**

Location: 49th Street & Farnam Street
Date: 3/2/2021

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	86	-	-	-	-	-	-	0	3	0	89
6:30	-	-	-	-	-	-	0	170	-	-	-	-	-	-	0	10	0	180
6:45	-	-	-	-	-	-	0	278	-	-	-	-	-	-	0	17	0	295
7:00	3	83	0	0	0	0	86	421	0	2	0	1	0	0	3	22	89	443
7:15	3	81	0	0	0	0	84	427	0	4	0	1	2	0	7	23	91	450
7:30	4	104	0	0	0	0	108	**437**	0	1	0	5	1	0	7	**20**	115	**457**
7:45	0	142	0	0	0	1	143	417	0	0	2	2	1	0	5	19	148	436
8:00	2	90	0	0	0	0	92	345	0	2	0	1	1	0	4	18	96	363
8:15	6	87	1	0	0	0	94	297	0	0	0	2	2	0	4	15	98	312
8:30	3	84	1	0	0	0	88	271	0	1	2	3	0	0	6	16	94	287
8:45	6	63	0	0	0	2	71	234	0	1	0	3	0	0	4	18	75	252
9:00	2	24	0	0	17	1	44	211	0	0	0	1	0	0	1	19	45	230
9:15	2	41	0	0	22	3	68	229	1	0	1	1	1	1	5	21	73	250
9:30	0	27	0	0	22	2	51	216	1	1	0	1	1	4	8	21	59	237
9:45	1	19	0	0	28	0	48	212	1	0	0	2	0	2	5	17	53	229
10:00	1	29	0	0	31	1	62	232	0	0	0	0	0	3	3	18	65	250
10:15	3	25	0	0	24	3	55	170	0	0	0	1	1	3	5	15	60	185
10:30	3	24	0	0	19	1	47	115	0	2	0	0	1	1	4	10	51	125
10:45	3	30	0	0	33	2	68	68	1	0	0	1	0	4	6	6	74	74
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	42	953	2	0	196	16	1209		4	14	5	25	11	18	77		1286	**PHF**
peak (7:30 - 8:30)	**12**	**423**	**1**	**0**	**0**	**1**	**437**		**0**	**3**	**2**	**10**	**5**	**0**	**20**		**457**	**0.77**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	72	-	-	-	-	-	-	0	7	0	79
13:30	-	-	-	-	-	-	0	167	-	-	-	-	-	-	0	15	0	182
13:45	-	-	-	-	-	-	0	258	-	-	-	-	-	-	0	19	0	277
14:00	1	25	1	0	41	4	72	344	2	2	0	2	0	1	7	27	79	371
14:15	3	34	0	0	54	4	95	401	0	1	0	2	1	4	8	30	103	431
14:30	1	29	2	0	56	3	91	430	1	0	0	0	0	3	4	33	95	463
14:45	1	28	1	0	51	5	86	438	0	1	0	2	2	3	8	33	94	471
15:00	5	45	0	0	77	2	129	431	1	1	0	4	0	4	10	32	139	463
15:15	8	33	2	0	75	6	124	384	1	1	0	2	2	5	11	29	135	413
15:30	1	26	1	1	67	3	99	356	2	0	0	0	2	0	4	32	103	388
15:45	2	14	0	0	62	1	79	371	0	1	0	2	0	4	7	42	86	413
16:00	0	0	0	1	75	6	82	412	0	1	0	1	2	3	7	48	89	460
16:15	0	0	0	0	91	5	96	**472**	2	3	0	0	6	3	14	**53**	110	**525**
16:30	0	0	0	0	108	6	114	475	0	2	0	0	1	11	14	46	128	521
16:45	0	0	0	0	115	5	120	452	1	2	0	1	3	6	13	38	133	490
17:00	1	0	0	2	131	8	142	393	0	0	0	0	5	7	12	33	154	426
17:15	0	0	0	1	90	8	99		0	1	0	0	1	5	7		106	
17:30	0	0	0	0	88	3	91		1	1	0	0	1	3	6		97	
17:45	0	0	0	0	55	6	61		2	0	0	1	2	3	8		69	
Total	23	234	7	5	1236	75	1580		13	17	0	17	28	65	140		1720	**PHF**
peak (16:15 - 17:15)	**1**	**0**	**0**	**2**	**445**	**24**	**472**		**3**	**7**	**0**	**1**	**15**	**27**	**53**		**525**	**0.85**

Location: 50th Street & Farnam Street
Date: 11/4/2015

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	142	-	-	-	-	-	-	0	31	0	173
6:30	-	-	-	-	-	-	0	310	-	-	-	-	-	-	0	116	0	426
6:45	-	-	-	-	-	-	0	482	-	-	-	-	-	-	0	233	0	715
7:00	2	128	12	0	0	0	142	665	0	13	4	1	13	0	31	360	173	1025
7:15	4	146	18	0	0	0	168	677	0	30	8	8	39	0	85	441	253	1118
7:30	10	132	30	0	0	0	172	**658**	0	50	14	10	43	0	117	**467**	289	**1125**
7:45	9	164	10	0	0	0	183	601	0	54	15	10	48	0	127	464	310	1065
8:00	3	142	9	0	0	0	154	541	0	41	10	10	51	0	112	425	266	966
8:15	10	132	7	0	0	0	149	480	0	50	12	10	39	0	111	401	260	881
8:30	5	100	10	0	0	0	115	455	0	54	3	7	50	0	114	348	229	803
8:45	4	109	10	0	0	0	123	425	0	38	4	8	38	0	88	308	211	733
9:00	1	74	7	0	9	2	93	428	1	29	14	7	36	1	88	277	181	705
9:15	20	58	3	5	29	9	124	448	4	32	0	1	20	1	58	245	182	693
9:30	0	39	6	4	33	3	85	411	3	39	3	2	23	4	74	244	159	655
9:45	4	63	5	1	47	6	126	424	1	21	1	0	29	5	57	223	183	647
10:00	8	60	6	4	31	4	113	407	2	16	4	0	29	5	56	234	169	641
10:15	8	32	8	4	31	4	87	294	1	29	7	4	15	1	57	178	144	472
10:30	1	42	6	5	38	6	98	207	2	14	2	4	28	3	53	121	151	328
10:45	2	40	5	1	58	3	109	109	5	31	4	4	19	5	68	68	177	177
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	91	1461	152	24	276	37	2041		19	541	105	86	520	25	1296		3337	**PHF**
peak (7:30 - 8:30)	**32**	**570**	**56**	**0**	**0**	**0**	**658**		**0**	**195**	**51**	**40**	**181**	**0**	**467**		**1125**	**0.91**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	136	-	-	-	-	-	-	0	50	0	186
13:30	-	-	-	-	-	-	0	264	-	-	-	-	-	-	0	105	0	369
13:45	-	-	-	-	-	-	0	413	-	-	-	-	-	-	0	185	0	598
14:00	3	46	4	8	68	7	136	553	3	22	1	1	21	2	50	276	186	829
14:15	1	41	15	4	61	6	128	557	13	20	1	0	19	2	55	295	183	852
14:30	4	49	14	5	70	7	149	605	8	29	1	3	34	5	80	325	229	930
14:45	2	44	8	6	73	7	140	633	11	31	4	3	40	2	91	351	231	984
15:00	6	48	6	3	71	6	140	681	1	32	7	2	25	2	69	347	209	1028
15:15	4	46	11	16	93	6	176	680	6	38	2	1	37	1	85	407	261	1087
15:30	8	35	9	14	102	9	177	708	12	48	5	0	33	8	106	457	283	1165
15:45	5	30	9	7	120	17	188	729	5	39	1	1	35	6	87	467	275	1196
16:00	0	0	0	13	119	7	139	781	7	62	0	0	48	12	129	525	268	1306
16:15	0	0	0	21	164	19	204	844	9	59	0	0	57	10	135	533	339	1377
16:30	0	0	0	22	168	8	198	885	13	46	0	0	47	10	116	560	314	1445
16:45	0	0	0	16	200	24	240	**879**	7	63	0	0	63	12	145	**587**	385	**1466**
17:00	0	0	0	14	157	31	202	793	8	60	0	0	58	11	137	583	339	1376
17:15	0	0	0	21	211	13	245		7	71	0	0	82	2	162		407	
17:30	0	0	0	15	159	18	192		6	78	0	0	48	11	143		335	
17:45	0	0	0	17	130	7	154		3	60	0	0	73	5	141		295	
Total	33	339	76	202	1966	192	2808		119	758	22	11	720	101	1731		4539	**PHF**
peak (16:45 - 17:45)	**0**	**0**	**0**	**66**	**727**	**86**	**879**		**28**	**272**	**0**	**0**	**251**	**36**	**587**		**1466**	**0.90**

Location: 51st Street & Farnam Street
Date: 11/27/2012

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	127	-	-	-	-	-	-	0	8	0	135
6:30	-	-	-	-	-	-	0	275	-	-	-	-	-	-	0	14	0	289
6:45	-	-	-	-	-	-	0	477	-	-	-	-	-	-	0	19	0	496
7:00	0	126	1	0	0	0	127	665	0	1	3	3	1	0	8	24	135	689
7:15	1	146	1	0	0	0	148	**691**	0	1	1	3	1	0	6	**23**	154	**714**
7:30	0	202	0	0	0	0	202	681	0	0	1	2	2	0	5	24	207	705
7:45	1	187	0	0	0	0	188	641	0	1	2	2	0	0	5	22	193	663
8:00	1	152	0	0	0	0	153	566	0	1	3	3	0	0	7	24	160	590
8:15	0	138	0	0	0	0	138	511	0	0	3	3	1	0	7	23	145	534
8:30	2	159	1	0	0	0	162	484	0	0	2	1	0	0	3	20	165	504
8:45	0	113	0	0	0	0	113	423	0	0	5	2	0	0	7	20	120	443
9:00	1	83	0	0	14	0	98	442	3	0	2	0	1	0	6	17	104	459
9:15	0	73	1	0	37	0	111	447	2	0	1	1	0	0	4	15	115	462
9:30	0	60	0	1	39	1	101	426	0	0	0	2	0	1	3	17	104	443
9:45	0	65	0	0	67	0	132	407	1	1	0	1	0	1	4	20	136	427
10:00	0	60	0	0	43	0	103	353	0	0	0	2	2	0	4	19	107	372
10:15	0	49	1	0	40	0	90	250	1	2	0	0	1	2	6	15	96	265
10:30	0	45	0	0	37	0	82	160	1	1	2	2	0	0	6	9	88	169
10:45	0	45	1	1	31	0	78	78	0	0	0	0	2	1	3	3	81	81
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	6	1703	6	2	308	1	2026		8	8	25	27	11	5	84		2110	**PHF**
peak (7:15 - 8:15)	**3**	**687**	**1**	**0**	**0**	**0**	**691**		**0**	**3**	**7**	**10**	**3**	**0**	**23**		**714**	**0.86**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	128	-	-	-	-	-	-	0	2	0	130
13:30	-	-	-	-	-	-	0	266	-	-	-	-	-	-	0	6	0	272
13:45	-	-	-	-	-	-	0	409	-	-	-	-	-	-	0	11	0	420
14:00	0	42	1	0	85	0	128	582	0	1	1	0	0	0	2	13	130	595
14:15	0	58	0	1	79	0	138	628	0	2	0	0	0	2	4	18	142	646
14:30	1	54	0	1	87	0	143	644	1	0	0	1	1	2	5	26	148	670
14:45	1	83	1	2	86	0	173	657	1	0	1	0	0	0	2	23	175	680
15:00	1	73	0	0	100	0	174	658	1	1	0	1	3	1	7	23	181	681
15:15	1	62	0	0	90	1	154	646	1	2	0	4	5	0	12	17	166	663
15:30	0	53	1	2	99	1	156	672	0	0	1	1	0	0	2	9	158	681
15:45	1	34	0	1	138	0	174	695	0	0	0	0	2	0	2	13	176	708
16:00	0	0	0	2	159	1	162	731	0	1	0	0	0	0	1	12	163	743
16:15	0	0	0	2	175	3	180	754	1	1	0	0	1	1	4	15	184	769
16:30	0	0	0	2	174	3	179	796	0	1	0	1	3	1	6	15	185	811
16:45	0	0	0	2	204	4	210	**820**	0	1	0	0	0	0	1	**17**	211	**837**
17:00	0	0	0	1	184	0	185	785	0	3	0	0	1	0	4	21	189	806
17:15	0	0	0	6	214	2	222		0	1	0	0	1	2	4		226	
17:30	0	0	0	7	195	1	203		1	2	0	0	4	1	8		211	
17:45	0	0	0	0	173	2	175		0	1	0	0	3	1	5		180	
Total	5	459	3	29	2242	18	2756		6	17	3	8	24	11	69		2825	**PHF**
peak (16:45 - 17:45)	**0**	**0**	**0**	**16**	**797**	**7**	**820**		**1**	**7**	**0**	**0**	**6**	**3**	**17**		**837**	**0.93**

Location: 51st Street & Farnam Street
Date: 5/14/2018

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	0	40	0	2	9	0	51	385	0	0	1	0	1	0	2	5	53	390
6:15	0	72	0	0	15	2	89	454	0	0	0	0	0	0	0	12	89	466
6:30	0	104	0	0	9	0	113	508	0	0	0	1	1	0	2	22	115	530
6:45	0	130	0	0	2	0	132	534	0	0	0	0	1	0	1	29	133	563
7:00	1	119	0	0	0	0	120	**555**	0	2	2	2	3	0	9	**35**	129	**590**
7:15	0	143	0	0	0	0	143	552	0	3	3	4	0	0	10	28	153	580
7:30	1	138	0	0	0	0	139	542	1	4	3	1	0	0	9	19	148	561
7:45	0	152	1	0	0	0	153	520	0	1	4	2	0	0	7	15	160	535
8:00	1	116	0	0	0	0	117	477	0	1	0	0	1	0	2	12	119	489
8:15	0	132	1	0	0	0	133	459	0	0	0	0	1	0	1	11	134	470
8:30	0	116	1	0	0	0	117	404	0	0	5	0	0	0	5	16	122	420
8:45	0	109	0	0	1	0	110	373	0	1	1	0	2	0	4	12	114	385
9:00	0	69	0	0	30	0	99	372	0	1	0	0	0	0	1	10	100	382
9:15	0	54	0	1	22	1	78	362	1	0	1	1	2	1	6	10	84	372
9:30	0	49	0	1	34	2	86	386	0	1	0	0	0	0	1	7	87	393
9:45	0	72	0	1	36	0	109	387	0	0	0	1	0	1	2	13	111	400
10:00	1	46	0	0	41	1	89	383	0	0	0	0	0	1	1	13	90	396
10:15	0	52	0	1	49	0	102	391	2	1	0	0	0	0	3	15	105	406
10:30	2	44	1	1	39	0	87	400	1	1	1	2	1	1	7	16	94	416
10:45	0	52	1	1	50	1	105	433	0	0	1	1	0	0	2	13	107	446
11:00	0	52	1	0	44	0	97	445	0	1	2	0	0	0	3	16	100	461
11:15	0	51	0	3	57	0	111		0	2	2	0	0	0	4		115	
11:30	0	53	0	1	65	1	120		1	0	1	0	2	0	4		124	
11:45	2	54	3	0	57	1	117		0	2	0	0	1	2	5		122	
Total	8	2019	9	12	560	9	2617		6	21	27	15	16	6	91		2708	**PHF**
peak (7:00 - 8:00)	**2**	**552**	**1**	**0**	**0**	**0**	**555**		**1**	**10**	**12**	**9**	**3**	**0**	**35**		**590**	**0.92**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	3	56	0	3	63	0	125	473	0	0	2	0	1	1	4	15	129	488
12:15	0	56	0	3	59	1	119	467	0	0	1	1	0	0	2	19	121	486
12:30	2	53	2	3	61	1	122	464	1	1	1	0	1	0	4	21	126	485
12:45	1	57	1	1	47	0	107	478	1	1	1	1	1	0	5	20	112	498
13:00	0	61	1	1	55	1	119	498	1	2	3	0	1	1	8	23	127	521
13:15	0	63	2	0	51	0	116	499	1	0	2	1	0	0	4	15	120	514
13:30	1	60	3	0	72	0	136	504	0	0	3	0	0	0	3	14	139	518
13:45	1	59	1	1	65	0	127	479	1	0	1	0	6	0	8	14	135	493
14:00	1	65	0	1	51	2	120	489	0	0	0	0	0	0	0	13	120	502
14:15	2	58	0	5	56	0	121	498	0	0	0	0	0	3	3	18	124	516
14:30	0	55	1	0	55	0	111	573	0	1	0	2	0	0	3	19	114	592
14:45	0	59	3	3	68	4	137	641	0	2	0	0	3	2	7	20	144	661
15:00	0	42	0	1	85	1	129	649	1	2	0	2	0	0	5	22	134	671
15:15	0	75	0	0	119	2	196	665	0	0	2	0	1	1	4	24	200	689
15:30	2	46	0	3	127	1	179	655	0	0	2	0	1	1	4	26	183	681
15:45	0	13	0	2	130	0	145	667	3	3	2	1	0	0	9	29	154	696
16:00	0	0	0	2	140	3	145	724	0	3	0	0	3	1	7	28	152	752
16:15	0	0	0	1	183	2	186	782	1	0	0	1	1	3	6	26	192	808
16:30	0	0	0	2	185	4	191	**790**	1	0	0	1	3	2	7	**25**	198	**815**
16:45	0	0	0	0	199	3	202	748	1	1	0	0	2	4	8	29	210	777
17:00	0	0	0	3	199	1	203	670	0	3	1	0	1	0	5	26	208	696
17:15	0	0	0	2	189	3	194		1	1	0	0	3	0	5		199	
17:30	0	0	0	1	146	2	149		0	5	0	0	6	0	11		160	
17:45	0	1	0	0	116	7	124		1	1	0	0	3	0	5		129	
Total	13	879	14	38	2521	38	3503		14	26	21	10	37	19	127		3630	**PHF**
peak (16:30 - 17:30)	**0**	**0**	**0**	**7**	**772**	**11**	**790**		**3**	**5**	**1**	**1**	**9**	**6**	**25**		**815**	**0.97**

Location: 52nd Street & Farnam Street
Date: 10/30/2017

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	91	-	-	-	-	-	-	0	46	0	137
6:30	-	-	-	-	-	-	0	206	-	-	-	-	-	-	0	111	0	317
6:45	-	-	-	-	-	-	0	366	-	-	-	-	-	-	0	194	0	560
7:00	0	83	8	0	0	0	91	515	0	20	8	3	15	0	46	284	137	799
7:15	5	108	2	0	0	0	115	594	0	29	7	6	23	0	65	342	180	936
7:30	5	151	4	0	0	0	160	**634**	0	36	9	6	32	0	83	**362**	243	**996**
7:45	5	139	5	0	0	0	149	601	0	42	6	7	35	0	90	385	239	986
8:00	3	160	7	0	0	0	170	572	0	43	11	8	42	0	104	389	274	961
8:15	4	146	5	0	0	0	155	541	0	41	6	11	27	0	85	352	240	893
8:30	8	109	10	0	0	0	127	496	0	52	8	10	36	0	106	316	233	812
8:45	12	100	8	0	0	0	120	455	0	37	7	12	38	0	94	273	214	728
9:00	5	100	8	3	21	2	139	436	0	26	9	6	26	0	67	230	206	666
9:15	1	69	5	5	28	2	110	404	1	20	8	2	17	1	49	201	159	605
9:30	1	49	3	3	30	0	86	381	1	30	4	5	22	1	63	215	149	596
9:45	1	59	5	2	34	0	101	398	4	21	5	1	20	0	51	194	152	592
10:00	5	53	6	1	41	1	107	374	1	14	6	1	14	2	38	173	145	547
10:15	0	43	5	1	35	3	87	267	2	25	5	4	25	2	63	135	150	402
10:30	1	49	8	6	37	2	103	180	5	19	2	2	14	0	42	72	145	252
10:45	7	34	8	1	24	3	77	77	0	13	1	2	14	0	30	30	107	107
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	63	1452	97	22	250	13	1897		14	468	102	86	400	6	1076		2973	**PHF**
peak (7:30 - 8:30)	**17**	**596**	**21**	**0**	**0**	**0**	**634**		**0**	**162**	**32**	**32**	**136**	**0**	**362**		**996**	**0.91**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	133	-	-	-	-	-	-	0	52	0	185
13:30	-	-	-	-	-	-	0	231	-	-	-	-	-	-	0	90	0	321
13:45	-	-	-	-	-	-	0	355	-	-	-	-	-	-	0	134	0	489
14:00	4	49	9	6	60	5	133	487	1	33	2	2	12	2	52	183	185	670
14:15	2	40	4	1	48	3	98	475	2	15	0	6	13	2	38	199	136	674
14:30	4	56	6	5	51	2	124	541	1	23	2	6	11	1	44	230	168	771
14:45	3	55	11	8	50	5	132	560	2	23	6	3	13	2	49	257	181	817
15:00	0	44	10	5	58	4	121	593	4	36	6	4	17	1	68	303	189	896
15:15	2	63	10	8	74	7	164	604	4	33	3	4	21	4	69	325	233	929
15:30	2	53	10	10	58	10	143	618	5	33	3	3	25	2	71	340	214	958
15:45	5	49	6	7	89	9	165	683	6	33	7	5	44	0	95	370	260	1053
16:00	0	0	0	6	121	5	132	745	5	48	0	0	34	3	90	381	222	1126
16:15	0	0	0	15	153	10	178	880	5	37	0	0	39	3	84	424	262	1304
16:30	0	0	0	15	182	11	208	945	7	46	0	1	45	2	101	457	309	1402
16:45	0	0	0	16	199	12	227	**980**	5	55	1	0	44	1	106	**448**	333	**1428**
17:00	0	0	0	33	210	24	267	927	8	49	0	0	70	6	133	440	400	1367
17:15	0	0	0	26	195	22	243		4	58	1	0	50	4	117		360	
17:30	0	0	0	26	202	15	243		4	41	1	1	44	1	92		335	
17:45	1	0	0	25	130	18	174		9	45	0	0	38	6	98		272	
Total	23	409	66	212	1880	162	2752		72	608	32	35	520	40	1307		4059	**PHF**
peak (16:45 - 17:45)	**0**	**0**	**0**	**101**	**806**	**73**	**980**		**21**	**203**	**3**	**1**	**208**	**12**	**448**		**1428**	**0.89**

Location: 57th Street & Farnam Street
Date: 6/21/2016

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	76	-	-	-	-	-	-	0	2	0	78
6:30	-	-	-	-	-	-	0	182	-	-	-	-	-	-	0	5	0	187
6:45	-	-	-	-	-	-	0	299	-	-	-	-	-	-	0	5	0	304
7:00	0	76	0	0	0	0	76	430	1	0	1	0	0	0	2	7	78	437
7:15	0	104	2	0	0	0	106	453	3	0	0	0	0	0	3	7	109	460
7:30	0	116	0	0	1	0	117	**454**	0	0	0	0	0	0	0	**8**	117	**462**
7:45	0	130	1	0	0	0	131	433	1	0	1	0	0	0	2	10	133	443
8:00	0	98	0	0	1	0	99	393	1	0	1	0	0	0	2	9	101	402
8:15	0	106	1	0	0	0	107	365	2	0	2	0	0	0	4	7	111	372
8:30	0	95	1	0	0	0	96	343	1	0	1	0	0	0	2	3	98	346
8:45	0	90	0	0	1	0	91	340	1	0	0	0	0	0	1	1	92	341
9:00	0	51	1	1	18	0	71	370	0	0	0	0	0	0	0	1	71	371
9:15	0	56	0	1	28	0	85	398	0	0	0	0	0	0	0	2	85	400
9:30	0	56	0	0	37	0	93	408	0	0	0	0	0	0	0	2	93	410
9:45	0	76	2	1	42	0	121	388	1	0	0	0	0	0	1	4	122	392
10:00	0	56	0	0	43	0	99	373	1	0	0	0	0	0	1	3	100	376
10:15	0	51	1	0	43	0	95	274	0	0	0	0	0	0	0	2	95	276
10:30	0	40	0	0	33	0	73	179	2	0	0	0	0	0	2	2	75	181
10:45	0	63	0	2	41	0	106	106	0	0	0	0	0	0	0	0	106	106
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	0	1264	9	5	288	0	1566		14	0	6	0	0	0	20		1586	**PHF**
peak (7:30 - 8:30)	**0**	**450**	**2**	**0**	**2**	**0**	**454**		**4**	**0**	**4**	**0**	**0**	**0**	**8**		**462**	**0.87**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	95	-	-	-	-	-	-	0	1	0	96
13:30	-	-	-	-	-	-	0	187	-	-	-	-	-	-	0	1	0	188
13:45	-	-	-	-	-	-	0	316	-	-	-	-	-	-	0	3	0	319
14:00	0	42	1	0	52	0	95	439	1	0	0	0	0	0	1	3	96	442
14:15	0	58	2	0	32	0	92	463	0	0	0	0	0	0	0	2	92	465
14:30	0	56	4	0	69	0	129	504	1	0	1	0	0	0	2	3	131	507
14:45	0	63	1	1	58	0	123	**529**	0	0	0	0	0	0	0	**2**	123	**531**
15:00	0	54	2	1	62	0	119	505	0	0	0	0	0	0	0	2	119	507
15:15	0	54	2	0	77	0	133	501	1	0	0	0	0	0	1	3	134	504
15:30	0	56	1	1	96	0	154	482	1	0	0	0	0	0	1	5	155	487
15:45	0	13	4	2	80	0	99	447	0	0	0	0	0	0	0	5	99	452
16:00	0	1	3	1	110	0	115	456	1	0	0	0	0	0	1	5	116	461
16:15	0	0	1	2	111	0	114	463	3	0	0	0	0	0	3	4	117	467
16:30	0	0	0	0	119	0	119	452	1	0	0	0	0	0	1	1	120	453
16:45	0	0	0	1	107	0	108	420	0	0	0	0	0	0	0	0	108	420
17:00	0	0	2	2	118	0	122	401	0	0	0	0	0	0	0	2	122	403
17:15	0	0	1	1	101	0	103		0	0	0	0	0	0	0		103	
17:30	0	1	0	0	86	0	87		0	0	0	0	0	0	0		87	
17:45	0	1	0	1	87	0	89		2	0	0	0	0	0	2		91	
Total	0	399	24	13	1365	0	1801		11	0	1	0	0	0	12		1813	**PHF**
peak (14:45 - 15:45)	**0**	**227**	**6**	**3**	**293**	**0**	**529**		**2**	**0**	**0**	**0**	**0**	**0**	**2**		**531**	**0.86**

Location: Farnam Street & Dodge Street
Date: 10/8/2019

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	724	-	-	-	-	-	-	0	14	0	738
6:30	-	-	-	-	-	-	0	1499	-	-	-	-	-	-	0	35	0	1534
6:45	-	-	-	-	-	-	0	2327	-	-	-	-	-	-	0	64	0	2391
7:00	0	396	145	0	183	0	724	3334	14	0	0	-	-	-	14	99	738	3433
7:15	0	431	119	0	225	0	775	3501	21	0	0	-	-	-	21	120	796	3621
7:30	0	415	137	0	276	0	828	**3618**	29	0	0	-	-	-	29	**117**	857	**3735**
7:45	0	494	162	0	351	0	1007	3577	35	0	0	-	-	-	35	111	1042	3688
8:00	0	412	144	0	335	0	891	3292	35	0	0	-	-	-	35	91	926	3383
8:15	0	454	136	0	302	0	892	2996	18	0	0	-	-	-	18	75	910	3071
8:30	0	392	122	0	273	0	787	2625	23	0	0	-	-	-	23	80	810	2705
8:45	0	338	116	0	268	0	722	2321	15	0	0	-	-	-	15	90	737	2411
9:00	0	227	130	0	238	0	595	2162	19	0	0	-	-	-	19	107	614	2269
9:15	0	216	80	0	225	0	521	2084	23	0	0	-	-	-	23	132	544	2216
9:30	0	184	88	0	211	0	483	2035	33	0	0	-	-	-	33	150	516	2185
9:45	0	210	92	0	261	0	563	1983	32	0	0	-	-	-	32	159	595	2142
10:00	0	192	80	0	245	0	517	1953	44	0	0	-	-	-	44	178	561	2131
10:15	0	176	72	0	224	0	472	1436	41	0	0	-	-	-	41	134	513	1570
10:30	0	133	58	0	240	0	431	964	42	0	0	-	-	-	42	93	473	1057
10:45	0	203	64	0	266	0	533	533	51	0	0	-	-	-	51	51	584	584
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	0	4873	1745	0	4123	0	10741		475	0	0	0	0	0	475		11216	**PHF**
peak (7:30 - 8:30)	**0**	**1775**	**579**	**0**	**1264**	**0**	**3618**		**117**	**0**	**0**	**0**	**0**	**0**	**117**		**3735**	**0.90**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	551	-	-	-	-	-	-	0	38	0	589
13:30	-	-	-	-	-	-	0	1145	-	-	-	-	-	-	0	95	0	1240
13:45	-	-	-	-	-	-	0	1798	-	-	-	-	-	-	0	161	0	1959
14:00	0	204	90	0	257	0	551	2422	38	0	0	-	-	-	38	210	589	2632
14:15	0	228	96	0	270	0	594	2401	57	0	0	-	-	-	57	223	651	2624
14:30	0	265	119	0	269	0	653	2467	66	0	0	-	-	-	66	226	719	2693
14:45	0	248	91	0	285	0	624	2532	49	0	0	-	-	-	49	226	673	2758
15:00	0	220	88	0	222	0	530	2634	51	0	0	-	-	-	51	255	581	2889
15:15	0	233	95	0	332	0	660	2789	60	0	0	-	-	-	60	296	720	3085
15:30	0	257	105	0	356	0	718	2852	66	0	0	-	-	-	66	360	784	3212
15:45	0	261	79	0	386	0	726	2836	78	0	0	-	-	-	78	410	804	3246
16:00	0	248	75	0	362	0	685	2911	92	0	0	-	-	-	92	458	777	3369
16:15	0	286	61	0	376	0	723	2981	124	0	0	-	-	-	124	481	847	3462
16:30	0	277	49	0	376	0	702	3031	116	0	0	-	-	-	116	491	818	3522
16:45	0	318	61	0	422	0	801	**3122**	126	0	0	-	-	-	126	**470**	927	**3592**
17:00	0	306	58	0	391	0	755	3106	115	0	0	-	-	-	115	447	870	3553
17:15	0	324	66	0	383	0	773		134	0	0	-	-	-	134		907	
17:30	0	350	69	0	374	0	793		95	0	0	-	-	-	95		888	
17:45	0	324	84	0	377	0	785		103	0	0	-	-	-	103		888	
Total	0	4349	1286	0	5438	0	11073		1370	0	0	0	0	0	1370		12443	**PHF**
peak (16:45 - 17:45)	**0**	**1298**	**254**	**0**	**1570**	**0**	**3122**		**470**	**0**	**0**	**0**	**0**	**0**	**470**		**3592**	**0.97**

Location: Happy Hollow Boulevard & Dodge Street
Date: 10/8/2019

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	586	-	-	-	-	-	-	0	68	0	654
6:30	-	-	-	-	-	-	0	1249	-	-	-	-	-	-	0	160	0	1409
6:45	-	-	-	-	-	-	0	1947	-	-	-	-	-	-	0	315	0	2262
7:00	0	396	0	0	183	7	586	2821	14	15	1	3	28	7	68	474	654	3295
7:15	0	431	0	0	225	7	663	3005	19	22	2	6	27	16	92	568	755	3573
7:30	0	415	0	0	276	7	698	**3106**	28	30	1	5	69	22	155	**631**	853	**3737**
7:45	0	494	0	0	351	29	874	3083	27	46	6	12	53	15	159	616	1033	3699
8:00	0	412	0	0	335	23	770	2826	30	49	5	7	44	27	162	584	932	3410
8:15	0	454	0	0	302	8	764	2525	23	31	6	9	57	29	155	518	919	3043
8:30	0	392	0	0	273	10	675	2205	15	38	4	8	66	9	140	457	815	2662
8:45	0	338	0	0	268	11	617	1931	14	37	7	4	54	11	127	405	744	2336
9:00	0	227	0	0	238	4	469	1790	12	29	4	6	33	12	96	371	565	2161
9:15	0	216	0	0	225	3	444	1761	13	33	2	1	28	17	94	360	538	2121
9:30	0	184	0	0	211	6	401	1722	7	30	0	2	30	19	88	347	489	2069
9:45	0	210	0	0	261	5	476	1701	9	16	1	3	43	21	93	334	569	2035
10:00	0	192	0	0	245	3	440	1700	3	36	3	1	23	19	85	328	525	2028
10:15	0	176	0	0	224	5	405	1260	9	29	1	2	28	12	81	243	486	1503
10:30	0	133	0	0	240	7	380	855	12	25	2	3	30	3	75	162	455	1017
10:45	0	203	0	0	266	6	475	475	2	35	4	4	31	11	87	87	562	562
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	0	4873	0	0	4123	141	9137		237	501	49	76	644	250	1757		10894	**PHF**
peak (7:30 - 8:30)	**0**	**1775**	**0**	**0**	**1264**	**67**	**3106**		**108**	**156**	**18**	**33**	**223**	**93**	**631**		**3737**	**0.90**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	466	-	-	-	-	-	-	0	117	0	583
13:30	-	-	-	-	-	-	0	971	-	-	-	-	-	-	0	218	0	1189
13:45	-	-	-	-	-	-	0	1511	-	-	-	-	-	-	0	355	0	1866
14:00	0	204	0	0	257	5	466	2053	8	51	7	2	34	15	117	469	583	2522
14:15	0	228	0	0	270	7	505	2039	7	39	8	3	27	17	101	463	606	2502
14:30	0	265	0	0	269	6	540	2112	4	76	6	3	34	14	137	474	677	2586
14:45	0	248	0	0	285	9	542	2205	12	56	4	2	33	7	114	485	656	2690
15:00	0	220	0	0	222	10	452	2334	12	56	4	1	30	8	111	491	563	2825
15:15	0	233	0	0	332	13	578	2519	10	58	5	3	29	7	112	545	690	3064
15:30	0	257	0	0	356	20	633	2624	8	61	5	10	46	18	148	586	781	3210
15:45	0	261	0	0	386	24	671	2678	16	50	3	4	40	7	120	595	791	3273
16:00	0	248	0	0	362	27	637	2784	14	86	9	4	35	17	165	630	802	3414
16:15	0	286	0	0	376	21	683	2885	10	87	12	5	30	9	153	609	836	3494
16:30	0	277	0	0	376	34	687	2939	12	78	13	2	37	15	157	613	844	3552
16:45	0	318	0	0	422	37	777	**3005**	7	74	10	5	45	14	155	**623**	932	**3628**
17:00	0	306	0	0	391	41	738	2951	7	74	4	5	43	11	144	606	882	3557
17:15	0	324	0	0	383	30	737		6	83	5	4	43	16	157		894	
17:30	0	350	0	0	374	29	753		4	84	14	3	49	13	167		920	
17:45	0	324	0	0	377	22	723		8	75	6	4	31	14	138		861	
Total	0	4349	0	0	5438	335	10122		145	1088	115	60	586	202	2196		12318	**PHF**
peak (16:45 - 17:45)	**0**	**1298**	**0**	**0**	**1570**	**137**	**3005**		**24**	**315**	**33**	**17**	**180**	**54**	**623**		**3628**	**0.97**

Location: Happy Hollow Boulevard & Farnam Street
Date: 9/18/2019

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	105	-	-	-	-	-	-	0	70	0	175
6:30	-	-	-	-	-	-	0	222	-	-	-	-	-	-	0	169	0	391
6:45	-	-	-	-	-	-	0	344	-	-	-	-	-	-	0	297	0	641
7:00	4	100	1	0	0	0	105	499	14	18	3	4	31	0	70	450	175	949
7:15	6	109	2	0	0	0	117	523	21	33	3	2	40	0	99	503	216	1026
7:30	2	114	6	0	0	0	122	**540**	29	33	3	5	58	0	128	**510**	250	**1050**
7:45	9	135	11	0	0	0	155	553	35	51	0	2	65	0	153	471	308	1024
8:00	12	111	6	0	0	0	129	498	35	35	3	2	48	0	123	425	252	923
8:15	10	115	9	0	0	0	134	474	18	21	1	6	60	0	106	401	240	875
8:30	8	108	19	0	0	0	135	438	23	25	1	2	38	0	89	353	224	791
8:45	4	78	18	0	0	0	100	414	15	30	2	1	59	0	107	330	207	744
9:00	15	64	19	2	5	0	105	441	14	32	3	4	46	0	99	277	204	718
9:15	6	60	11	3	17	1	98	439	6	26	1	1	24	0	58	232	156	671
9:30	9	57	14	5	25	1	111	461	8	19	2	2	35	0	66	241	177	702
9:45	8	67	25	0	25	2	127	446	7	19	2	1	25	0	54	237	181	683
10:00	6	42	19	3	33	0	103	449	11	11	2	1	29	0	54	243	157	692
10:15	10	62	11	4	31	2	120	346	10	25	2	0	30	0	67	189	187	535
10:30	9	43	6	2	34	2	96	226	8	24	1	1	28	0	62	122	158	348
10:45	5	66	18	3	38	0	130	130	13	22	0	5	20	0	60	60	190	190
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	123	1331	195	22	208	8	1887		267	424	29	39	636	0	1395		3282	**PHF**
peak (7:30 - 8:30)	**33**	**475**	**32**	**0**	**0**	**0**	**540**		**117**	**140**	**7**	**15**	**231**	**0**	**510**		**1050**	**0.85**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	121	-	-	-	-	-	-	0	56	0	177
13:30	-	-	-	-	-	-	0	247	-	-	-	-	-	-	0	107	0	354
13:45	-	-	-	-	-	-	0	401	-	-	-	-	-	-	0	205	0	606
14:00	11	62	8	2	32	6	121	528	6	31	1	0	18	0	56	272	177	800
14:15	10	50	10	3	50	3	126	518	7	27	2	0	15	0	51	285	177	803
14:30	27	65	12	1	46	3	154	552	20	43	2	3	30	0	98	309	252	861
14:45	15	57	9	2	41	3	127	557	8	32	3	0	24	0	67	312	194	869
15:00	11	45	8	7	36	4	111	600	15	24	5	1	24	0	69	321	180	921
15:15	28	58	14	3	51	6	160	663	9	37	3	3	23	0	75	336	235	999
15:30	19	57	19	5	57	2	159	671	9	35	4	3	50	0	101	341	260	1012
15:45	24	49	25	2	67	3	170	686	11	35	2	0	28	0	76	326	246	1012
16:00	36	0	41	4	87	6	174	682	5	35	0	0	44	0	84	341	258	1023
16:15	19	0	25	3	112	9	168	684	12	40	0	0	28	0	80	356	248	1040
16:30	27	0	22	6	111	8	174	726	5	41	0	1	39	0	86	359	260	1085
16:45	15	0	21	5	121	4	166	720	5	47	0	1	38	0	91	370	257	1090
17:00	22	0	32	4	108	10	176	**748**	7	49	0	0	43	0	99	**368**	275	**1116**
17:15	30	0	29	11	126	14	210		8	34	0	0	41	0	83		293	
17:30	32	0	37	5	88	6	168		7	55	0	0	35	0	97		265	
17:45	37	0	50	7	96	4	194		7	41	0	0	41	0	89		283	
Total	363	443	362	70	1229	91	2558		141	606	22	12	521	0	1302		3860	**PHF**
peak (17:00 - 18:00)	**121**	**0**	**148**	**27**	**418**	**34**	**748**		**29**	**179**	**0**	**0**	**160**	**0**	**368**		**1116**	**0.95**

Location: Saddle Creek Road & Farnam Street
Date: 8/6/2019

Prepared By: FELSBURG HOLT & ULLEVIG

Total Vehicles

AM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
6:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
6:15	-	-	-	-	-	-	0	156	-	-	-	-	-	-	0	407	0	563
6:30	-	-	-	-	-	-	0	300	-	-	-	-	-	-	0	740	0	1040
6:45	-	-	-	-	-	-	0	462	-	-	-	-	-	-	0	1143	0	1605
7:00	5	66	50	20	0	15	156	704	1	97	38	61	210	0	407	1586	563	2290
7:15	1	53	47	26	0	17	144	785	0	100	27	49	157	0	333	1648	477	2433
7:30	9	70	25	25	0	33	162	**848**	0	129	31	55	188	0	403	**1699**	565	**2547**
7:45	12	114	51	38	0	27	242	851	0	104	36	55	247	1	443	1690	685	2541
8:00	10	111	49	30	0	37	237	763	0	123	52	69	224	1	469	1637	706	2400
8:15	10	79	47	36	0	35	207	718	2	110	32	53	187	0	384	1552	591	2270
8:30	12	51	44	28	0	30	165	666	3	115	41	49	184	2	394	1508	559	2174
8:45	3	61	40	29	0	21	154	647	0	120	33	48	188	1	390	1410	544	2057
9:00	7	60	41	30	24	30	192	613	8	138	40	43	155	0	384	1318	576	1931
9:15	8	35	25	32	32	23	155	559	4	131	21	32	149	3	340	1248	495	1807
9:30	4	38	20	33	30	21	146	535	9	95	25	38	125	4	296	1206	442	1741
9:45	5	33	14	29	24	15	120	521	6	131	25	21	111	4	298	1213	418	1734
10:00	4	31	17	25	33	28	138	548	15	116	18	36	128	1	314	1289	452	1837
10:15	4	25	13	29	27	33	131	410	14	104	24	22	127	7	298	975	429	1385
10:30	4	23	16	33	34	22	132	279	9	121	15	30	123	5	303	677	435	956
10:45	5	33	18	24	34	33	147	147	15	162	21	25	143	8	374	374	521	521
11:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
11:15	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:30	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
11:45	-	-	-	-	-	-	0		-	-	-	-	-	-	0		0	
Total	103	883	517	467	238	420	2628		86	1896	479	686	2646	37	5830		8458	**PHF**
peak (7:30 - 8:30)	**41**	**374**	**172**	**129**	**0**	**132**	**848**		**2**	**466**	**151**	**232**	**846**	**2**	**1699**		**2547**	**0.90**

PM Peak	Eastbound			Westbound			E-W total	Hourly	Northbound			Southbound			N-S total	Hourly	Grand	Hourly
Time Period (beginning)	LT	TH	RT	LT	TH	RT		Total	LT	TH	RT	LT	TH	RT		Total	Total	Total
12:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:15	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:30	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
12:45	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:00	-	-	-	-	-	-	0	0	-	-	-	-	-	-	0	0	0	0
13:15	-	-	-	-	-	-	0	162	-	-	-	-	-	-	0	448	0	610
13:30	-	-	-	-	-	-	0	334	-	-	-	-	-	-	0	824	0	1158
13:45	-	-	-	-	-	-	0	527	-	-	-	-	-	-	0	1246	0	1773
14:00	3	28	17	36	41	37	162	670	14	178	28	45	176	7	448	1707	610	2377
14:15	5	21	9	57	51	29	172	651	8	161	23	38	141	5	376	1682	548	2333
14:30	9	30	13	52	45	44	193	702	15	176	13	36	171	11	422	1709	615	2411
14:45	12	27	19	32	29	24	143	716	19	184	25	43	180	10	461	1732	604	2448
15:00	7	29	16	30	35	26	143	853	15	178	15	34	177	4	423	1726	566	2579
15:15	9	24	20	47	74	49	223	930	14	179	22	29	146	13	403	1769	626	2699
15:30	12	36	12	42	64	41	207	968	24	185	16	23	186	11	445	1868	652	2836
15:45	5	25	25	63	91	71	280	1004	14	208	20	29	175	9	455	1895	735	2899
16:00	7	11	9	53	85	55	220	1034	18	214	25	32	167	10	466	1975	686	3009
16:15	7	7	3	63	118	63	261	1062	31	242	20	41	161	7	502	2057	763	3119
16:30	1	0	2	65	126	49	243	1073	29	224	20	33	159	7	472	2064	715	3137
16:45	5	14	4	73	127	87	310	**1082**	34	241	26	34	195	5	535	**2074**	845	**3156**
17:00	4	7	7	45	130	55	248	965	32	254	20	37	188	17	548	2047	796	3012
17:15	6	11	5	58	133	59	272		26	247	15	26	183	12	509		781	
17:30	4	4	10	56	121	57	252		29	220	33	42	144	14	482		734	
17:45	3	6	5	54	85	40	193		31	229	24	31	179	14	508		701	
Total	99	280	176	826	1355	786	3522		353	3320	345	553	2728	156	7455		10977	**PHF**
peak (16:45 - 17:45)	**19**	**36**	**26**	**232**	**511**	**258**	**1082**		**121**	**962**	**94**	**139**	**710**	**48**	**2074**		**3156**	**0.93**

Omaha Citywide Intersection Average Number of Crashes and Average Crash Rates

By Federal Functional Classification

2014-2017 Data

Classification	Average Annual Number of Crashes	Average Annual Crash Rate	Number of Intersections With Traffic Count [1]	Total Intersections with At Least 1 Reported Crash	% of Intersections included in Average Crash Rate Calculation
Interstate/ Other Freeways & Expressways	9.25	0.59	1	1	100%
Interstate/ Other Principal Arterials	5.95	0.42	22	22	100%
Interstate/ Minor Arterial	3.95	0.39	16	16	100%
Other Freeways & Expressways/ Other Principal Arterials	9.19	0.66	8	8	100%
Other Freeways & Expressways/ Minor Arterial	4.08	0.44	18	18	100%
Other Freeways & Expressways/ Major Collector	0.55	0.25	5	5	100%
Other Freeways & Expressways/ Minor Collector	0.25	0.06	1	1	100%
Other Principal Arterials/ Other Principal Arterials	11.33	0.63	36	36	100%
Other Principal Arterials/ Minor Arterial	7.64	0.58	137	139	99%
Other Principal Arterials/ Major Collector	3.96	0.42	96	104	92%
Other Principal Arterials/ Minor Collector	1.77	0.21	16	16	100%
Other Principal Arterials/ Local	1.45	0.23	206	563	37%
Minor Arterial/ Minor Arterial	5.05	0.60	79	86	92%
Minor Arterial/ Major Collector	2.85	0.51	96	112	86%
Minor Arterial/ Minor Collector	1.74	0.55	23	32	72%
Minor Arterial/ Local	0.94	0.23	255	759	34%
Major Collector/ Major Collector	0.83	0.34	19	54	35%
Major Collector/ Minor Collector	1.03	0.58	6	10	60%
Major Collector/ Local	0.51	0.33	34	384	9%
Minor Collector/ Minor Collector	0.38	-	0	2	0%
Minor Collector/ Local	0.49	0.71	4	56	7%
Local/ Local	0.34	0.62	18	1107	2%

[1] *NOTE: Only intersections with traffic counts are included in average crash rate calculation; intersections with no counts but at least one crash are not included*

Omaha Citywide Segment Average Number of Crashes and Average Crash Rates

By Federal Functional Classification

2014-2017 Data

Classification	Average Annual Number of Crashes	Average Annual Crash Density (crashes/mi)	Total Segments with At Least 1 Reported Crash Used in Averages	Average Segment Length (ft)
Other Freeways & Expressways	1.30	4.83	5	2,122
Other Principal Arterials	1.67	15.23	921	875
Minor Arterial	0.98	9.77	1,447	728
Collector	0.67	6.36	902	925
Local	0.40	4.34	4,974	631

Farnam Street, 40th Street to Dodge Street; Harney Street, 40th Street to Farnam Street
Intersection and Road Segment Crash Summary
1/1/2015 - 12/31/2020

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
48th St & Farnam St	1/1/2015	Thursday	15					Northbound	Eastbound		Dry	Clear	Angle
42nd St & Farnam St	1/5/2015	Monday	11				1	Westbound	Northbound	Road Surface Conditions	Snow	Sleet, hail, freezing rain/drizzle	Angle
42nd St & Farnam St	1/9/2015	Friday	0				1	Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
55th St & Farnam St (East)	1/11/2015	Sunday	18					Southbound Backing	Westbound	Driveway	Dry	Clear	Backing
Farnam St, 42nd St to 44th St	1/14/2015	Wednesday	14				1	Southbound Right Turn	Westbound	Driveway	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	1/21/2015	Wednesday	8					Northbound	Southbound Left Turn		Dry	Clear	Left-turn leaving
42nd St & Farnam St	1/23/2015	Friday	9					Southbound	Westbound	SB Ran Red Light; SB Sun Glare	Dry	Clear	Angle
Happy Hollow Blvd & Farnam St	1/23/2015	Friday	16					Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
42nd St & Harney St	1/26/2015	Monday	20					Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Happy Hollow Blvd & Farnam St	1/29/2015	Thursday	17					Eastbound Right Turn	Eastbound	EB Wide Turn - Semi	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	2/10/2015	Tuesday	17					Northbound	Westbound	NB Ran Red Light	Wet	Clear	Angle
40th St & Farnam St	2/13/2015	Friday	6					Westbound	Southbound	SB Ran Red Light	Dry	Clear	Angle
Happy Hollow Blvd & Farnam St	2/13/2015	Friday	16					Westbound	Southbound	Unknown Fault	Dry	Clear	Angle
50th St & Farnam St	2/14/2015	Saturday	15					Westbound	Northbound	NB Ran Red Light	Dry	Clear	Angle
50th St & Farnam St	2/14/2015	Saturday	17		1	1	1	Northbound	Eastbound	NB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	2/18/2015	Wednesday	0					Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
42nd St & Farnam St	2/22/2015	Sunday	1				2	Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
42nd St & Farnam St	2/25/2015	Wednesday	7					Southbound	Eastbound Right Turn	EB Wrong Way	Dry	Clear	Angle
52nd St & Farnam St	2/27/2015	Friday	17	1	1		1	Northbound	Westbound	NB Ran Red Light - Passed Stopped	Dry	Clear	Angle
49th St & Farnam St	2/28/2015	Saturday	2					Southbound	Westbound	SB DUI	Dry	Clear	Angle
Farnam St, 54th St to 55th St (East)	3/2/2015	Monday	14					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Rear-end
Happy Hollow Blvd & Farnam St	3/24/2015	Tuesday	7					Eastbound	Eastbound		Wet	Rain	Rear-end
Saddle Creek Rd & Farnam St	3/24/2015	Tuesday	8				1	Eastbound	Westbound Left Turn		Wet	Rain	Left-turn leaving
42nd St & Harney St	3/31/2015	Tuesday	9					Southbound	Southbound		Dry	Clear	Rear-end
40th St & Harney St	4/3/2015	Friday	19				1	Eastbound	Southbound	SB Ran Stop Sign	Dry	Clear	Angle
Farnam St, 55th St (West) to 56th St	4/6/2015	Monday	8					Eastbound	Eastbound	EB Changing Lanes	Dry	Sleet, hail, freezing rain/drizzle	Sideswipe (same)
Happy Hollow Blvd & Farnam St	4/6/2015	Monday	18					Westbound	Unknown		Wet	Cloudy	Angle
48th St & Farnam St	4/10/2015	Friday	16					Westbound	Northbound	NB Ran Stop Sign	Dry	Clear	Angle
Harney St, 41st St to 42nd St	4/22/2015	Wednesday	9					Eastbound	Eastbound	EB Changing Lanes	Dry	Clear	Sideswipe (same)
40th St & Harney St	4/29/2015	Wednesday	13					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane - Semi	Dry	Clear	Sideswipe (same)
40th St & Farnam St	5/1/2015	Friday	20				1	Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
42nd St & Farnam St	5/4/2015	Monday	9					Westbound Left Turn	Westbound	WB Turn from Wrong Lane - Semi	Wet	Rain	Sideswipe (same)
50th St & Farnam St	5/7/2015	Thursday	8					Northbound	Northbound		Wet	Cloudy	Rear-end
46th St & Farnam St	5/20/2015	Wednesday	8			1		Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
40th St & Farnam St	5/21/2015	Thursday	10					Westbound	Northbound	NB Ran Red Light	Dry	Clear	Angle
40th St & Harney St	5/22/2015	Friday	9					Southbound	Eastbound Left Turn	EB Wide Turn - Bus	Dry	Cloudy	Other
50th St & Farnam St	5/23/2015	Saturday	13				1	Southbound	Eastbound	SB Ran Red Light	Wet	Cloudy	Angle
Happy Hollow Blvd & Farnam St	5/25/2015	Monday	17					Westbound	Southbound	SB Ran Red Light	Dry	Clear	Angle
40th St & Farnam St	6/4/2015	Thursday	10					Southbound	Westbound	SB Ran Red Light	Wet	Cloudy	Angle
52nd St & Farnam St	6/5/2015	Friday	12					Westbound	Northbound	Unknown Fault	Dry	Cloudy	Angle
52nd St & Farnam St	6/11/2015	Thursday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Wet	Cloudy	Sideswipe (same)
40th St & Farnam St	6/13/2015	Saturday	7				3	Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	6/15/2015	Monday	16					Westbound	Westbound		Dry	Cloudy	Rear-end
Farnam St, 55th St (West) to 56th St	6/17/2015	Wednesday	17					Eastbound	Westbound	EB Wrong Way	Dry	Clear	Sideswipe (opposite)
52nd St & Farnam St	6/22/2015	Monday	16					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	6/24/2015	Wednesday	18				1	Southbound	Southbound		Dry	Clear	Rear-end

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
Harney St, 41st St to 42nd St	6/29/2015	Monday	10					Eastbound	Eastbound	EB Changing Lanes	Dry	Clear	Sideswipe (same)
49th St & Farnam St	7/9/2015	Thursday	17				1	Westbound	Westbound Left Turn	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	7/13/2015	Monday	8					Southbound	Southbound		Wet	Rain	Rear-end
42nd St & Farnam St	7/20/2015	Monday	11					Westbound	Southbound Right Turn		Dry	Clear	Angle
42nd St & Farnam St	7/26/2015	Sunday	11			1		Northbound	Westbound	WB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	8/2/2015	Sunday	17					Northbound	Southbound Left Turn		Dry	Clear	Left-turn leaving
Happy Hollow Blvd & Farnam St	8/5/2015	Wednesday	16					Southbound	Eastbound	SB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	8/7/2015	Friday	10				1	Eastbound	Southbound	SB Ran Red Light	Dry	Clear	Angle
42nd St & Farnam St	8/8/2015	Saturday	15			1		Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
50th St & Farnam St	8/14/2015	Friday	8			1	1	Southbound	Eastbound	SB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	8/21/2015	Friday	16					Northbound	Northbound		Dry	Clear	Rear-end
Happy Hollow Blvd & Farnam St	8/28/2015	Friday	14					Eastbound	Eastbound U Turn		Dry	Cloudy	U-turn (same)
56th St & Farnam St	9/11/2015	Friday	16					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
41st St & Farnam St	9/13/2015	Sunday	19					Westbound Right Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
40th St & Harney St	9/19/2015	Saturday	9				2	Eastbound	Southbound	SB Ran Red Light	Dry	Clear	Angle
42nd St & Harney St	9/22/2015	Tuesday	17					Westbound	Westbound		Unknown	Cloudy	Rear-end
52nd St & Farnam St	9/22/2015	Tuesday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Wet	Rain	Sideswipe (same)
42nd St & Harney St	9/26/2015	Saturday	17					Eastbound	Northbound	NB Ran Red Light	Dry	Clear	Angle
44th St & Farnam St	9/30/2015	Wednesday	16			1		Westbound	Westbound	WB Stopped for Uninvolved Emerge	Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	10/14/2015	Wednesday	10					Southbound	Southbound		Dry	Clear	Rear-end
42nd St & Harney St	10/16/2015	Friday	16			1		Eastbound	Northbound Pedestrian		Dry	Clear	Pedestrian
Saddle Creek Rd & Farnam St	10/23/2015	Friday	8					Eastbound	Westbound Left Turn		Wet	Rain	Left-turn leaving
42nd St & Farnam St	10/25/2015	Sunday	11					Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
40th St & Farnam St	10/29/2015	Thursday	19			1	1	Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
40th St & Farnam St	10/30/2015	Friday	23					Westbound	Southbound	SB Ran Red Light	Wet	Rain	Angle
50th St & Farnam St	11/1/2015	Sunday	12				2	Eastbound	Northbound	EB Ran Red Light	Dry	Clear	Angle
48th St & Farnam St	11/10/2015	Tuesday	11				1	Westbound	Northbound		Dry	Cloudy	Angle
Saddle Creek Rd & Farnam St	11/12/2015	Thursday	17					Southbound	Southbound		Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	11/16/2015	Monday	6				1	Eastbound Left Turn	Eastbound Pedestrian		Unknown	Unknown	Pedestrian
Saddle Creek Rd & Farnam St	11/16/2015	Monday	16					Southbound	Southbound		Wet	Rain	Sideswipe (same)
42nd St & Farnam St	11/27/2015	Friday	13					Northbound	Westbound	WB Ran Red Light; Road Surface Co	Ice	Clear	Angle
55th St & Farnam St (East)	11/30/2015	Monday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Wet	Snow	Sideswipe (same)
42nd St & Farnam St	12/4/2015	Friday	3					Northbound	Northbound		Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	12/4/2015	Friday	12					Eastbound U Turn	Eastbound		Dry	Clear	U-turn (same)
Happy Hollow Blvd & Farnam St	12/10/2015	Thursday	8					Eastbound Left Turn	Eastbound	EB Turn From Wrong Lane	Dry	Clear	Sideswipe (same)
Happy Hollow Blvd & Farnam St	12/22/2015	Tuesday	18					Northbound Left Turn	Southbound		Dry	Cloudy	Left-turn leaving
42nd St & Farnam St	12/25/2015	Friday	17					Westbound	Southbound	WB Ran Red Light	Snow	Cloudy	Angle
48th St & Farnam St	12/30/2015	Wednesday	20					Northbound	Eastbound		Dry	Clear	Angle
52nd St & Farnam St	1/2/2016	Saturday	8					Southbound	Eastbound	SB Ran Red Light	Wet	Clear	Angle
Farnam St, 41st St to 42nd St	1/12/2016	Tuesday	7					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
44th St & Farnam St	1/14/2016	Thursday	0					Northbound	Westbound	WB Ran Red Light	Ice	Clear	Angle
Happy Hollow Blvd & Farnam St	1/15/2016	Friday	17					Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
42nd St & Harney St	1/20/2016	Wednesday	15					Eastbound	Southbound	SB Ran Red Light	Wet	Clear	Angle
42nd St & Farnam St	2/3/2016	Wednesday	15			1		Northbound	Northbound		Snow	Clear	Rear-end
Saddle Creek Rd & Farnam St	2/3/2016	Wednesday	15					Eastbound Left Turn	Westbound		Wet	Clear	Left-turn leaving
Farnam St, 56th St to 57th St	2/3/2016	Wednesday	17					Southbound Backing	Westbound	Driveway	Snow	Clear	Angle
Saddle Creek Rd & Farnam St	2/14/2016	Sunday	21					Westbound Left Turn	Eastbound		Wet	Clear	Left-turn leaving
Farnam St, 49th Ave to 50th St	2/17/2016	Wednesday	17					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
Farnam St, Saddle Creek Rd to 46th St	2/17/2016	Wednesday	18					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
Harney St, 40th St to 41st St	2/18/2016	Thursday	8					Eastbound	Eastbound	EB Changing Lanes	Wet	Cloudy	Sideswipe (same)
Saddle Creek Rd & Farnam St	2/22/2016	Monday	12			1		Eastbound Left Turn	Westbound		Dry	Cloudy	Left-turn leaving

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
42nd St & Farnam St	2/23/2016	Tuesday	8					Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
40th St & Farnam St	3/6/2016	Sunday	11					Northbound	Westbound	NB Ran Red Light	Dry	Cloudy	Angle
42nd St & Harney St	3/6/2016	Sunday	19					Northbound	Eastbound	EB Ran Red Light	Dry	Clear	Angle
50th St & Farnam St	3/15/2016	Tuesday	9				1	Eastbound	Northbound	Unknown Fault	Dry	Clear	Angle
50th St & Farnam St	3/17/2016	Thursday	16				1	Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
40th St & Farnam St	4/1/2016	Friday	16				1	Southbound	Westbound	SB Ran Red Light	Dry	Cloudy	Angle
Farnam St, 44th St to Saddle Creek Rd	4/2/2016	Saturday	20					Eastbound		Median	Dry	Clear	Fixed Object in Road
Saddle Creek Rd & Farnam St	4/8/2016	Friday	11					Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
Farnam St, 55th St (East) to 55th St (West)	4/10/2016	Sunday	2					Westbound		WB DUI	Dry	Clear	Ran Off Road
49th St & Farnam St	4/11/2016	Monday	15					Westbound	Westbound Left Turn		Dry	Clear	Rear-end
42nd St & Harney St	4/19/2016	Tuesday	14					Northbound	Northbound		Dry	Cloudy	Rear-end
42nd St & Harney St	4/20/2016	Wednesday	14				2	Southbound	Southbound		Wet	Cloudy	Rear-end
42nd St & Harney St	4/21/2016	Thursday	17				1	Northbound	Northbound		Dry	Cloudy	Rear-end
44th St & Farnam St	4/27/2016	Wednesday	16					Westbound	Eastbound Left Turn		Wet	Rain	Left-turn leaving
Saddle Creek Rd & Farnam St	5/6/2016	Friday	8					Northbound	Northbound		Dry	Clear	Sideswipe (same)
42nd St & Harney St	5/11/2016	Wednesday	10					Northbound	Eastbound	EB Ran Red Light	Wet	Rain	Angle
42nd St & Farnam St	5/18/2016	Wednesday	10					Westbound	Southbound	SB Right Turn on Red	Dry	Clear	Angle
Farnam St, 44th St to Saddle Creek Rd	5/24/2016	Tuesday	15					Westbound	Westbound		Dry	Clear	Rear-end
Farnam St, 48th St to 49th St	6/1/2016	Wednesday	9					Eastbound	Eastbound	EB Stopped for Uninvolved Parked	Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	6/6/2016	Monday	13					Westbound Left Turn	Eastbound		Dry	Clear	Left-turn leaving
42nd St & Harney St	6/11/2016	Saturday	17					Eastbound	Eastbound	EB DUI	Dry	Cloudy	Rear-end
49th St & Farnam St	6/15/2016	Wednesday	16					Northbound	Westbound		Dry	Clear	Angle
Saddle Creek Rd & Farnam St	6/17/2016	Friday	19					Northbound	Southbound Left Turn		Dry	Clear	Left-turn leaving
Harney St, 40th St to 41st St	6/28/2016	Tuesday	13					Eastbound		Barrier - Work Zone	Dry	Clear	Fixed Object in Road
50th St & Farnam St	6/28/2016	Tuesday	11				1	Eastbound	Southbound	Unknown Fault	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	7/2/2016	Saturday	2					Northbound Left Turn	Southbound		Wet	Rain	Left-turn leaving
Happy Hollow Blvd & Farnam St	7/2/2016	Saturday	12					Westbound	Westbound		Wet	Rain	Rear-end
40th St & Farnam St	7/5/2016	Tuesday	18					Southbound	Southbound		Dry	Clear	Rear-end
50th St & Farnam St	7/11/2016	Monday	17					Westbound	Westbound		Dry	Clear	Rear-end
40th St & Harney St	7/12/2016	Tuesday	14					Northbound	Northbound		Dry	Clear	Rear-end
Farnam St, 51st Ave to 52nd St	7/18/2016	Monday	17					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
52nd St & Farnam St	7/19/2016	Tuesday	16				1	Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Cloudy	Sideswipe (same)
53rd St & Farnam St	7/19/2016	Tuesday	17					Westbound	Westbound Left Turn	WB Turn from Wrong Lane	Dry	Cloudy	Sideswipe (same)
Farnam St, Saddle Creek Rd to 46th St	7/21/2016	Thursday	16					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	7/21/2016	Thursday	21			1		Southbound	Westbound Left Turn	WB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	8/1/2016	Monday	7					Northbound	Southbound Left Turn		Dry	Cloudy	Left-turn leaving
Farnam St, Saddle Creek Rd to 46th St	8/1/2016	Monday	16				2	Westbound U Turn	Westbound		Dry	Clear	Rear-end
Happy Hollow Blvd & Farnam St	8/3/2016	Wednesday	13					Northbound Left Turn	Southbound		Dry	Clear	Left-turn leaving
51st St & Farnam St	8/3/2016	Wednesday	22				1	Northbound	Westbound		Dry	Clear	Angle
44th St & Farnam St	8/12/2016	Friday	14		1			Southbound	Eastbound	SB Ran Red Light	Dry	Cloudy	Angle
Saddle Creek Rd & Farnam St	8/13/2016	Saturday	10					Southbound	Southbound Right Turn		Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	8/16/2016	Tuesday	14					Southbound	Southbound		Dry	Clear	Rear-end
52nd St & Farnam St	8/24/2016	Wednesday	8				1	Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Unknown	Clear	Sideswipe (same)
55th St & Farnam St (East)	8/29/2016	Monday	16					Westbound Left Turn			Dry	Cloudy	Ran Off Road
Saddle Creek Rd & Farnam St	9/14/2016	Wednesday	12					Westbound	Westbound		Dry	Cloudy	Rear-end
Farnam St, 49th Ave to 50th St	9/14/2016	Wednesday	16					Westbound	Westbound	WB Changing Lanes	Dry	Cloudy	Sideswipe (same)
Saddle Creek Rd & Farnam St	9/20/2016	Tuesday	12					Northbound	Northbound		Dry	Clear	Rear-end
41st St & Harney St	9/21/2016	Wednesday	14					Southbound	Eastbound		Dry	Cloudy	Angle
52nd St & Farnam St	9/23/2016	Friday	16				1	Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
52nd St & Farnam St	9/25/2016	Sunday	15			1		Westbound	Southbound	SB Ran Red Light	Dry	Clear	Angle
Farnam St, 42nd St to 44th St	9/26/2016	Monday	13					Eastbound	Eastbound	EB Stopped for Uninvolved Crossing	Dry	Clear	Rear-end

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
Farnam St, 44th St to Saddle Creek Rd	9/27/2016	Tuesday	17					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
42nd St & Farnam St	10/1/2016	Saturday	12					Eastbound	Northbound	EB Wrong Way	Dry	Cloudy	Angle
50th Ave & Farnam St	10/1/2016	Saturday	19					Northbound	Eastbound		Dry	Clear	Angle
41st St & Farnam St	10/13/2016	Thursday	10					Southbound	Eastbound		Dry	Clear	Angle
40th St & Farnam St	10/20/2016	Thursday	17					Northbound Right Turn	Westbound	NB Wide Turn	Dry	Clear	Other
48th St & Farnam St	10/24/2016	Monday	12					Northbound	Eastbound	NB Ran Stop Sign	Dry	Clear	Angle
42nd St & Farnam St	11/1/2016	Tuesday	18					Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
41st St & Harney St	11/3/2016	Thursday	8					Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Happy Hollow Blvd & Farnam St	11/5/2016	Saturday	12				2	Northbound Left Turn	Southbound		Dry	Cloudy	Left-turn leaving
Saddle Creek Rd & Farnam St	11/7/2016	Monday	12					Southbound	Southbound		Wet	Rain	Rear-end
Saddle Creek Rd & Farnam St	11/15/2016	Tuesday	5				1	Westbound Left Turn	Northbound Right Turn	NB Wide Turn	Dry	Clear	Other
Happy Hollow Blvd & Farnam St	11/15/2016	Tuesday	19				1	Westbound Left Turn	Eastbound		Dry	Clear	Left-turn leaving
41st St & Harney St	11/16/2016	Wednesday	8				1	Southbound	Eastbound	SB Ran Stop Sign	Dry	Clear	Angle
41st St & Harney St	11/18/2016	Friday	7					Eastbound	Southbound		Dry	Cloudy	Angle
52nd St & Farnam St	11/20/2016	Sunday	1					Northbound	Eastbound	EB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	11/21/2016	Monday	17				1	Westbound Left Turn	Westbound Pedestrian	WB Didn't Yield to Pedestrian	Dry	Clear	Pedestrian
51st Ave & Farnam St	11/27/2016	Sunday	0			1	1	Westbound Left Turn		Tree	Dry	Clear	Ran Off Road
Happy Hollow Blvd & Farnam St	12/5/2016	Monday	11				1	Northbound	Westbound	WB Ran Red Light	Dry	Cloudy	Angle
Farnam St, 40th St to 41st St	12/10/2016	Saturday	16					Westbound	Westbound	WB Changing Lanes	Dry	Cloudy	Sideswipe (same)
44th St & Farnam St	12/12/2016	Monday	7				1	Eastbound	Westbound Left Turn		Dry	Clear	Left-turn leaving
Happy Hollow Blvd & Farnam St	12/12/2016	Monday	17			1		Southbound	Northbound Left Turn		Dry	Clear	Angle
42nd St & Harney St	12/16/2016	Friday	7					Southbound	Eastbound Right Turn	EB Right Turn on Red	Dry	Clear	Angle
Happy Hollow Blvd & Farnam St	12/18/2016	Sunday	18				1	Westbound	Northbound	WB Ran Red Light	Wet	Clear	Angle
Harney St, 42nd St to Farnam St	12/22/2016	Thursday	10					Eastbound	Eastbound	EB Changing Lanes	Unknown	Unknown	Sideswipe (same)
50th St & Farnam St	1/2/2017	Monday	17					Westbound	Westbound Left Turn	WB Turn from Wrong Lane	Wet	Rain	Sideswipe (same)
50th St & Farnam St	1/6/2017	Friday	8					Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Snow	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	1/7/2017	Saturday	13					Northbound	Northbound		Dry	Clear	Rear-end
42nd St & Farnam St	1/10/2017	Tuesday	22			1		Northbound	Westbound	Unknown Fault	Dry	Cloudy	Angle
Saddle Creek Rd & Farnam St	1/19/2017	Thursday	8					Southbound	Southbound		Wet	Cloudy	Rear-end
Saddle Creek Rd & Farnam St	1/21/2017	Saturday	12					Southbound Left Turn	Northbound		Dry	Clear	Left-turn leaving
Saddle Creek Rd & Farnam St	1/21/2017	Saturday	18					Eastbound Left Turn	Westbound		Dry	Clear	Left-turn leaving
48th St & Farnam St	1/25/2017	Wednesday	8					Eastbound		Road Surface Conditions	Snow	Snow	Ran Off Road
40th St & Farnam St	1/28/2017	Saturday	0					Northbound	Eastbound	Unknown Fault; NB DUI	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	2/4/2017	Saturday	16				1	Westbound Left Turn	Eastbound		Dry	Clear	Left-turn leaving
40th St & Farnam St	2/9/2017	Thursday	6					Southbound	Eastbound	EB Ran Red Light	Wet	Clear	Angle
41st St & Farnam St	2/10/2017	Friday	15					Eastbound Left Turn	Westbound		Dry	Clear	Left-turn leaving
Happy Hollow Blvd & Farnam St	2/23/2017	Thursday	21					Northbound	Eastbound	EB Ran Red Light	Snow	Sleet, hail, freezing rain/drizzle	Angle
42nd St & Harney St	2/28/2017	Tuesday	14					Southbound	Eastbound	SB Ran Red Light	Dry	Clear	Angle
Happy Hollow Blvd & Farnam St	3/9/2017	Thursday	14					Northbound	Westbound	Unknown Fault	Dry	Clear	Angle
52nd St & Farnam St	3/10/2017	Friday	14			1		Northbound	Eastbound	Unknown Fault	Dry	Cloudy	Angle
Harney St, 42nd St to Farnam St	3/13/2017	Monday	1					Eastbound			Wet	Rain	Ran Off Road
40th St & Harney St	3/25/2017	Saturday	12					Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Wet	Rain	Sideswipe (same)
42nd St & Farnam St	3/25/2017	Saturday	14				1	Westbound	Northbound	WB Ran Red Light	Wet	Rain	Angle
51st Ave & Farnam St	3/29/2017	Wednesday	7					Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Wet	Rain	Sideswipe (same)
52nd St & Farnam St	3/29/2017	Wednesday	7					Southbound	Eastbound	SB Ran Red Light	Wet	Rain	Angle
Saddle Creek Rd & Farnam St	3/30/2017	Thursday	21					Southbound	Southbound	Road Surface Conditions	Wet	Sleet, hail, freezing rain/drizzle	Rear-end
42nd St & Farnam St	4/9/2017	Sunday	17				1	Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	4/9/2017	Sunday	17					Southbound	Southbound		Dry	Cloudy	Rear-end
41st St & Harney St	4/20/2017	Thursday	6					Eastbound	Southbound		Dry	Clear	Angle
Happy Hollow Blvd & Farnam St	4/25/2017	Tuesday	11					Westbound	Southbound	Unknown Fault	Dry	Cloudy	Angle
49th St & Farnam St	4/26/2017	Wednesday	10				1	Southbound	Eastbound		Dry	Cloudy	Angle

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
41st St & Farnam St	4/27/2017	Thursday	16					Eastbound Left Turn	Westbound	EB Vision Obstruction - WB Vehicles	Dry	Clear	Left-turn leaving
Farnam St, 48th St to 49th St	5/3/2017	Wednesday	9					Westbound	Westbound		Dry	Clear	Rear-end
52nd St & Farnam St	5/3/2017	Wednesday	10				1	Southbound Left Turn	Northbound		Dry	Clear	Left-turn leaving
Harney St, 42nd St to Farnam St	5/19/2017	Friday	21					Eastbound			Wet	Rain	Ran Off Road
50th Ave & Farnam St	5/24/2017	Wednesday	16				1	Southbound	Westbound		Dry	Clear	Angle
Farnam St, 49th St to 49th Ave	5/25/2017	Thursday	15				1	Westbound	Westbound		Dry	Clear	Rear-end
50th St & Farnam St	6/9/2017	Friday	7					Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	6/19/2017	Monday	13					Southbound	Southbound		Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	6/21/2017	Wednesday	12					Northbound Left Turn	Southbound		Dry	Clear	Left-turn leaving
42nd St & Farnam St	6/24/2017	Saturday	11				1	Westbound	Northbound	Unknown Fault	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	6/29/2017	Thursday	13					Northbound	Northbound		Dry	Clear	Rear-end
42nd St & Farnam St	6/30/2017	Friday	1					Westbound	Westbound		Dry	Clear	Rear-end
46th St & Farnam St	7/3/2017	Monday	16					Westbound	Southbound Left Turn		Dry	Clear	Angle
Farnam St, Saddle Creek Rd to 46th St	7/12/2017	Wednesday	11				1	Eastbound	Eastbound Right Turn		Dry	Cloudy	Rear-end
41st St & Farnam St	7/20/2017	Thursday	11					Southbound	Eastbound		Dry	Clear	Angle
50th St & Farnam St	7/26/2017	Wednesday	5			1	1	Eastbound	Southbound	SB Ran Red Light	Wet	Rain	Angle
Saddle Creek Rd & Farnam St	7/26/2017	Wednesday	13					Northbound	Southbound Left Turn		Wet	Rain	Left-turn leaving
Farnam St, 42nd St to 44th St	8/2/2017	Wednesday	13					Westbound	Westbound	WB Changing Lanes	Dry	Cloudy	Sideswipe (same)
Saddle Creek Rd & Farnam St	8/4/2017	Friday	8					Eastbound	Westbound Left Turn		Dry	Clear	Left-turn leaving
50th St & Farnam St	8/6/2017	Sunday	1					Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
40th St & Harney St	8/13/2017	Sunday	14				1	Southbound	Eastbound	SB Ran Red Light	Dry	Cloudy	Angle
40th St & Farnam St	8/17/2017	Thursday	13					Southbound Right Turn	Southbound		Dry	Clear	Rear-end
49th St & Farnam St	8/17/2017	Thursday	14					Northbound	Westbound		Dry	Clear	Angle
48th St & Farnam St	8/25/2017	Friday	15					Northbound	Westbound		Dry	Clear	Angle
Farnam St, 40th St to 41st St	8/27/2017	Sunday	14					Westbound	Westbound	WB Changing Lanes	Dry	Cloudy	Sideswipe (same)
Farnam St, 48th St to 49th St	8/27/2017	Sunday	19					Westbound Left Turn	Eastbound	Driveway	Dry	Clear	Left-turn leaving
42nd St & Farnam St	9/5/2017	Tuesday	14					Northbound	Westbound	Unknown Fault	Dry	Clear	Angle
51st St & Farnam St	9/5/2017	Tuesday	10					Northbound	Westbound		Dry	Clear	Angle
50th St & Farnam St	9/13/2017	Wednesday	8					Eastbound	Southbound	EB Ran Red Light	Dry	Clear	Angle
42nd St & Harney St	9/14/2017	Thursday	19					Northbound	Northbound		Dry	Clear	Rear-end
Harney St, 41st St to 42nd St	9/14/2017	Thursday	7				1	Eastbound		Parked Car	Dry	Clear	Fixed Object in Road
40th St, Harney St to Farnam St	9/15/2017	Friday	15					Northbound			Dry	Clear	Ran Off Road
Farnam St, 49th Ave to 50th St	9/15/2017	Friday	17					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
42nd St & Farnam St	9/18/2017	Monday	8					Westbound	Westbound		Wet	Rain	Rear-end
Farnam St, 46th St to 48th St	9/25/2017	Monday	17					Westbound	Westbound Left Turn	WB Turn from Wrong Lane	Wet	Rain	Sideswipe (same)
42nd St & Harney St	9/28/2017	Thursday	11					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Cloudy	Sideswipe (same)
Harney St, 40th St to 41st St	9/29/2017	Friday	20					Eastbound	Westbound	WB Wrong Way	Dry	Clear	Sideswipe (opposite)
42nd St & Farnam St	10/4/2017	Wednesday	22					Northbound	Westbound	WB Ran Red Light	Dry	Clear	Angle
Happy Hollow Blvd & Farnam St	10/4/2017	Wednesday	16				1	Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
40th St & Farnam St	10/6/2017	Friday	21					Westbound U Turn	Westbound	WB Turn from Wrong Lane	Wet	Cloudy	U-turn (same)
41st St & Harney St	10/6/2017	Friday	12					Eastbound	Southbound Left Turn		Wet	Cloudy	Angle
40th St & Farnam St	10/7/2017	Saturday	16				1	Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
40th St & Farnam St	10/17/2017	Tuesday	10				1	Southbound Left Turn	Northbound Pedestrian		Dry	Clear	Pedestrian
54th St & Farnam St	10/17/2017	Tuesday	11					Southbound Right Turn	Westbound		Dry	Clear	Angle
Saddle Creek Rd & Farnam St	10/25/2017	Wednesday	9				1	Northbound	Southbound Left Turn		Dry	Clear	Left-turn leaving
Harney St, 42nd St to Farnam St	10/27/2017	Friday	3					Eastbound		EB DUI	Dry	Clear	Ran Off Road
Saddle Creek Rd & Farnam St	10/27/2017	Friday	8					Northbound	Northbound		Dry	Cloudy	Rear-end
50th St & Farnam St	10/30/2017	Monday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
42nd St & Harney St	11/10/2017	Friday	11					Eastbound	Eastbound	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
52nd St & Farnam St	11/15/2017	Wednesday	17					Westbound	Westbound Left Turn	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Happy Hollow Blvd & Farnam St	11/17/2017	Friday	17					Westbound	Westbound		Dry	Cloudy	Rear-end

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
Saddle Creek Rd & Farnam St	11/22/2017	Wednesday	9				1	Northbound	Northbound		Dry	Clear	Rear-end
42nd St & Farnam St	11/23/2017	Thursday	18				1	Southbound		SB Evasive Action - Motorcycle Laid	Dry	Clear	Other
41st St & Harney St	11/30/2017	Thursday	18				1	Southbound	Eastbound		Dry	Clear	Angle
Farnam St, Saddle Creek Rd to 46th St	11/30/2017	Thursday	9					Westbound	Westbound U Turn		Dry	Clear	U-turn (same)
Farnam St, 51st St to 51st Ave	12/8/2017	Friday	9					Eastbound	Eastbound	EB Changing Lanes	Dry	Clear	Sideswipe (same)
41st St & Farnam St	12/11/2017	Monday	8			1		Southbound	Westbound		Dry	Clear	Angle
40th St & Farnam St	12/22/2017	Friday	11				1	Northbound	Southbound	SB Ran Red Light	Ice	Clear	Angle
42nd St & Harney St	12/23/2017	Saturday	22				1	Eastbound	Northbound	NB Ran Red Light	Snow	Snow	Angle
40th St & Farnam St	12/31/2017	Sunday	8					Westbound Right Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
40th St & Harney St	1/4/2018	Thursday	18					Southbound	Southbound		Dry	Clear	Rear-end
41st St & Harney St	1/8/2018	Monday	6					Eastbound	Southbound		Wet	Cloudy	Angle
42nd St & Farnam St	1/11/2018	Thursday	11					Northbound	Southbound	NB Evasive Action - Avoiding Uninv	Snow	Cloudy	Other
50th Ave & Farnam St	1/17/2018	Wednesday	8				1	Northbound	Eastbound		Snow	Clear	Angle
52nd St & Farnam St	1/29/2018	Monday	17					Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
Farnam St, Saddle Creek Rd to 46th St	1/31/2018	Wednesday	6				1	Eastbound	Westbound	Road Surface Conditions	Ice	Cloudy	Head-on
52nd St & Farnam St	2/1/2018	Thursday	17					Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
Farnam St, 40th St to 41st St	2/1/2018	Thursday	20				2	Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
44th St & Farnam St	2/2/2018	Friday	12				1	Westbound	Northbound	WB Ran Red Light	Dry	Cloudy	Angle
42nd St & Farnam St	2/6/2018	Tuesday	19				1	Southbound	Westbound	Unknown Fault	Snow	Sleet, hail, freezing rain/drizzle	Angle
Saddle Creek Rd & Farnam St	2/7/2018	Wednesday	23				1	Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
42nd St & Farnam St	2/11/2018	Sunday	2				1	Westbound	Westbound		Snow	Snow	Rear-end
44th St & Farnam St	2/11/2018	Sunday	11					Westbound Left Turn	Eastbound		Wet	Clear	Left-turn leaving
Saddle Creek Rd & Farnam St	2/11/2018	Sunday	11				1	Southbound		SB Evasive Action - Avoiding Uninv	Dry	Clear	Ran off Road
50th St & Farnam St	2/15/2018	Thursday	19					Eastbound	Westbound Left Turn		Dry	Clear	Left-turn leaving
42nd St & Farnam St	2/18/2018	Sunday	1					Northbound	Westbound	NB Ran Red Light	Unknown	Unknown	Angle
41st St & Harney St	2/21/2018	Wednesday	9					Southbound Left Turn	Eastbound		Snow	Clear	Angle
42nd St & Farnam St	2/22/2018	Thursday	6					Northbound	Westbound	WB Ran Red Light; Road Surface Co	Wet	Sleet, hail, freezing rain/drizzle	Angle
Farnam St, Saddle Creek Rd to 46th St	2/26/2018	Monday	14					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
52nd St & Farnam St	2/26/2018	Monday	17					Westbound	Northbound	WB Ran Red Light	Wet	Clear	Angle
48th St & Farnam St	3/1/2018	Thursday	16					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
40th St & Farnam St	3/5/2018	Monday	1					Northbound	Northbound		Wet	Rain	Rear-end
Farnam St, 48th St to 49th St	3/5/2018	Monday	19					Northbound Backing	Eastbound	Driveway	Dry	Cloudy	Angle
Farnam St, 54th St to 55th St (East)	3/12/2018	Monday	8					Eastbound	Eastbound	EB Changing Lanes	Dry	Clear	Sideswipe (same)
Farnam St, 40th St to 41st St	3/18/2018	Sunday	15					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
Farnam St, 49th Ave to 50th St	3/21/2018	Wednesday	16					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
49th St & Farnam St	3/24/2018	Saturday	16					Southbound	Westbound		Dry	Cloudy	Angle
48th St & Farnam St	4/6/2018	Friday	13				1	Northbound	Eastbound		Wet	Sleet, hail, freezing rain/drizzle	Angle
50th St & Farnam St	4/12/2018	Thursday	7					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	4/14/2018	Saturday	22				2	Westbound	Southbound	SB Ran Red Light	Wet	Snow	Angle
Saddle Creek Rd & Farnam St	4/17/2018	Tuesday	8					Westbound Left Turn	Eastbound		Dry	Clear	Left-turn leaving
Happy Hollow Blvd & Farnam St	5/1/2018	Tuesday	14				1	Westbound	Northbound	WB Ran Red Light	Dry	Cloudy	Angle
42nd St & Harney St	5/2/2018	Wednesday	8					Eastbound	Southbound	EB Ran Red Light	Wet	Rain	Angle
Harney St, 42nd St to Farnam St	5/6/2018	Sunday	1					Eastbound		EB DUI	Dry	Clear	Ran off Road
50th St & Farnam St	5/9/2018	Wednesday	21					Eastbound Right Turn	Southbound	EB Right Turn on Red	Dry	Clear	Angle
41st St & Harney St	5/16/2018	Wednesday	18			2		Southbound	Eastbound		Dry	Clear	Angle
41st St & Harney St	5/17/2018	Thursday	7		1			Eastbound	Southbound		Dry	Clear	Angle
40th St & Farnam St	6/3/2018	Sunday	18					Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
Farnam St, 49th Ave to 50th St	6/18/2018	Monday	19					Eastbound		Tree fell on car	Dry	Cloudy	Other
Happy Hollow Blvd & Farnam St	6/25/2018	Monday	16					Westbound	Southbound	SB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	6/25/2018	Monday	20					Eastbound	Eastbound	Road Surface Conditions	Wet	Sleet, hail, freezing rain/drizzle	Sideswipe (same)
Happy Hollow Blvd & Farnam St	6/30/2018	Saturday	2					Westbound Right Turn		WB DUI	Dry	Clear	Ran off Road

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
Saddle Creek Rd & Farnam St	7/14/2018	Saturday	4					Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
50th St & Farnam St	7/15/2018	Sunday	18				4	Northbound	Eastbound	NB Ran Red Light; NB DUI	Dry	Clear	Angle
41st St & Harney St	7/24/2018	Tuesday	8					Southbound	Eastbound		Dry	Clear	Angle
50th Ave & Farnam St	7/25/2018	Wednesday	8			1		Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Cloudy	Sideswipe (same)
50th St & Farnam St	8/5/2018	Sunday	13			3	1	Eastbound	Northbound	NB Ran Red Light	Dry	Clear	Angle
50th St & Farnam St	8/6/2018	Monday	8					Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
42nd St & Farnam St	8/18/2018	Saturday	17					Northbound	Westbound	WB Ran Red Light	Dry	Clear	Angle
53rd St & Farnam St	8/27/2018	Monday	22				1	Westbound	Northbound	NB Ran Stop Sign	Dry	Clear	Angle
42nd St & Harney St	9/17/2018	Monday	16					Northbound	Northbound		Dry	Clear	Rear-end
53rd St & Farnam St	9/18/2018	Tuesday	19				2	Southbound	Eastbound	SB Ran Stop Sign; SB Vision Obstruc	Dry	Clear	Angle
Farnam St, 48th St to 49th St	9/25/2018	Tuesday	16					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
50th St & Farnam St	9/26/2018	Wednesday	12				2	Southbound	Westbound	SB Ran Red Light; SB Vision Obstruc	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	10/1/2018	Monday	12				1	Northbound	Northbound		Wet	Rain	Rear-end
Saddle Creek Rd & Farnam St	10/8/2018	Monday	13					Southbound	Southbound		Wet	Sleet, hail, freezing rain/drizzle	Rear-end
Happy Hollow Blvd & Farnam St	10/12/2018	Friday	11				1	Northbound	Eastbound	NB Ran Red Light	Wet	Rain	Angle
41st St & Harney St	10/16/2018	Tuesday	15					Southbound	Eastbound		Dry	Clear	Angle
49th St & Farnam St	10/21/2018	Sunday	13					Southbound	Westbound		Dry	Clear	Angle
56th St & Farnam St	11/1/2018	Thursday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Cloudy	Sideswipe (same)
Farnam St, 46th St to 48th St	11/17/2018	Saturday	18					Westbound	Eastbound	Road Surface Conditions	Snow	Snow	Head-on
50th St & Farnam St	11/19/2018	Monday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
42nd St & Farnam St	11/20/2018	Tuesday	19					Westbound Left Turn			Dry	Clear	Ran Off Road
Saddle Creek Rd & Farnam St	11/29/2018	Thursday	2					Northbound	Northbound		Dry	Clear	Rear-end
52nd St & Farnam St	11/30/2018	Friday	18				1	Northbound	Northbound		Wet	Rain	Rear-end
42nd St & Harney St	12/7/2018	Friday	9					Northbound	Eastbound	EB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	12/9/2018	Sunday	13					Southbound Right Turn	Southbound	SB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
50th St & Farnam St	12/11/2018	Tuesday	10					Southbound	Westbound	SB Ran Red Light; SB Sun Glare	Dry	Cloudy	Angle
Saddle Creek Rd & Farnam St	12/11/2018	Tuesday	13					Southbound	Southbound		Dry	Cloudy	Rear-end
56th St & Farnam St	12/11/2018	Tuesday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Wet	Clear	Sideswipe (same)
Harney St, 40th St to 41st St	12/15/2018	Saturday	0					Westbound Backing		Road Surface Conditions; Parked Ve	Ice	Unknown	Fixed Object in Road
48th St & Farnam St	12/15/2018	Saturday	15					Northbound	Westbound		Dry	Clear	Angle
50th St & Farnam St	12/18/2018	Tuesday	16					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Farnam St, 49th Ave to 50th St	12/22/2018	Saturday	8				1	Northbound Backing	Eastbound	Driveway	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	12/31/2018	Monday	0					Southbound	Southbound		Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	1/6/2019	Sunday	18			1	2	Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
Farnam St, 48th St to 49th St	1/14/2019	Monday	10					Westbound	Westbound	Work Zone	Wet	Cloudy	Rear-end
Saddle Creek Rd & Farnam St	1/14/2019	Monday	16					Southbound Left Turn	Northbound		Dry	Cloudy	Left-turn leaving
41st St & Harney St	1/16/2019	Wednesday	7					Southbound	Eastbound	SB Stop sign missing	Wet	Clear	Angle
42nd St & Harney St	1/18/2019	Friday	7					Northbound	Northbound		Dry	Clear	Rear-end
Happy Hollow Blvd & Farnam St	1/21/2019	Monday	7				1	Northbound Left Turn	Southbound		Dry	Cloudy	Left-turn leaving
52nd St & Farnam St	1/26/2019	Saturday	22					Southbound	Eastbound	Unknown Fault	Wet	Cloudy	Angle
50th St & Farnam St	1/29/2019	Tuesday	8					Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	2/4/2019	Monday	15					Southbound Left Turn	Southbound Left Turn		Dry	Clear	Rear-end
50th Ave & Farnam St	2/5/2019	Tuesday	9					Northbound	Westbound		Dry	Clear	Angle
50th St & Farnam St	2/5/2019	Tuesday	16					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Cloudy	Sideswipe (same)
Farnam St, 40th St to 41st St	2/11/2019	Monday	12					Unknown		Parked Car	Snow	Snow	Fixed Object in Road
50th Ave & Farnam St	2/14/2019	Thursday	6					Northbound	Westbound		Wet	Cloudy	Angle
50th St & Farnam St	2/14/2019	Thursday	19					Westbound Left Turn	Unknown		Dry	Clear	Other
Saddle Creek Rd & Farnam St	2/18/2019	Monday	21					Southbound	Southbound		Dry	Clear	Rear-end
Harney St, 40th St to 41st St	2/22/2019	Friday	7					Eastbound	Eastbound	EB Changing Lanes	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	2/26/2019	Tuesday	23					Northbound	Eastbound	NB Ran Red Light	Snow	Clear	Angle
42nd St & Farnam St	3/5/2019	Tuesday	22				3	Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle

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42nd St & Harney St	3/15/2019	Friday	9					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Happy Hollow Blvd & Farnam St	3/23/2019	Saturday	2					Eastbound Left Turn	Westbound		Dry	Clear	Left-turn leaving
Saddle Creek Rd & Farnam St	3/23/2019	Saturday	20				2	Northbound	Southbound Left Turn		Dry	Clear	Left-turn leaving
42nd St & Harney St	3/29/2019	Friday	22				1	Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Cloudy	Sideswipe (same)
Farnam St, 48th St to 49th St	4/3/2019	Wednesday	19					Southbound Backing	Northbound Backing	Driveway	Wet	Cloudy	Backing
41st St & Farnam St	4/5/2019	Friday	7					Southbound	Westbound		Dry	Fog, smog, smoke	Angle
52nd St & Farnam St	4/5/2019	Friday	13					Southbound	Eastbound	SB Ran Red Light	Dry	Clear	Angle
Happy Hollow Blvd & Farnam St	4/9/2019	Tuesday	16					Westbound	Southbound	SB Ran Red Light	Dry	Cloudy	Angle
Happy Hollow Blvd & Farnam St	4/20/2019	Saturday	14				1	Northbound	Eastbound	NB Ran Red Light	Dry	Clear	Angle
52nd St & Farnam St	5/3/2019	Friday	18					Northbound Left Turn	Southbound		Dry	Clear	Left-turn leaving
Saddle Creek Rd & Farnam St	5/6/2019	Monday	12					Southbound	Southbound		Dry	Clear	Rear-end
Farnam St, 49th Ave to 50th St	5/6/2019	Monday	17				1	Eastbound	Westbound	EB Wrong Way	Wet	Rain	Head-on
Saddle Creek Rd & Farnam St	5/6/2019	Monday	22				3	Northbound	Northbound		Dry	Clear	Rear-end
Happy Hollow Blvd & Farnam St	5/7/2019	Tuesday	17					Southbound	Westbound	SB Ran Red Light	Dry	Cloudy	Angle
51st St & Farnam St	5/8/2019	Wednesday	7					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Wet	Rain	Sideswipe (same)
Farnam St, 55th St (East) to 55th St (West)	5/10/2019	Friday	16					Westbound	Westbound	WB Evasive Action - Stopped for EB	Dry	Clear	Rear-end
52nd St & Farnam St	5/27/2019	Monday	17	1			2	Northbound	Westbound	Unknown Fault	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	6/2/2019	Sunday	20			1	1	Southbound Left Turn	Northbound		Dry	Clear	Left-turn leaving
50th St & Farnam St	6/6/2019	Thursday	20					Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
52nd St & Farnam St	6/21/2019	Friday	17			2		Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
42nd St & Harney St	7/8/2019	Monday	9					Eastbound	Eastbound	EB Changing Lanes	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	7/9/2019	Tuesday	15				1	Northbound	Northbound		Dry	Clear	Rear-end
Harney St, 41st St to 42nd St	7/15/2019	Monday	12					Westbound Backing	Eastbound		Dry	Clear	Backing
50th St & Farnam St	7/19/2019	Friday	17				1	Southbound	Westbound	WB Ran Red Light	Dry	Clear	Angle
Farnam St, 54th St to 55th St (East)	7/22/2019	Monday	16					Westbound		WB Evasive Action - Avoiding Uninv	Dry	Clear	Ran off Road
42nd St & Farnam St	7/23/2019	Tuesday	17					Northbound	Westbound	NB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	7/29/2019	Monday	6					Southbound Right Turn	Southbound	SB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
41st St & Harney St	7/31/2019	Wednesday	21					Eastbound	Northbound		Dry	Clear	Angle
48th St & Farnam St	8/1/2019	Thursday	7					Southbound	Eastbound	SB Ran Stop Sign	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	8/14/2019	Wednesday	9					Northbound	Northbound		Dry	Clear	Sideswipe (same)
44th St & Farnam St	8/22/2019	Thursday	12					Southbound	Southbound	SB Chaning Lanes	Dry	Clear	Sideswipe (same)
Farnam St, 44th St to Saddle Creek Rd	9/3/2019	Tuesday	14					Eastbound	Eastbound	EB Stopped for Uninvolved EB U Tu	Dry	Clear	Rear-end
50th St & Farnam St	9/4/2019	Wednesday	17					Westbound Left Turn	Northbound	WB Tight Turn - School Bus	Dry	Clear	Other
42nd St & Harney St	9/5/2019	Thursday	7					Eastbound	Northbound	EB Ran Red Light	Dry	Clear	Angle
48th St & Farnam St	9/11/2019	Wednesday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Happy Hollow Blvd & Farnam St	9/19/2019	Thursday	15			1		Westbound	Southbound	WB Ran Red Light	Dry	Clear	Angle
50th St & Farnam St	9/23/2019	Monday	12				1	Northbound	Eastbound	NB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	10/13/2019	Sunday	9					Southbound Left Turn		SB Sun Glare	Dry	Clear	Fixed Object in Road
52nd St & Farnam St	10/14/2019	Monday	8					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	10/14/2019	Monday	10					Southbound	Southbound	SB Stopped for Uninvolved EB Emer	Dry	Clear	Rear-end
55th St & Farnam St (East)	10/15/2019	Tuesday	7					Southbound	Eastbound Left Turn	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
40th St & Harney St	10/16/2019	Wednesday	23			1	1	Southbound	Eastbound	SB Ran Red Light	Dry	Clear	Angle
Farnam St, 42nd St to 44th St	10/18/2019	Friday	12					Eastbound	Eastbound	EB Changing Lanes; Work Zone	Dry	Clear	Sideswipe (same)
50th Ave & Farnam St	10/18/2019	Friday	14			1	1	Southbound	Eastbound	SB Ran Stop Sign	Dry	Clear	Angle
Farnam St, Saddle Creek Rd to 46th St	10/18/2019	Friday	20					Westbound	Westbound	WB Changing Lanes	Dry	Clear	Sideswipe (same)
50th St & Farnam St	10/24/2019	Thursday	17					Northbound	Northbound		Dry	Clear	Rear-end
50th Ave & Farnam St	10/25/2019	Friday	10					Southbound	Westbound		Dry	Clear	Angle
Saddle Creek Rd & Farnam St	10/31/2019	Thursday	6					Northbound	Westbound Left Turn		Dry	Clear	Angle
42nd St & Harney St	11/1/2019	Friday	11					Eastbound	Southbound	EB Ran Red Light	Wet	Cloudy	Angle
57th St & Farnam St	11/5/2019	Tuesday	15					Northbound Right Turn	Westbound		Dry	Cloudy	Angle
Happy Hollow Blvd & Farnam St	11/12/2019	Tuesday	17					Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
42nd St & Harney St	11/12/2019	Tuesday	23					Eastbound	Southbound	SB Ran Red Light	Dry	Clear	Angle
42nd St & Farnam St	12/8/2019	Sunday	12					Northbound	Westbound	NB Ran Red Light	Dry	Cloudy	Angle
Happy Hollow Blvd & Farnam St	12/23/2019	Monday	15					Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	12/25/2019	Wednesday	9					Eastbound Left Turn	Westbound		Dry	Clear	Left-turn leaving
Happy Hollow Blvd & Farnam St	12/28/2019	Saturday	16					Southbound	Northbound Left Turn		Wet	Cloudy	Left-turn leaving
Saddle Creek Rd & Farnam St	12/31/2019	Tuesday	21					Eastbound Left Turn	Westbound		Dry	Clear	Left-turn leaving
42nd St & Farnam St	1/5/2020	Sunday	7				1	Westbound	Northbound	Unknown Fault	Dry	Clear	Angle
50th St & Farnam St	1/10/2020	Friday	15					Northbound	Northbound		Snow	Sleet, hail, freezing rain/drizzle	Rear-end
Farnam St, 56th St to 57th St	1/13/2020	Monday	22					Eastbound		Power Pole	Wet	Clear	Ran off Road
Farnam St, 46th St to 48th St	1/22/2020	Wednesday	17					Westbound Left Turn	Westbound	WB Turn from Wrong Lane	Wet	Rain	Sideswipe (same)
Farnam St, 56th St to 57th St	1/23/2020	Thursday	19					Westbound		Road Surface Conditions; Tree	Ice	Snow	Ran off Road
52nd St & Farnam St	1/26/2020	Sunday	12				2	Eastbound	Northbound	EB Ran Red Light	Wet	Clear	Angle
Farnam St, Saddle Creek Rd to 46th St	2/8/2020	Saturday	15					Westbound	Westbound U Turn		Dry	Clear	Rear-end
42nd St & Harney St	2/10/2020	Monday	8					Northbound	Northbound		Dry	Clear	Rear-end
42nd St & Farnam St	2/10/2020	Monday	8					Westbound	Southbound	WB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	2/13/2020	Thursday	11				1	Northbound	Northbound	NB Stopped for Uninvolved WB Em	Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	2/18/2020	Tuesday	13					Southbound	Southbound		Dry	Clear	Sideswipe (same)
51st Ave & Farnam St	2/18/2020	Tuesday	17					Southbound	Westbound	SB Ran Stop Sign	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	2/19/2020	Wednesday	19					Eastbound	Westbound Left Turn		Snow	Snow	Left-turn leaving
42nd St & Harney St	2/20/2020	Thursday	6					Northbound	Northbound		Dry	Clear	Rear-end
40th St & Farnam St	2/24/2020	Monday	16				2	Westbound	Westbound Right Turn	WB Stopped for Uninvolved Crossin	Dry	Clear	Rear-end
40th St & Harney St	3/3/2020	Tuesday	13				2	Southbound	Eastbound	SB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	3/5/2020	Thursday	12					Southbound Left Turn	Southbound Left Turn		Dry	Clear	Rear-end
42nd St & Harney St	3/8/2020	Sunday	19				1	Westbound	Northbound	WB Wrong Way	Dry	Clear	Angle
Harney St, 42nd St to Farnam St	3/18/2020	Wednesday	3					Eastbound			Wet	Rain	Ran off Road
40th St & Harney St	4/6/2020	Monday	15					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
42nd St & Farnam St	4/7/2020	Tuesday	0					Eastbound	Northbound	EB Wrong Way	Dry	Clear	Angle
52nd St & Farnam St	4/18/2020	Saturday	15					Westbound	Northbound	Unknown Fault	Dry	Clear	Angle
Harney St, 42nd St to Farnam St	4/30/2020	Thursday	21					Eastbound		EB DUI	Dry	Clear	Ran off Road
52nd St & Farnam St	5/1/2020	Friday	15			1		Westbound	Southbound	WB Ran Red Light	Dry	Clear	Angle
50th Ave & Farnam St	5/26/2020	Tuesday	17				1	Southbound	Westbound	SB Ran Stop Sign; SB Vision Obstruc	Dry	Cloudy	Angle
50th St & Farnam St	5/28/2020	Thursday	22					Southbound	Westbound	SB Ran Red Light	Dry	Clear	Angle
49th St & Farnam St	6/7/2020	Sunday	16					Eastbound U Turn	Eastbound		Dry	Clear	U-turn (same)
48th St & Farnam St	6/12/2020	Friday	9					Northbound	Westbound		Dry	Clear	Angle
52nd St & Farnam St	6/27/2020	Saturday	12			5	3	Eastbound	Southbound	EB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	7/17/2020	Friday	12			1		Southbound	Southbound		Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	7/21/2020	Tuesday	17					Northbound	Westbound	NB Ran Red Light	Dry	Cloudy	Angle
40th St & Harney St	7/27/2020	Monday	17			1		Southbound	Eastbound	SB Ran Red Light	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	8/1/2020	Saturday	22			1		Northbound	Northbound		Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	8/5/2020	Wednesday	21					Eastbound Left Turn	Westbound		Dry	Clear	Left-turn leaving
44th St & Farnam St	8/5/2020	Wednesday	21				1	Eastbound	Eastbound Left Turn	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Farnam St, 40th St to 41st St	8/13/2020	Thursday	9					Unknown		Light Pole	Unknown	Unknown	Ran off Road
50th St & Farnam St	8/22/2020	Saturday	18					Northbound	Northbound		Dry	Cloudy	Rear-end
Farnam St, 50th Ave to 51st St	9/9/2020	Wednesday	7					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Wet	Rain	Sideswipe (same)
40th St & Harney St	9/24/2020	Thursday	14					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
52nd St & Farnam St	10/5/2020	Monday	18					Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
48th St & Farnam St	10/8/2020	Thursday	14				1	Southbound	Eastbound		Dry	Clear	Angle
49th St & Farnam St	10/13/2020	Tuesday	8					Eastbound Left Turn	Eastbound	EB Turn from Wrong Lane	Dry	Clear	Sideswipe (same)
Saddle Creek Rd & Farnam St	10/23/2020	Friday	18				2	Southbound	Southbound		Dry	Clear	Rear-end
Saddle Creek Rd & Farnam St	10/25/2020	Sunday	8					Southbound Left Turn	Northbound		Dry	Clear	Left-turn leaving
42nd St & Farnam St	10/31/2020	Saturday	0					Northbound	Westbound	Unknown Fault	Dry	Clear	Angle

Location	Accident Date	Accident Day	Accident Hour	Fatal Injuries	Disabling Injuries	Visible Injuries	Possible Injuries	Vehicle 1 Direction	Vehicle 2 Direction	Contributing Circumstances	Road Surface Condition	Weather	Accident Type
40th St & Harney St	11/13/2020	Friday	2					Southbound	Eastbound	Unknown Fault	Dry	Clear	Angle
42nd St & Harney St	11/21/2020	Saturday	2					Westbound	Northbound	WB Wrong Way; WB DUI	Dry	Clear	Angle
Saddle Creek Rd & Farnam St	11/28/2020	Saturday	18				1	Northbound Left Turn	Southbound		Dry	Clear	Left-turn leaving
40th St & Farnam St	12/4/2020	Friday	7				2	Westbound	Northbound	WB Ran Red Light	Dry	Clear	Angle
50th Ave & Farnam St	12/5/2020	Saturday	12					Northbound	Eastbound		Dry	Clear	Angle
Harney St, 42nd St to Farnam St	12/22/2020	Tuesday	1					Eastbound		EB DUI	Dry	Clear	Ran off Road
49th St & Farnam St	12/31/2020	Thursday	0					Eastbound	Southbound	SB Ran Stop Sign	Unknown	Unknown	Angle

APPENDIX B. TRAFFIC FORECAST DATA

Intersection ID #	Intersection	Leg	2010 ADT	2011 ADT	2012 ADT	2013 ADT	2014 ADT	2015 ADT	2016 ADT	2017 ADT	2018 ADT	2019 ADT	2020 ADT	2021 ADT	Average ADT (All)	2010 ADT MAPA	2018 ADT MAPA	2040 Forecast MAPA	Growth % (MAPA)
1220	Farnam Street & Dodge Street	North		-				-				-			-	-	-	-	-
		South		12,932				10,352				9,752			11,012	11,000	8,100	11,800	0.2%
		East		35,358				40,662				37,566			37,862	35,500	31,800	40,300	0.4%
		West		44,098				50,654				47,318			47,357		36,300		-
27	Happy Hollow Blvd & Dodge Street	North	7,872					7,866				7,766			7,835	6,000	6,200	6,200	0.1%
		South	6,434					6,834				12,792			8,687	4,500	4,200	4,900	0.3%
		East	44,000					41,444				39,118			41,521	35,250	32,500	40,300	0.4%
		West	48,070					41,916				45,296			45,094	35,500	32,800	40,300	0.4%
28	Happy Hollow Blvd & Farnam Street	North		4,540					5,300			5,646			5,162	4,500	4,200	4,900	0.3%
		South		5,096					6,368			6,590			6,018	6,000	5,000	6,400	0.2%
		East		9,058					7,336			7,008			7,801	8,000	5,700	8,800	0.3%
		West		11,414					9,972			9,324			10,237	11,000	7,800	11,800	0.2%
9057	57th Street & Farnam Street	North		-					-						-				-
		South		192					166						179				-
		East		8,648					6,834						7,741				-
		West		8,494					6,748						7,621				-
379	52nd Street & Farnam Street	North				*5,778				4,848					4,848	5,000	4,700	5,700	0.4%
		South				*6,150				5,226					5,226	5,500	5,100	6,000	0.3%
		East				*10,034				9,310					9,310	8,200	9,100	9,200	0.4%
		West				*9,398				8,744					8,744	8,000	8,500	8,800	0.3%
371	51st Street & Farnam Street	North			282						296				289				-
		South			284						326				305				-
		East			9,650						8,079				8,865				-
		West			9,524						7,981				8,753				-
362	50th Street & Farnam Street	North	6144					6,230							6,187	5,400	5,400	6,200	0.5%
		South	6350					6,516							6,433	5,500	8,100	7,000	0.8%
		East	10160					9,442							9,801	8,800	5,500	9,100	0.1%
		West	9686					9,316							9,501	8,400	8,000	9,500	0.4%
9049	49th Street & Farnam Street	North												710	710				-
		South												212	212				-
		East												5,524	5,524				-
		West												5,586	5,586				-
-	48th Street & Farnam Street	North								640					640				-
		South								1,004					1,004				-
		East								9,570					9,570				-
		West								9,386					9,386				-

City of Omaha PWKs ADT Counts
Olsson Saddle Creek UNMC Study
HDR UNMC Development Study
Recently Collected or FHU Provided
MAPA

Intersection ID #	Intersection	Leg	2010 ADT	2011 ADT	2012 ADT	2013 ADT	2014 ADT	2015 ADT	2016 ADT	2017 ADT	2018 ADT	2019 ADT	2020 ADT	2021 ADT	Average ADT (All)	2010 ADT MAPA	2018 ADT MAPA	2040 Forecast MAPA	Growth % (MAPA)
9046	46th Street & Farnam Street	North			1,094					1,070				*794	1,082				-
		South			-					-				-	-				-
		East			10,984				11,000	9,778				*5,870	10,587				-
		West			10,718				9,300	9,482				*5,724	9,833				-
76	Saddle Creek Road & Farnam Street	North					30,718		31,500	28,064		26,860			29,286	30,000	21,900	33,500	0.4%
		South					31,806		31,100	29,482		27,678			30,017	29,000	25,400	34,500	0.6%
		East					19,190		17,400	15,140		14,636			16,592	15,000	12,000	19,300	0.8%
		West					10,638		11,000	9,678		8,566			9,971	10,000	8,500	10,300	0.1%
340	44th Street & Farnam Street	North	2240					2,070	3,400						2,570				-
		South	2688					3,710							3,199				-
		East	16772					14,658							15,715				-
		West	16756					15,054							15,905				-
323	42nd Street & Farnam Street	North	8490					8,316	8,200						8,335	7,500	6,600	11,700	1.5%
		South	10660					11,466							11,063	9,500	9,200	10,200	0.2%
		East	12832					9,770	12,000						11,534	11,000	7,800	13,800	0.8%
		West	12974					8,808							10,891	11,000	7,000	20,400	2.1%
307	40th Street & Farnam Street	North	7210					5,440	6,000		5,236				5,972	6,000	4,900	7,800	0.9%
		South	5678					2,872	5,300		3,194				4,261	5,000	3,000	5,200	0.1%
		East	12262					10,606			10,014				10,961	11,000	9,400	12,000	0.3%
		West	11254					9,618	12,000		9,060				10,483	11,000	8,500	13,800	0.8%
326	42nd Street & Harney Street	North	11072					10,830							10,951	9,500	7,700	10,200	0.2%
		South	14018					13,130							13,574	12,000	9,400	12,800	0.2%
		East	7182					6,008	6,700						6,630	6,500	4,300	6,800	0.2%
		West	8052					6,760							7,406		4,800		-
309	40th Street & Harney Street	North	4258					2,874	5,300						4,144	5,000	2,100	5,200	0.1%
		South	3398					2,028							2,713				-
		East	7826					5,326							6,576	7,000	3,800	8,000	0.4%
		West	7318					5,096	6,700						6,371	6,500	3,600	6,800	0.2%

City of Omaha PWKs ADT Counts
Olsson Saddle Creek UNMC Study
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Recently Collected or FHU Provided
MAPA

APPENDIX C. DESIGN CRITERIA, CONCEPTS, COST ESTIMATES, & DECISION MATRIX

Roadway Design - Principal Controlling Design Criteria (1)

Project No: 120340-01	**OPW No.:** 53944	**Name: Farnam Street Corridor Study**
Designer: FHU	**City PM:** Justin Zetterman	

	Roadway 1	**Roadway 2**
Highway or Local Road/Street (2) *Sta. to Sta. (RP to RP)*	Farnam Street 48th Street to 44th Street	Saddle Creek Road Emilie Street to Douglas Street
On National Highway System?	No	No
FHWA PoDI? (3)	No	No
Federal Functional Classification	Minor Arterial	Other Principal Arterial
On Priority Commercial System?	No	No
ADT *(Design Year)*	9,700 – 21,800	33,500-34,500
Number of Lanes	2-4	4
Design Standard	City of Omaha	City of Omaha
Location (*Rural/Urban*)	Urban	Urban
CRITERIA	**DESIGN VALUE USED (MIN. DESIGN VALUE)**	**DESIGN VALUE USED (MIN. DESIGN VALUE)**
Design Speed *(mph)*	35 mph (Posted 30 mph)	40 mph (Posted 35 mph)
Lane Width *(ft.)*	12.5ft (12ft preferred, 11ft acceptable)	12.5ft (12ft preferred, 11ft acceptable)
Two-way Left-turn Lane Width *(ft.)*	12ft (14ft preferred, 12ft acceptable)	12ft (14ft preferred, 12ft acceptable)
Curb Type	(6-inch Standard)	(6-inch Standard)
Horizontal Alignment		
Superelevation *(Maximum e) (%)*	NC (6% GB)	6% (6% GB)
Minimum Curve Radius *(ft.)*	510ft (510ft for 35mph DS)	762ft (762ft for 40mph DS)
Sidewalks		
Width *(ft.)*	5ft – 10ft (5ft Minimum)	5ft – 10ft (5ft Minimum)
Width *(Buffer)*	6ft-6in to 8ft (6ft-6in Minimum)	6ft-6in to 8ft (6ft-6in Minimum)

(1) For additional information see Mitigation Strategies for Design Exceptions (http://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/fhwa_sa_07011.pdf)

(2) "Highway or Local Road/Street" is project-specific, roads may be listed individually or grouped together (e.g. mainline, ramps, county roads, arterials) if they have common design criteria.

(3) **P**roject **o**f **D**ivision **I**nterest. See Appendix H, "Application of Design Standards", page H-3.

GB = "AASHTO Minimum Design Guidance"

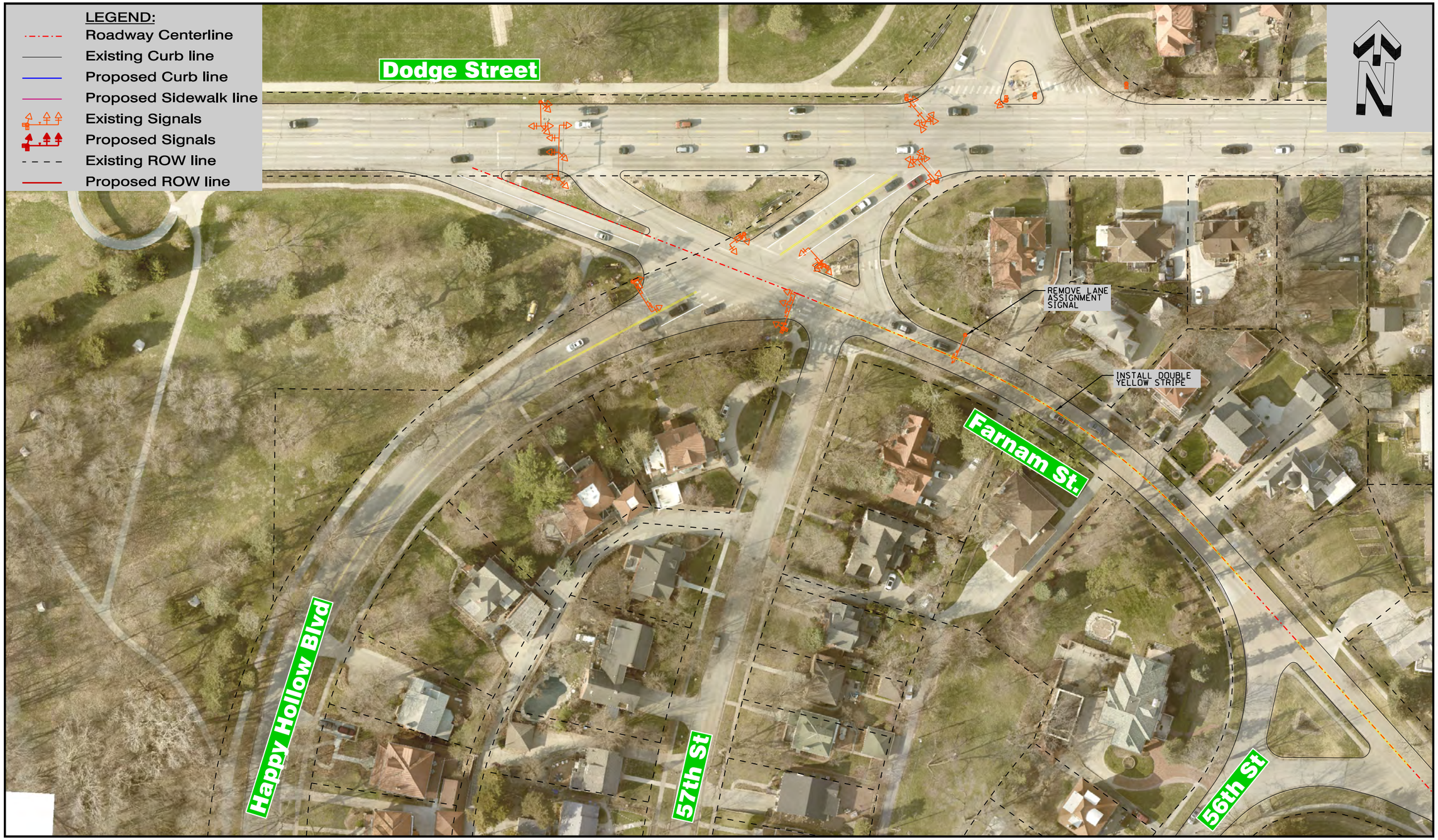
THIS PROJECT WILL REQUIRE A DESIGN EXCEPTION FROM THE FHWA YES ☐ NO ☒

THIS PROJECT MAY REQUIRE A RELAXATION OF THE MINIMUM DESIGN STANDARDS YES ☒ NO ☐

Notes:

FARNAM STREET: DODGE ST. - 56TH ST.

FIGURE
C-1



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
PUBLIC WORKS DEPARTMENT

OPW53944

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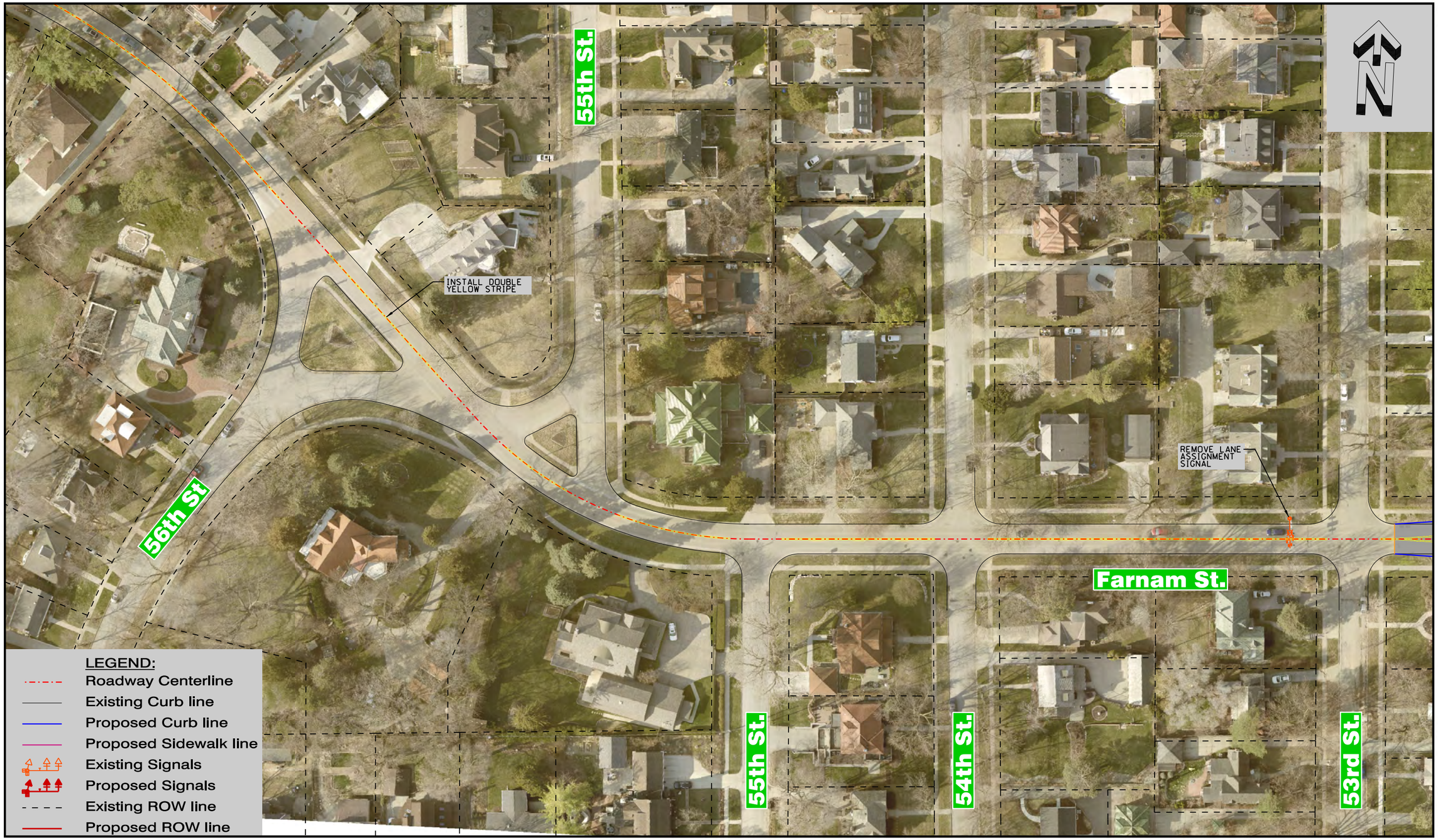
FILE NAME: O:\Projects\120340-01 Farnam Street\02_CIVIL\Roadway\Plans\120340-M01.dgn

FARNAM STREET: 56TH ST. - 53RD ST.

FIGURE
C-2



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
PUBLIC WORKS DEPARTMENT

OPW53944

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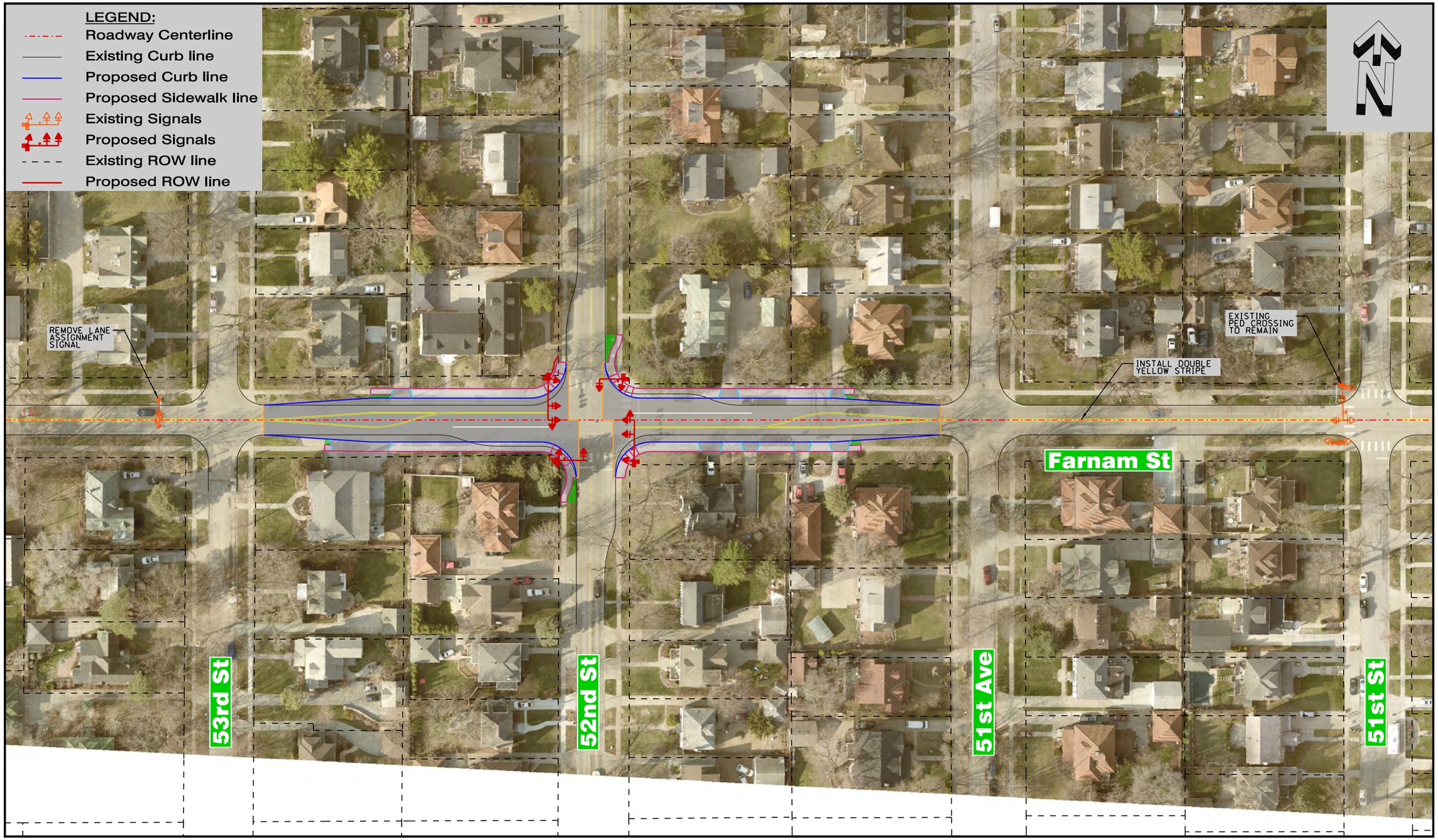
FIGURE
C-3

FARNAM STREET: 53RD ST. - 51ST ST.
ALTERNATIVE 1 - LEFT TURN LANES



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
PUBLIC WORKS DEPARTMENT

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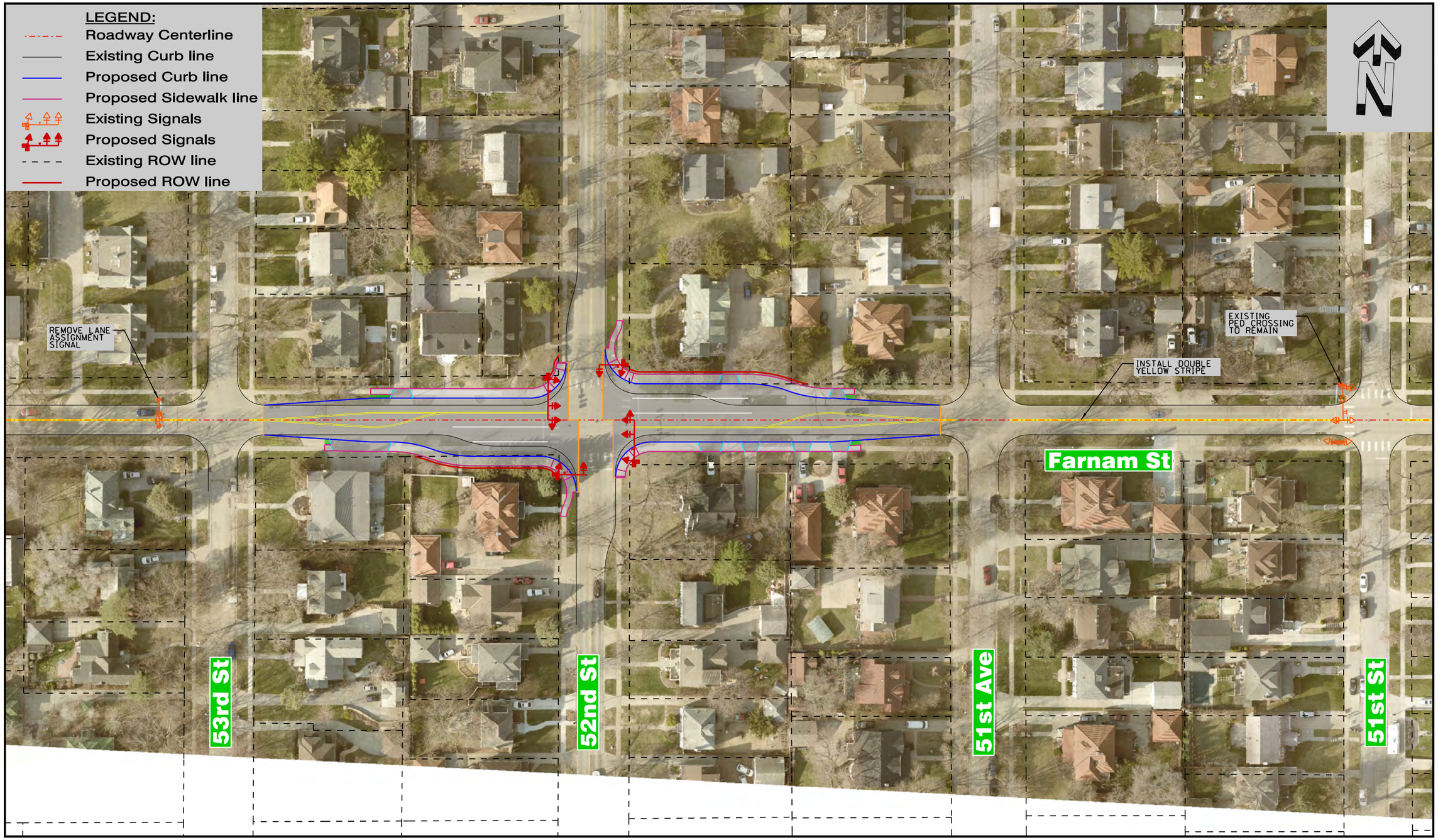
FARNAM STREET: 53RD ST. - 51ST ST.
ALTERNATIVE 2 - LEFT/RIGHT TURN LANES

FIGURE
C-4



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
PUBLIC WORKS DEPARTMENT

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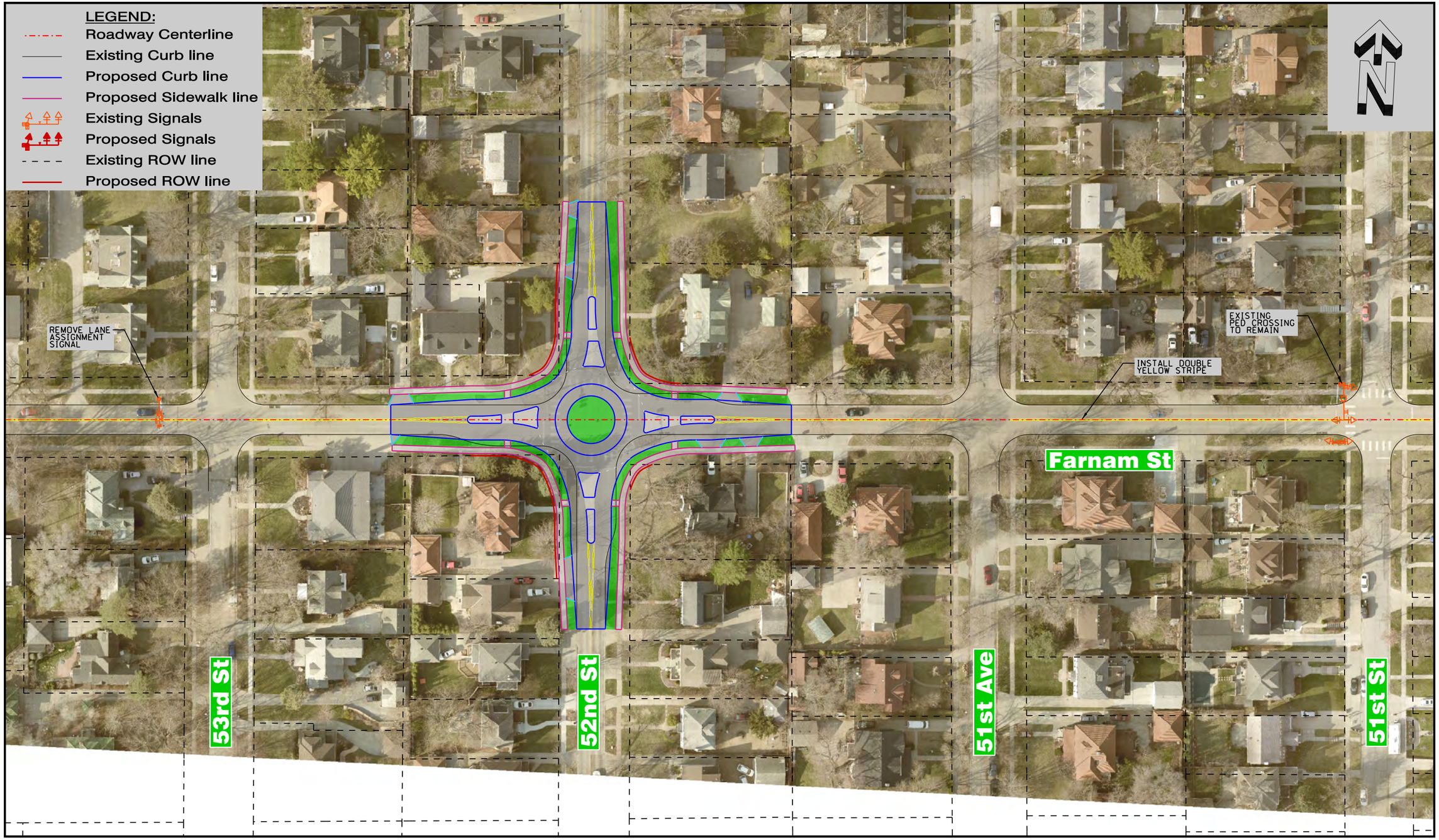
FARNAM STREET: 53RD ST. - 51ST ST.
ALTERNATIVE 3 - ROUNDABOUT

FIGURE
C-5



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
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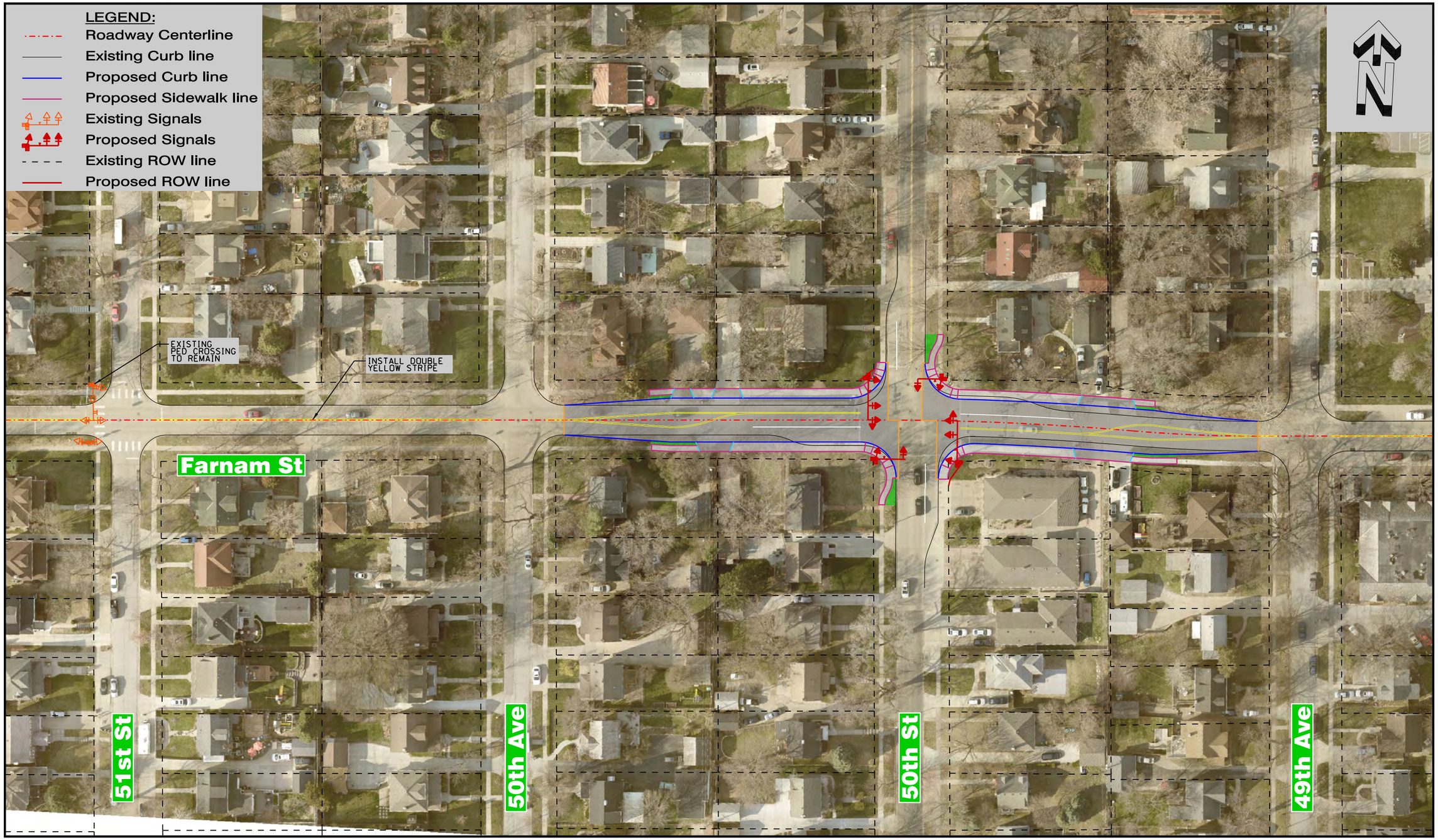
FARNAM STREET: 51ST ST. - 49TH AVE.
ALTERNATIVE 1 - LEFT TURN LANES

FIGURE
C-6



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
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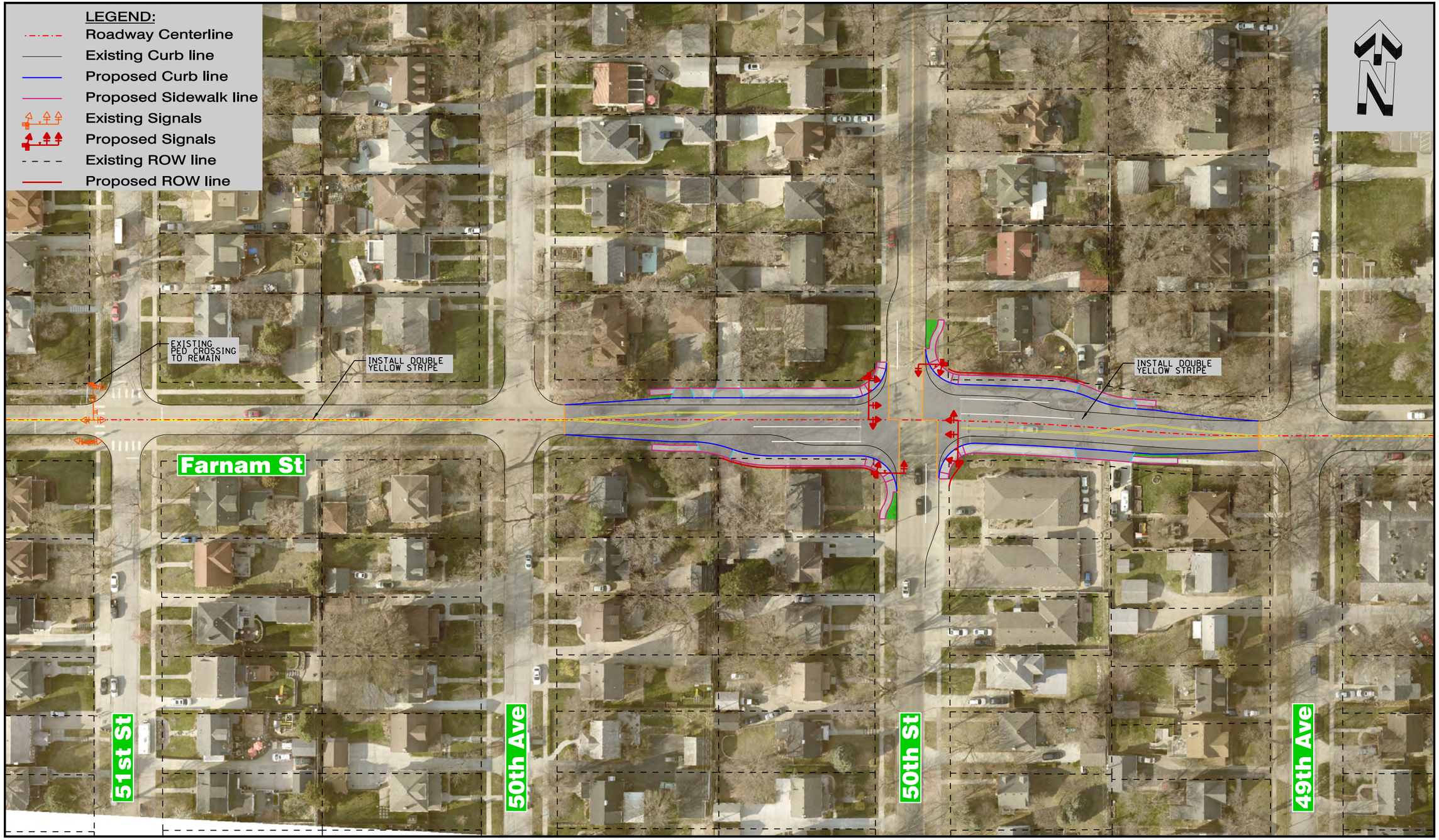
FIGURE
C-7

FARNAM STREET: 51ST ST. - 49TH AVE.
ALTERNATIVE 2 - LEFT/RIGHT TURN LANES



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
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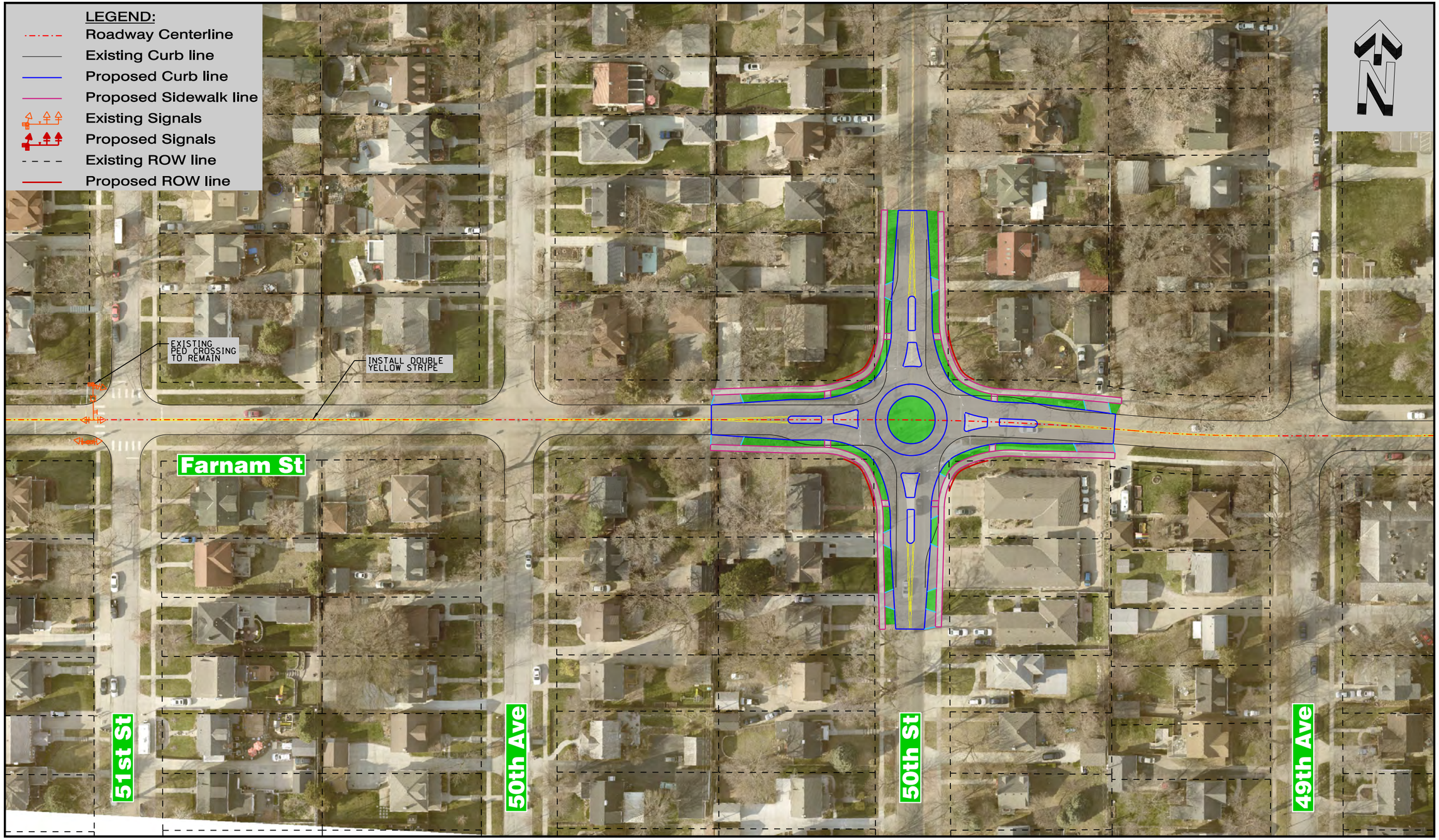
FARNAM STREET: 51ST ST. - 49TH AVE.
ALTERNATIVE 3 - ROUNDABOUT

FIGURE
C-8



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

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FARNAM STREET: 49TH AVE. - 48TH ST.

FIGURE
C-9

PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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FARNAM STREET: 48TH ST. - 46TH ST.

FIGURE
C-10

PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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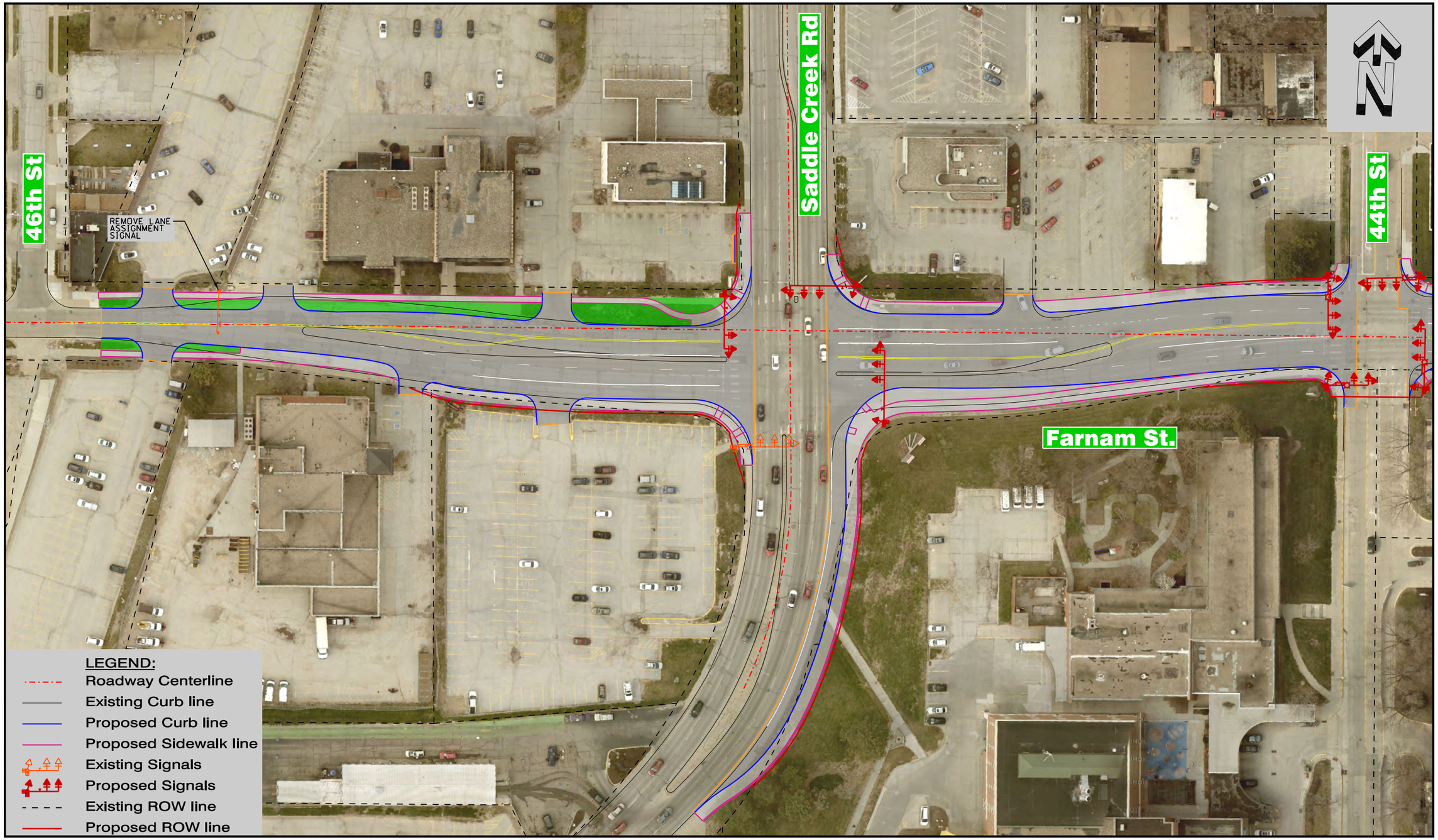
FARNAM STREET: 46TH ST. - 44TH ST.
ALTERNATIVE 1 - LEFT TURN LANES

FIGURE
C-11



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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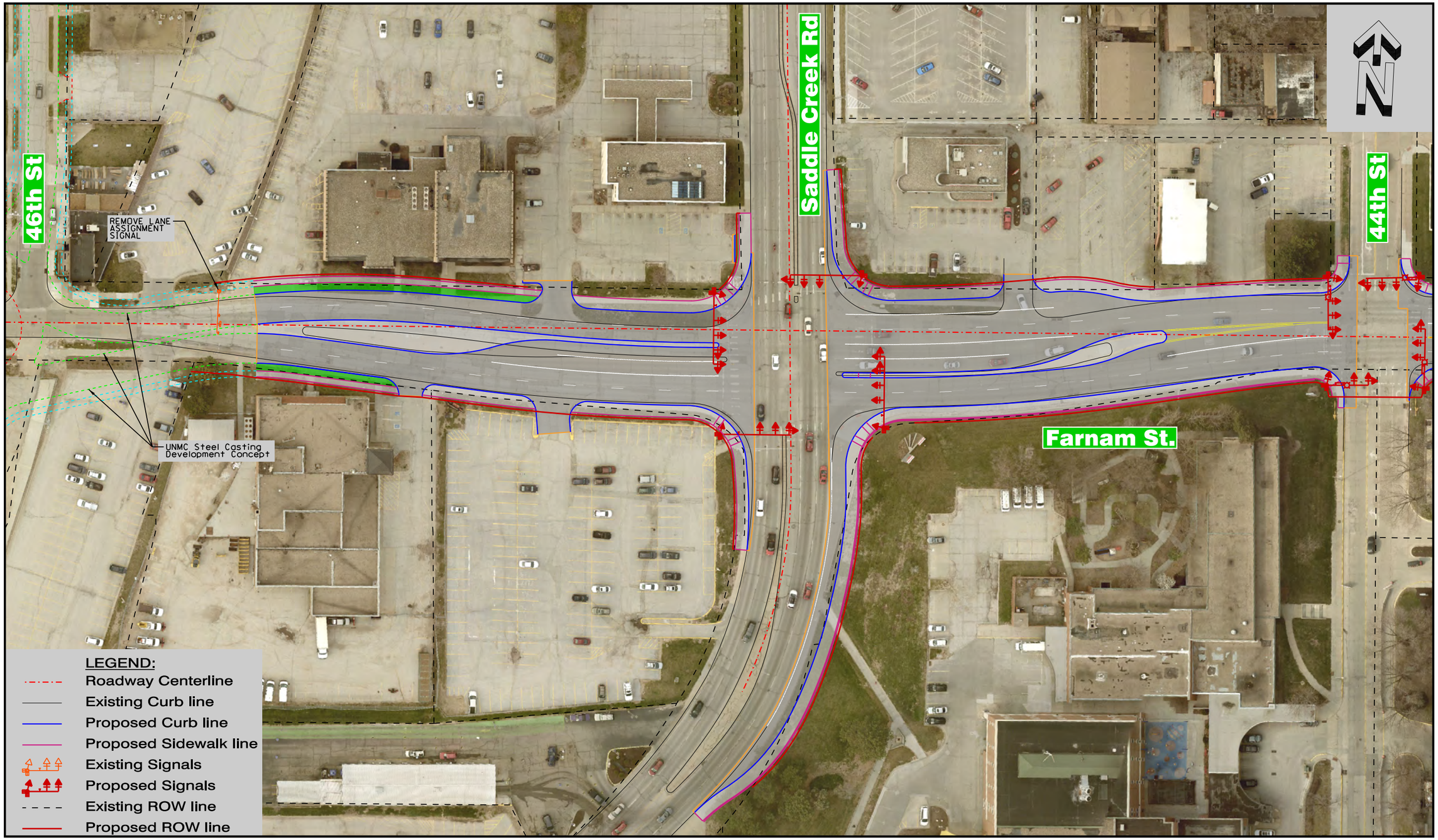
FARNAM STREET: 46TH ST. - 44TH ST.
ALTERNATIVE 2 - DUAL LEFT TURN LANES

FIGURE
C-12



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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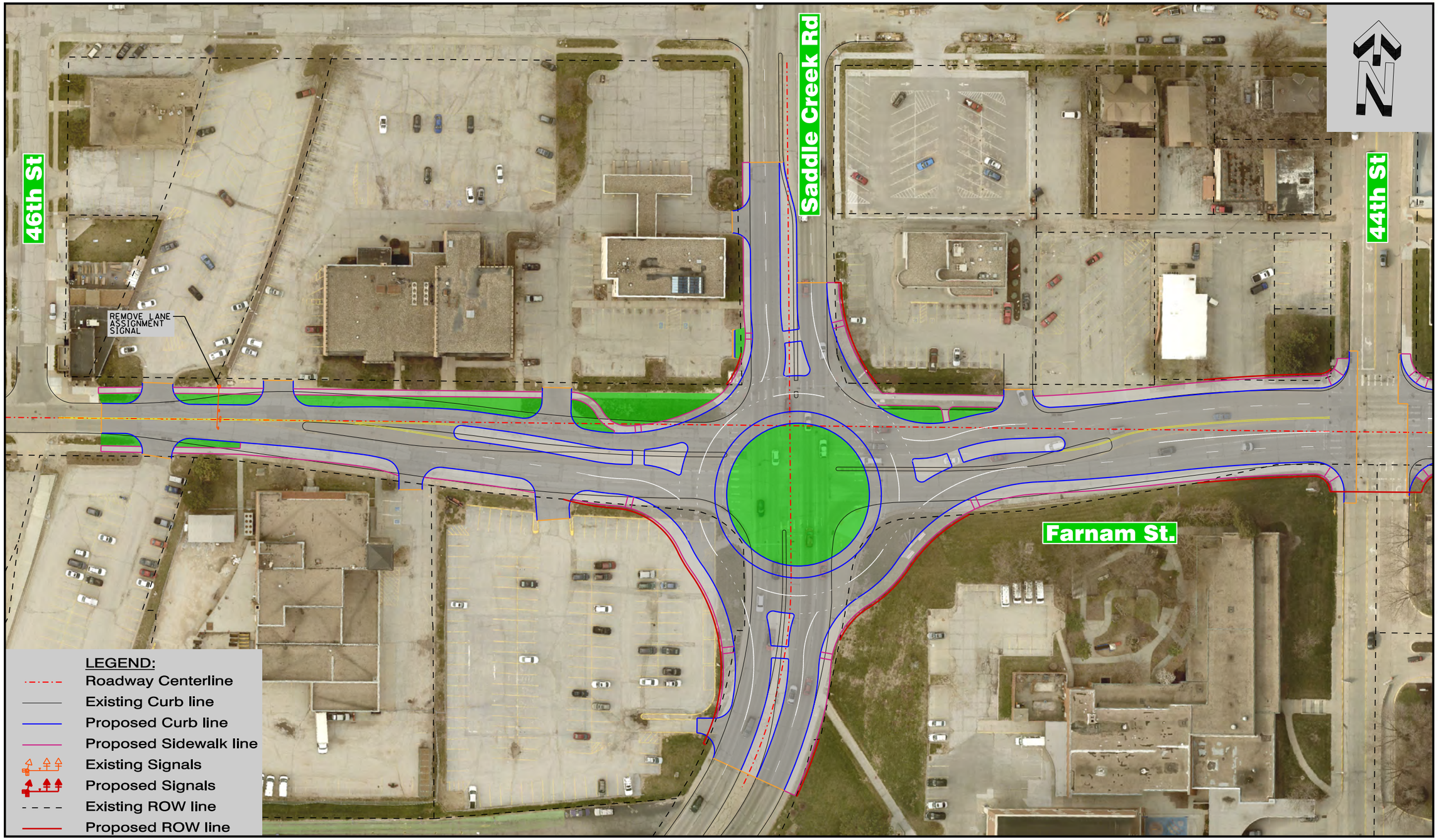
FARNAM STREET: 46TH ST. - 44TH ST.
ALTERNATIVE 3 - ROUNDABOUT

FIGURE
C-13



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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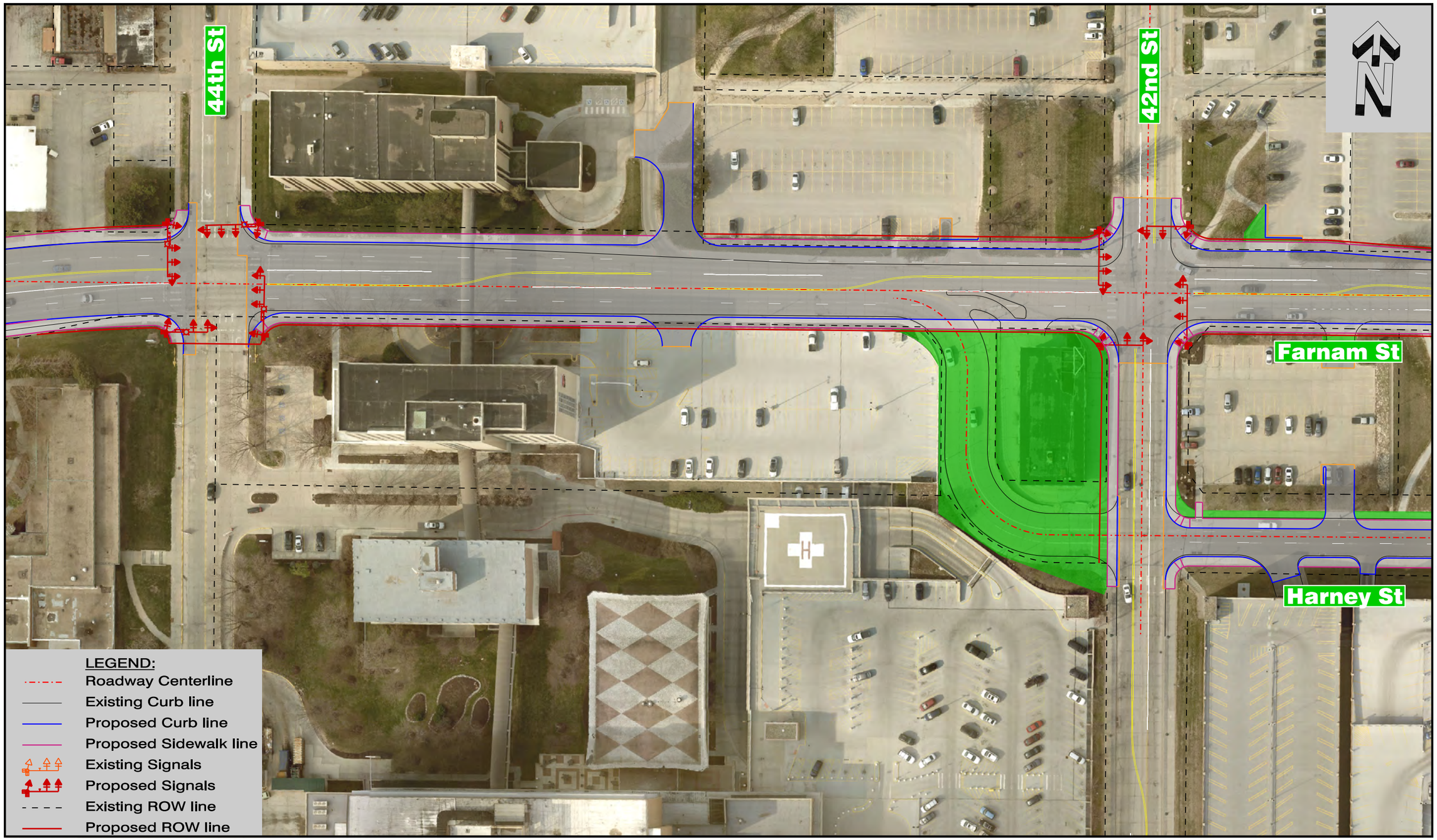
FARNAM STREET: 44TH ST. - 42ND ST.

FIGURE
C-14



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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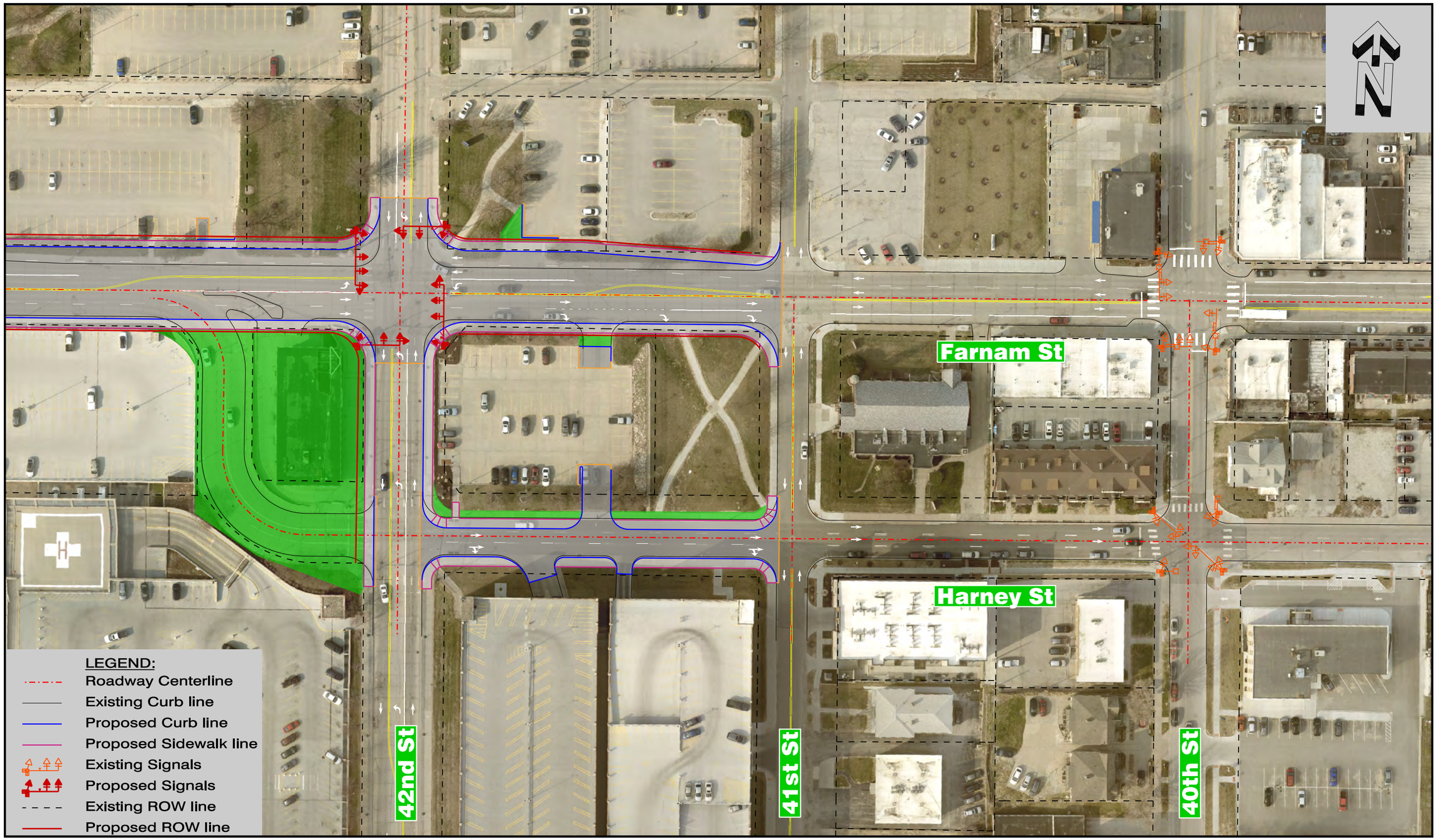
FIGURE
C-15

FARNAM STREET: 42ND ST. - 40TH ST.
ALTERNATIVE 1a - TWO-WAY 41ST STREET



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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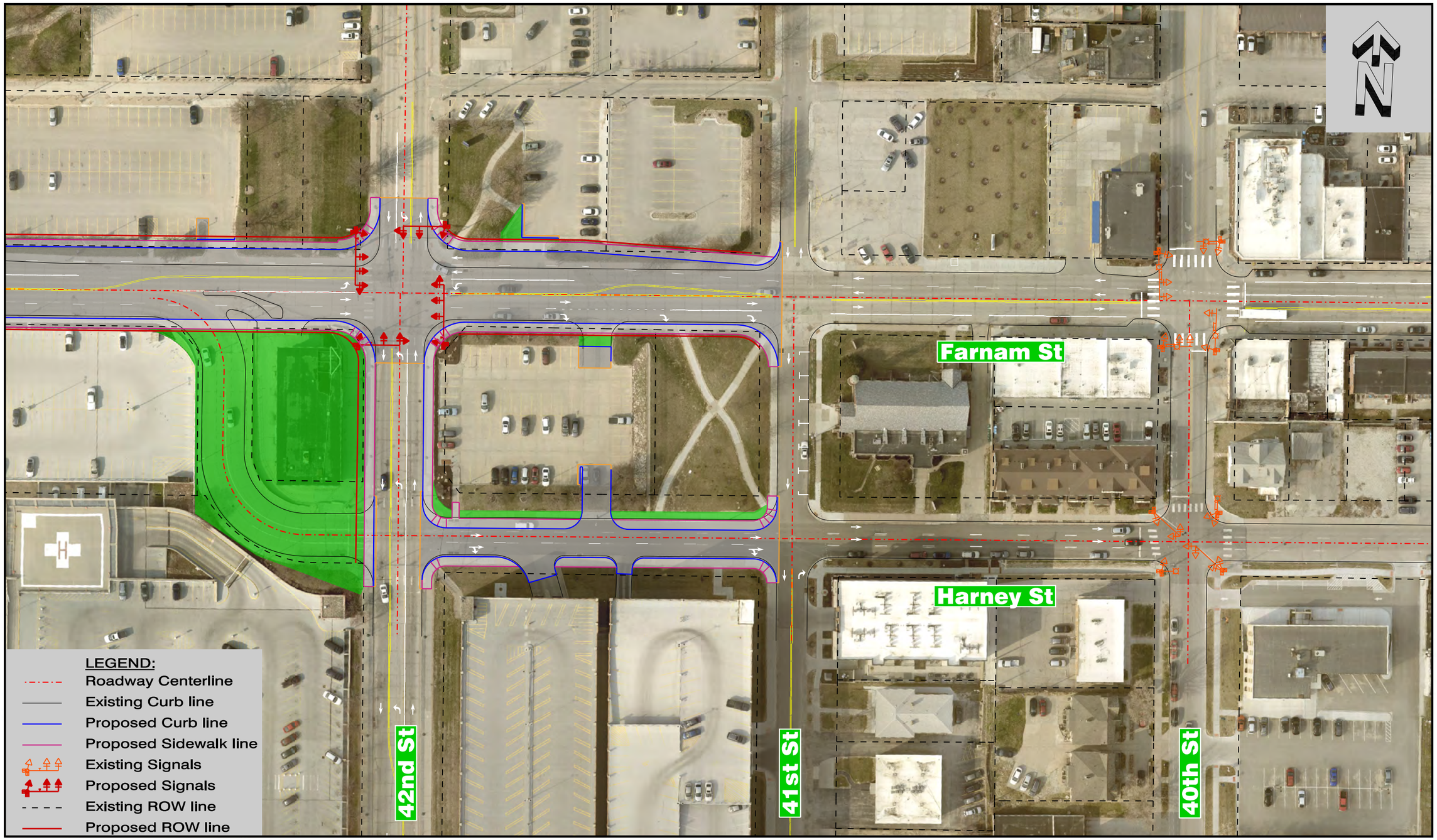
FIGURE
C-16

FARNAM STREET: 42ND ST. - 40TH ST.
ALTERNATIVE 1b - ONE-WAY 41ST STREET



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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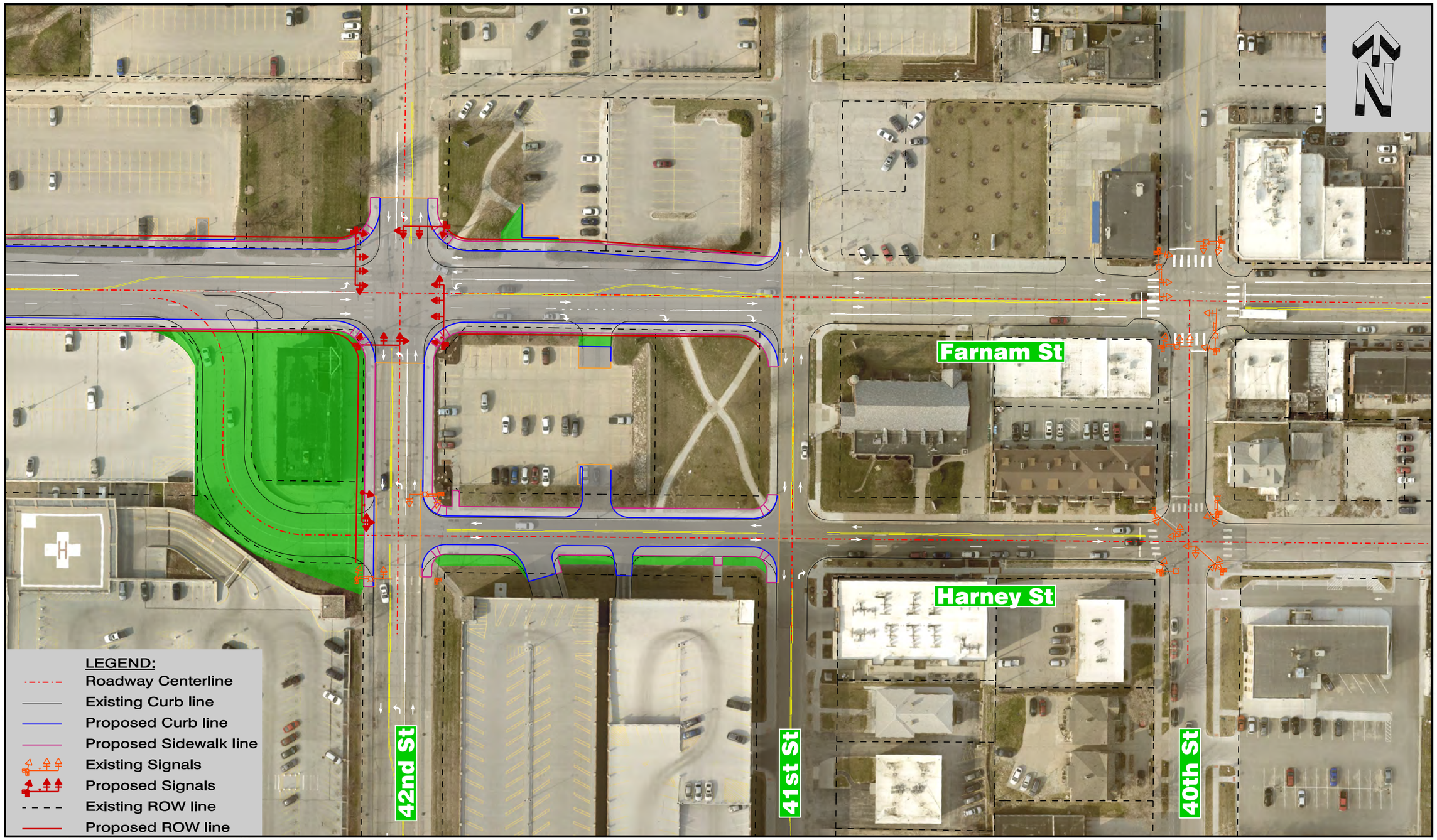
FARNAM STREET: 42ND ST. - 40TH ST.
ALTERNATIVE 1c - TWO-WAY HARNEY

FIGURE
C-17



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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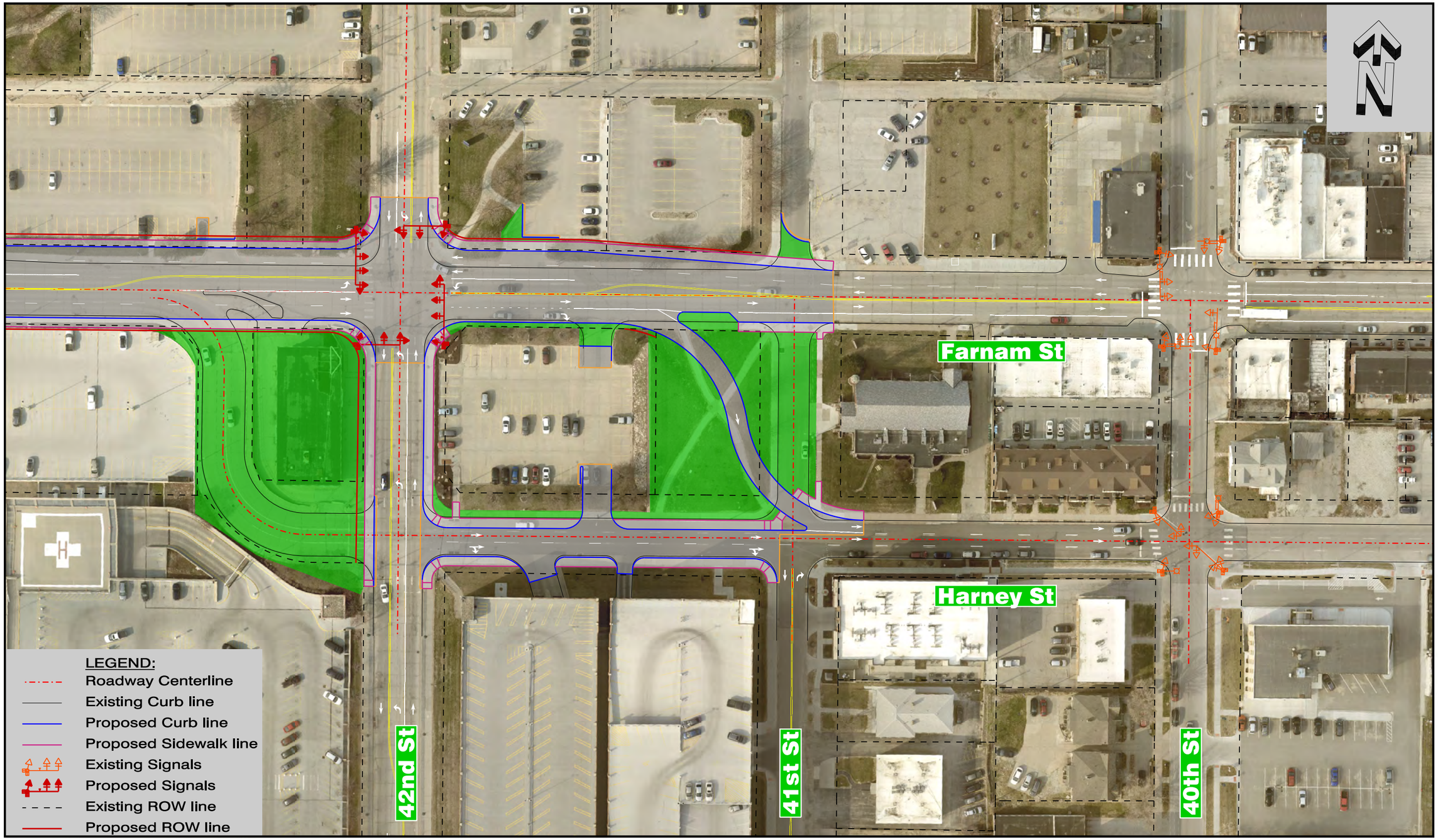
FIGURE
C-18

FARNAM STREET: 42ND ST. - 40TH ST.
ALTERNATIVE 2 - EAST "S" CURVE



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

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0 40 80
GRAPHIC SCALE : FEET

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CITY OF OMAHA
PUBLIC WORKS DEPARTMENT

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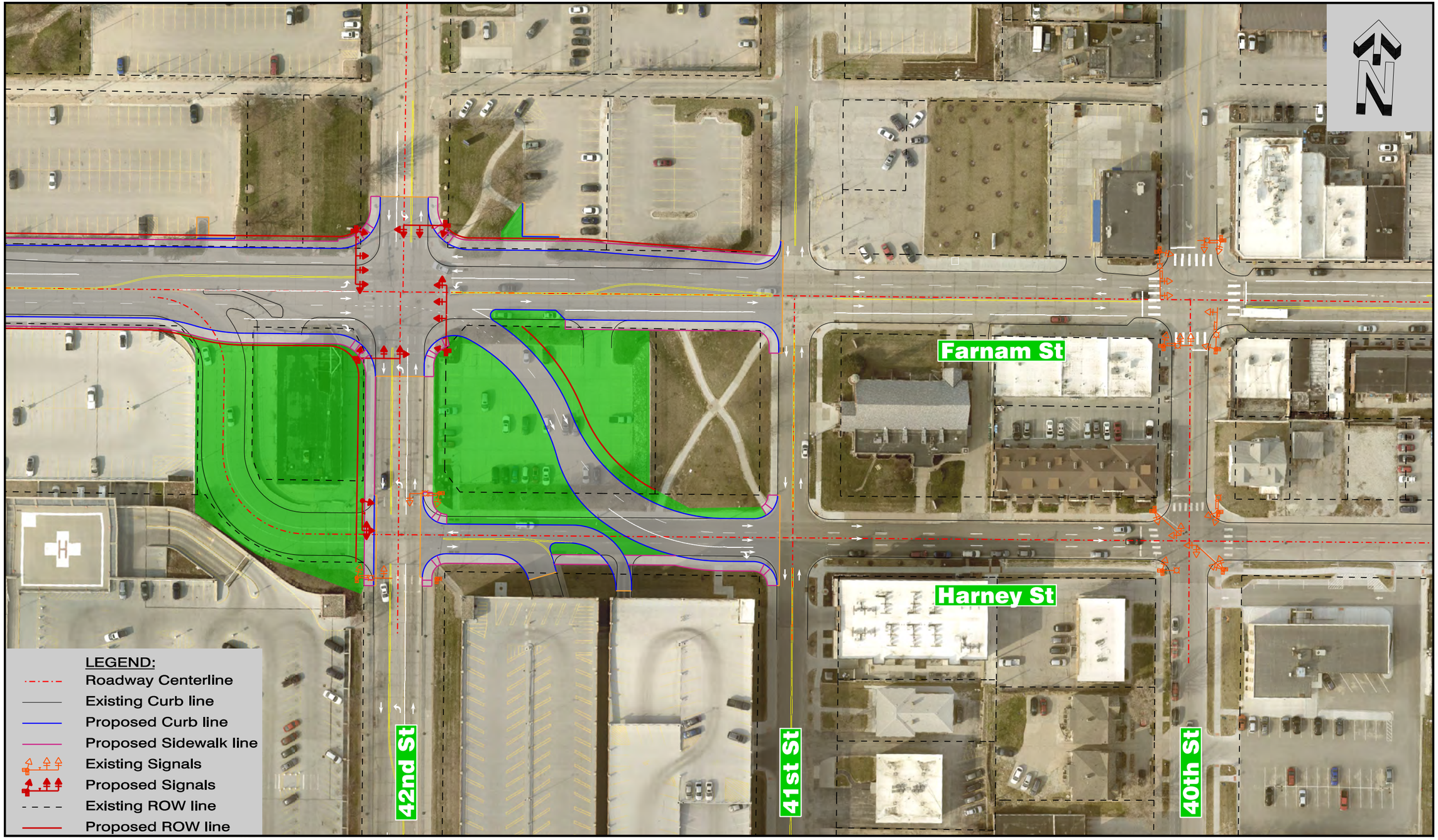
FIGURE
C-19

FARNAM STREET: 42ND ST. - 40TH ST.
ALTERNATIVE 3 - WEST "S" CURVE



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
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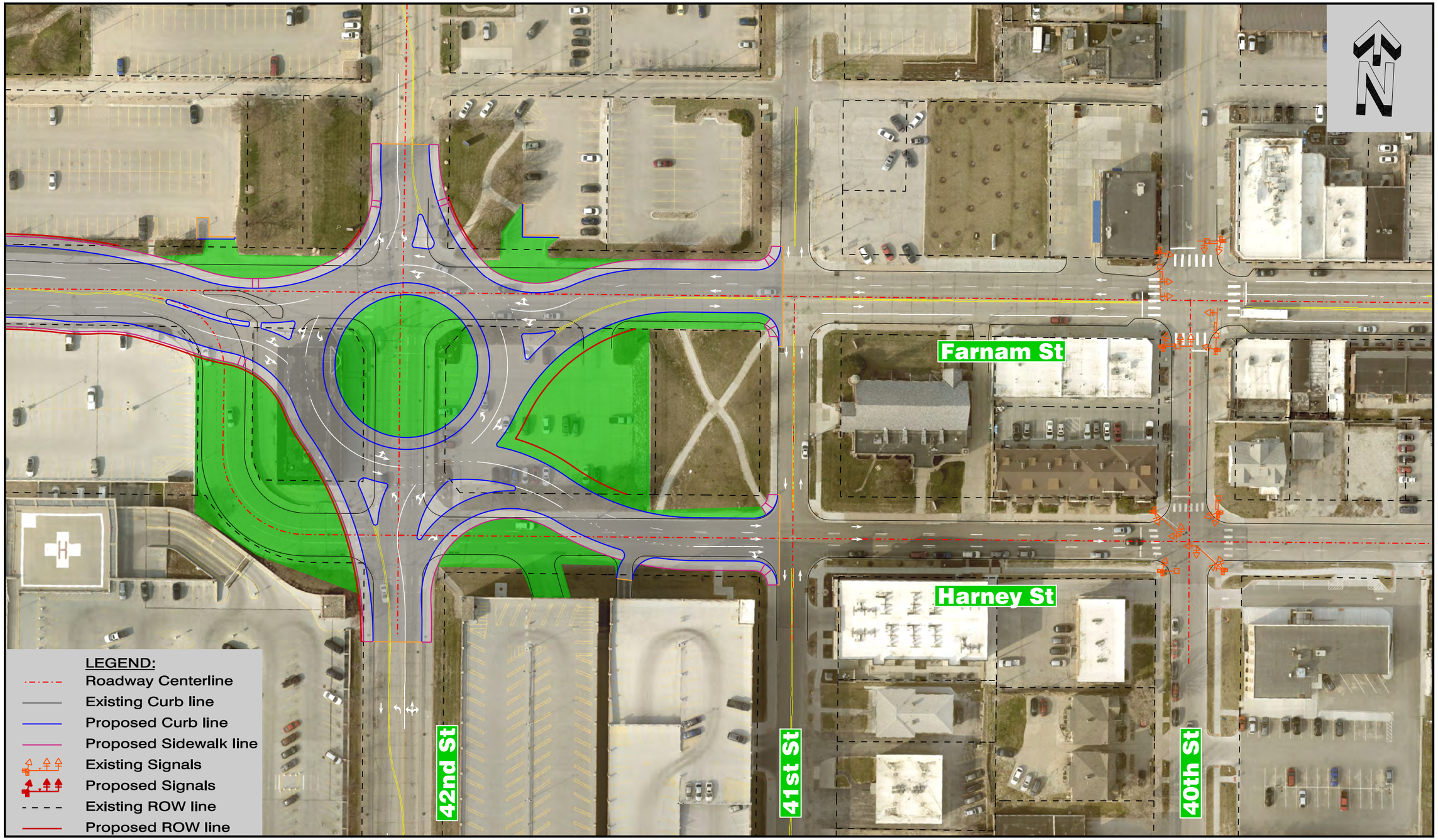
FIGURE
C-20

FARNAM STREET: 42ND ST. - 40TH ST.
ALTERNATIVE 4a - ROUNDABOUT



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

FELSBURG HOLT & ULLEVIG

CITY OF OMAHA
PUBLIC WORKS DEPARTMENT

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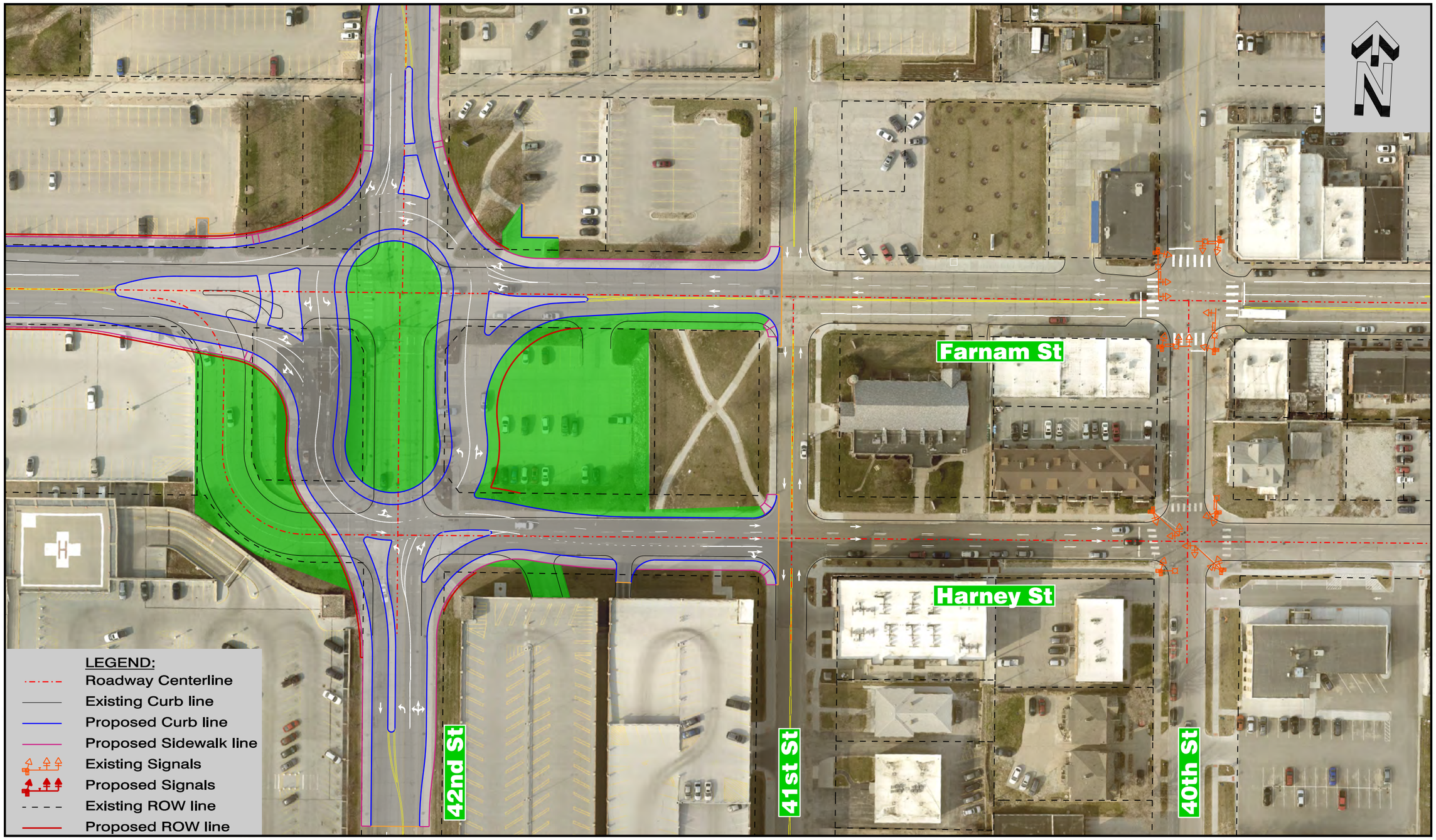
FARNAM STREET: 42ND ST. - 40TH ST.
ALTERNATIVE 4b - PEANUT

FIGURE
C-21



PERMANENT TWO-WAY CONVERSION
FARNAM STREET CORRIDOR STUDY

0 40 80
GRAPHIC SCALE : FEET

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FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
One-way to Two-way Conversion (excluding intersections)
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty		Unit Price		Total
Mobilization - 10%	LS	1	$	4,500.00	$	4,500.00
Remove Roadway	SY		$	10.00	$	-
Construct Sidewalk	SY		$	75.00	$	-
Construct Median Surfacing	SY		$	75.00	$	-
Construct Pavement	SY		$	100.00	$	-
Install Pavement Markings	LF	5,800	$	5.00	$	29,000.00
Lane Assignment Signal Removal	EA	4	$	4,000.00	$	16,000.00
Right-Of-Way	SF		$	15.00	$	-
Impacted Tracts	EA		$	2,000.00	$	-
0	0		$	-	$	-
		Construction Subtotal			$	49,500.00
Drainage - Contingency	0%		$	-	$	-
Misc - Contingency	20%		$	-	$	9,900.00
Traffic Control	10%		$	-	$	4,950.00
			$	-	$	-
		Group Total			**$**	**64,350.00**

Project Related Items

	2021 Estimate		Total
PE	12.00%		$ 7,722.00
Construction Engineer	12.00%		$ 7,722.00
	Total Project Cost		**$ 79,794.00**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
52nd Street - Alternative 1 - Left Turn Lanes
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty	Unit Price	Total
Mobilization - 10%	LS	1	$ 63,430.00	$ 63,430.00
Remove Roadway	SY	1,800	$ 10.00	$ 18,000.00
Construct Sidewalk	SY	620	$ 75.00	$ 46,500.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	2,350	$ 100.00	$ 235,000.00
Install Pavement Markings	LF	1,800	$ 5.00	$ 9,000.00
Traffic Signal	EA	4	$ 80,000.00	$ 320,000.00
Right-Of-Way	SF	120	$ 15.00	$ 1,800.00
Impacted Tracts	EA	2	$ 2,000.00	$ 4,000.00
0	0		$ -	$ -
		Construction Subtotal		$ 697,730.00
Drainage - Contingency	25%		$ -	$ 174,432.50
Misc - Contingency	20%		$ -	$ 139,546.00
Traffic Control	10%		$ -	$ 69,773.00
			$ -	$ -
		Group Total		**$ 1,081,481.50**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 129,777.78
Construction Engineer	12.00%	$ 129,777.78
	Total Project Cost	**$ 1,341,037.06**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
52nd Street - Alternative 2 - Left/Right Turn Lanes
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty	Unit Price	Total
Mobilization - 10%	LS	1	$ 71,117.50	$ 71,120.00
Remove Roadway	SY	1,800	$ 10.00	$ 18,000.00
Construct Sidewalk	SY	625	$ 75.00	$ 46,875.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	2,725	$ 100.00	$ 272,500.00
Install Pavement Markings	LF	1,940	$ 5.00	$ 9,700.00
Traffic Signal	EA	4	$ 80,000.00	$ 320,000.00
Right-Of-Way	SF	2,540	$ 15.00	$ 38,100.00
Impacted Tracts	EA	3	$ 2,000.00	$ 6,000.00
0	0		$ -	$ -
		Construction Subtotal		$ 782,295.00
Drainage - Contingency	25%		$ -	$ 195,573.75
Misc - Contingency	20%		$ -	$ 156,459.00
Traffic Control	10%		$ -	$ 78,229.50
			$ -	$ -
		Group Total		**$ 1,212,557.25**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 145,506.87
Construction Engineer	12.00%	$ 145,506.87
	Total Project Cost	**$ 1,503,570.99**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
52nd Street - Alternative 3 - Roundabout
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty	Unit Price	Total
Mobilization - 10%	LS	1	$ 36,955.00	$ 36,960.00
Remove Roadway	SY	2,270	$ 10.00	$ 22,700.00
Construct Sidewalk	SY	640	$ 75.00	$ 48,000.00
Construct Median Surfacing	SY	235	$ 75.00	$ 17,625.00
Construct Pavement	SY	2,385	$ 100.00	$ 238,500.00
Install Pavement Markings	LF	1,650	$ 5.00	$ 8,250.00
Traffic Signal	EA	0	$ 80,000.00	$ -
Right-Of-Way	SF	1,765	$ 15.00	$ 26,475.00
Impacted Tracts	EA	4	$ 2,000.00	$ 8,000.00
0	0		$ -	$ -
		Construction Subtotal		$ 406,510.00
Drainage - Contingency	25%		$ -	$ 101,627.50
Misc - Contingency	20%		$ -	$ 81,302.00
Traffic Control	10%		$ -	$ 40,651.00
			$ -	$ -
		Group Total		**$ 630,090.50**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 75,610.86
Construction Engineer	12.00%	$ 75,610.86
	Total Project Cost	**$ 781,312.22**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
50th Street - Alternative 1 - Left Turn Lanes
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty	Unit Price	Total
Mobilization - 10%	LS	1	$ 64,142.50	$ 64,150.00
Remove Roadway	SY	1,830	$ 10.00	$ 18,300.00
Construct Sidewalk	SY	600	$ 75.00	$ 45,000.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	2,415	$ 100.00	$ 241,500.00
Install Pavement Markings	LF	2,000	$ 5.00	$ 10,000.00
Traffic Signal	EA	4	$ 80,000.00	$ 320,000.00
Right-Of-Way	SF	175	$ 15.00	$ 2,625.00
Impacted Tracts	EA	2	$ 2,000.00	$ 4,000.00
0	0		$ -	$ -
		Construction Subtotal		$ 705,575.00
Drainage - Contingency	25%		$ -	$ 176,393.75
Misc - Contingency	20%		$ -	$ 141,115.00
Traffic Control	10%		$ -	$ 70,557.50
			$ -	$ -
		Group Total		**$ 1,093,641.25**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 131,236.95
Construction Engineer	12.00%	$ 131,236.95
	Total Project Cost	**$ 1,356,115.15**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
50th Street - Alternative 2 - Left/Right Turn Lanes
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty	Unit Price	Total
Mobilization - 10%	LS	1	$ 71,002.50	$ 71,010.00
Remove Roadway	SY	1,830	$ 10.00	$ 18,300.00
Construct Sidewalk	SY	600	$ 75.00	$ 45,000.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	2,850	$ 100.00	$ 285,000.00
Install Pavement Markings	LF	2,050	$ 5.00	$ 10,250.00
Traffic Signal	EA	4	$ 80,000.00	$ 320,000.00
Right-Of-Way	SF	1,565	$ 15.00	$ 23,475.00
Impacted Tracts	EA	4	$ 2,000.00	$ 8,000.00
0	0		$ -	$ -
		Construction Subtotal		$ 781,035.00
Drainage - Contingency	25%		$ -	$ 195,258.75
Misc - Contingency	20%		$ -	$ 156,207.00
Traffic Control	10%		$ -	$ 78,103.50
			$ -	$ -
		Group Total		**$ 1,210,604.25**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 145,272.51
Construction Engineer	12.00%	$ 145,272.51
	Total Project Cost	**$ 1,501,149.27**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
50th Street - Alternative 3 - Roundabout
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty	Unit Price	Total
Mobilization - 10%	LS	1	$ 36,751.50	$ 36,760.00
Remove Roadway	SY	2,275	$ 10.00	$ 22,750.00
Construct Sidewalk	SY	635	$ 75.00	$ 47,625.00
Construct Median Surfacing	SY	205	$ 75.00	$ 15,375.00
Construct Pavement	SY	2,500	$ 100.00	$ 250,000.00
Install Pavement Markings	LF	1,675	$ 5.00	$ 8,375.00
Traffic Signal	EA	0	$ 80,000.00	$ -
Right-Of-Way	SF	1,026	$ 15.00	$ 15,390.00
Impacted Tracts	EA	4	$ 2,000.00	$ 8,000.00
0	0		$ -	$ -
		Construction Subtotal		$ 404,275.00
Drainage - Contingency	25%		$ -	$ 101,068.75
Misc - Contingency	20%		$ -	$ 80,855.00
Traffic Control	10%		$ -	$ 40,427.50
			$ -	$ -
		Group Total		**$ 626,626.25**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 75,195.15
Construction Engineer	12.00%	$ 75,195.15
	Total Project Cost	**$ 777,016.55**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
Saddle Creek - Alternative 1 - Left Turn Lanes
Monday, November 8, 2021

Construction Items

	Units	Qty	2021 Estimate Unit Price	Total
Mobilization - 10%	LS	1	$ 125,875.00	$ 125,880.00
Remove Roadway	SY	7,400	$ 10.00	$ 74,000.00
Construct Sidewalk	SY	2,470	$ 75.00	$ 185,250.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	7,380	$ 100.00	$ 738,000.00
Install Pavement Markings	LF	4,300	$ 5.00	$ 21,500.00
Traffic Signal	EA	3	$ 80,000.00	$ 240,000.00
Right-Of-Way	SF	7,366	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,384,630.00
Drainage - Contingency	25%		$ -	$ 346,157.50
Misc - Contingency	20%		$ -	$ 276,926.00
Traffic Control	10%		$ -	$ 138,463.00
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

		Group Total	**$ 2,146,176.50**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 257,541.18
Construction Engineer	12.00%	$ 257,541.18
	Total Project Cost	**$ 2,661,258.86**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
Saddle Creek - Alternative 2 - Dual Left Turn Lanes
Monday, November 8, 2021

Construction Items

	Units	Qty	2021 Estimate Unit Price	Total
Mobilization - 10%	LS	1	$ 142,072.50	$ 142,080.00
Remove Roadway	SY	6,950	$ 10.00	$ 69,500.00
Construct Sidewalk	SY	2,215	$ 75.00	$ 166,125.00
Construct Median Surfacing	SY	760	$ 75.00	$ 57,000.00
Construct Pavement	SY	7,905	$ 100.00	$ 790,500.00
Install Pavement Markings	LF	3,520	$ 5.00	$ 17,600.00
Traffic Signal	EA	4	$ 80,000.00	$ 320,000.00
Right-Of-Way	SF	15,258	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,562,805.00
Drainage - Contingency	25%		$ -	$ 390,701.25
Misc - Contingency	20%		$ -	$ 312,561.00
Traffic Control	10%		$ -	$ 156,280.50
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

		Group Total	**$ 2,422,347.75**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 290,681.73
Construction Engineer	12.00%	$ 290,681.73
	Total Project Cost	**$ 3,003,711.21**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
Saddle Creek - Alternative 3 - Roundabout
Monday, November 8, 2021

Construction Items

	Units	Qty	2021 Estimate Unit Price	Total
Mobilization - 10%	LS	1	$ 129,127.50	$ 129,130.00
Remove Roadway	SY	10,690	$ 10.00	$ 106,900.00
Construct Sidewalk	SY	2,200	$ 75.00	$ 165,000.00
Construct Median Surfacing	SY	975	$ 75.00	$ 73,125.00
Construct Pavement	SY	9,265	$ 100.00	$ 926,500.00
Install Pavement Markings	LF	3,950	$ 5.00	$ 19,750.00
Traffic Signal	EA	0	$ 80,000.00	$ -
Right-Of-Way	SF	12,600	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,420,405.00
Drainage - Contingency	25%		$ -	$ 355,101.25
Misc - Contingency	20%		$ -	$ 284,081.00
Traffic Control	10%		$ -	$ 142,040.50
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

		Group Total	**$ 2,201,627.75**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 264,195.33
Construction Engineer	12.00%	$ 264,195.33
	Total Project Cost	**$ 2,730,018.41**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
42nd Street - Alternative 1a - Two-Way 41st Street
Monday, November 8, 2021

Construction Items

	Units	Qty	2021 Estimate Unit Price	Total
Mobilization - 10%	LS	1	$ 158,632.50	$ 158,640.00
Remove Roadway	SY	8,800	$ 10.00	$ 88,000.00
Construct Sidewalk	SY	2,520	$ 75.00	$ 189,000.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	9,415	$ 100.00	$ 941,500.00
Install Pavement Markings	LF	9,565	$ 5.00	$ 47,825.00
Traffic Signal	EA	4	$ 80,000.00	$ 320,000.00
Right-Of-Way	SF	10,924	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,744,965.00
Drainage - Contingency	25%		$ -	$ 436,241.25
Misc - Contingency	20%		$ -	$ 348,993.00
Traffic Control	10%		$ -	$ 174,496.50
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

Group Total	**$**	**2,704,695.75**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 324,563.49
Construction Engineer	12.00%	$ 324,563.49
Total Project Cost	**$**	**3,353,822.73**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
42nd Street - Alternative 1b - One-Way 41st Street
Monday, November 8, 2021

Construction Items

	Units	Qty	2021 Estimate Unit Price	Total
Mobilization - 10%	LS	1	$ 158,547.50	$ 158,550.00
Remove Roadway	SY	8,810	$ 10.00	$ 88,100.00
Construct Sidewalk	SY	2,520	$ 75.00	$ 189,000.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	9,415	$ 100.00	$ 941,500.00
Install Pavement Markings	LF	9,375	$ 5.00	$ 46,875.00
Traffic Signal	EA	4	$ 80,000.00	$ 320,000.00
Right-Of-Way	SF	10,924	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,744,025.00
Drainage - Contingency	25%		$ -	$ 436,006.25
Misc - Contingency	20%		$ -	$ 348,805.00
Traffic Control	10%		$ -	$ 174,402.50
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

Group Total **$ 2,703,238.75**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 324,388.65
Construction Engineer	12.00%	$ 324,388.65
	Total Project Cost	**$ 3,352,016.05**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
42nd Street - Alternative 1c - Two-Way Harney
Monday, November 8, 2021

Construction Items

	Units	Qty	2021 Estimate Unit Price	Total
Mobilization - 10%	LS	1	$ 166,960.00	$ 166,960.00
Remove Roadway	SY	8,810	$ 10.00	$ 88,100.00
Construct Sidewalk	SY	2,520	$ 75.00	$ 189,000.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	9,435	$ 100.00	$ 943,500.00
Install Pavement Markings	LF	9,800	$ 5.00	$ 49,000.00
Traffic Signal	EA	5	$ 80,000.00	$ 400,000.00
Right-Of-Way	SF	10,924	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,836,560.00
Drainage - Contingency	25%		$ -	$ 459,140.00
Misc - Contingency	20%		$ -	$ 367,312.00
Traffic Control	10%		$ -	$ 183,656.00
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

		Group Total	**$ 2,846,668.00**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 341,600.16
Construction Engineer	12.00%	$ 341,600.16
	Total Project Cost	**$ 3,529,868.32**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
42nd Street - Alternative 2 - East "S" Curve
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty	Unit Price	Total
Mobilization - 10%	LS	1	$ 164,447.50	$ 164,450.00
Remove Roadway	SY	9,685	$ 10.00	$ 96,850.00
Construct Sidewalk	SY	2,440	$ 75.00	$ 183,000.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	9,975	$ 100.00	$ 997,500.00
Install Pavement Markings	LF	9,425	$ 5.00	$ 47,125.00
Traffic Signal	EA	4	$ 80,000.00	$ 320,000.00
Right-Of-Way	SF	21,693	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,808,925.00
Drainage - Contingency	25%		$ -	$ 452,231.25
Misc - Contingency	20%		$ -	$ 361,785.00
Traffic Control	10%		$ -	$ 180,892.50
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

Group Total	**$**	**2,803,833.75**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 336,460.05
Construction Engineer	12.00%	$ 336,460.05
Total Project Cost	**$**	**3,476,753.85**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
42nd Street - Alternative 3 - West "S" Curve
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty	Unit Price	Total
Mobilization - 10%	LS	1	$ 170,925.00	$ 170,930.00
Remove Roadway	SY	8,800	$ 10.00	$ 88,000.00
Construct Sidewalk	SY	2,100	$ 75.00	$ 157,500.00
Construct Median Surfacing	SY	0	$ 75.00	$ -
Construct Pavement	SY	10,150	$ 100.00	$ 1,015,000.00
Install Pavement Markings	LF	9,750	$ 5.00	$ 48,750.00
Traffic Signal	EA	5	$ 80,000.00	$ 400,000.00
Right-Of-Way	SF	26,751	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,880,180.00
Drainage - Contingency	25%		$ -	$ 470,045.00
Misc - Contingency	20%		$ -	$ 376,036.00
Traffic Control	10%		$ -	$ 188,018.00
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

Group Total **$ 2,914,279.00**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 349,713.48
Construction Engineer	12.00%	$ 349,713.48
	Total Project Cost	**$ 3,613,705.96**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
42nd Street - Alternative 4a-Roundabout
Monday, November 8, 2021

Construction Items

	Units	Qty	2021 Estimate Unit Price	Total
Mobilization - 10%	LS	1	$ 142,197.50	$ 142,200.00
Remove Roadway	SY	10,015	$ 10.00	$ 100,150.00
Construct Sidewalk	SY	2,135	$ 75.00	$ 160,125.00
Construct Median Surfacing	SY	340	$ 75.00	$ 25,500.00
Construct Pavement	SY	10,900	$ 100.00	$ 1,090,000.00
Install Pavement Markings	LF	9,240	$ 5.00	$ 46,200.00
Traffic Signal	EA	0	$ 80,000.00	$ -
Right-Of-Way	SF	28,727	$ -	$ -
Impacted Tracts	EA		$ 2,000.00	$ -
0	0		$ -	$ -
		Construction Subtotal		$ 1,564,175.00
Drainage - Contingency	25%		$ -	$ 391,043.75
Misc - Contingency	20%		$ -	$ 312,835.00
Traffic Control	10%		$ -	$ 156,417.50
			$ -	$ -

NOTE: No ROW cost.
Impacted property is owned by UNMC

Group Total **$ 2,424,471.25**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 290,936.55
Construction Engineer	12.00%	$ 290,936.55
	Total Project Cost	**$ 3,006,344.35**

FARNAM STREET STUDY

Engineer's Standard Bid Item Cost
42nd Street - Alternative 4b - Peanut
Monday, November 8, 2021

Construction Items

	Units	2021 Estimate Qty		Unit Price		Total
Mobilization - 10%	LS	1	$	167,822.50	$	167,830.00
Remove Roadway	SY	11,400	$	10.00	$	114,000.00
Construct Sidewalk	SY	2,575	$	75.00	$	193,125.00
Construct Median Surfacing	SY	1,050	$	75.00	$	78,750.00
Construct Pavement	SY	12,475	$	100.00	$	1,247,500.00
Install Pavement Markings	LF	8,970	$	5.00	$	44,850.00
Traffic Signal	EA	0	$	80,000.00	$	-
Right-Of-Way	SF	28,600	$	-	$	-
Impacted Tracts	EA		$	2,000.00	$	-
0	0		$	-	$	-
		Construction Subtotal			$	1,846,055.00
Drainage - Contingency	25%		$	-	$	461,513.75
Misc - Contingency	20%		$	-	$	369,211.00
Traffic Control	10%		$	-	$	184,605.50
			$	-	$	-

NOTE: No ROW cost.
Impacted property is owned by UNMC

Group Total **$ 2,861,385.25**

Project Related Items

		2021 Estimate Total
PE	12.00%	$ 343,366.23
Construction Engineer	12.00%	$ 343,366.23
	Total Project Cost	**$ 3,548,117.71**

Farnam Street Corridor Study
Alternative Screening Matrix

FELSBURG HOLT & ULLEVIG

Intersection	Alternative	Vehicle Safety (CMF Reduction)	Pedestrian Safety (# of Improvements*)	Project Cost ($)	Minimize ROW Impacts (SQ FT)	Traffic Operations (LOS)	Access Management (Closed, #)
52nd Street & Farnam Street	No-Build	-	-	0	0	F	0
	Alt 1. - Left Turn Lanes	-19%	+1	1.34 MM	120	C	0
	Alt 2. - Left/Right Turn Lanes	-19%	-1	1.50 MM	2540	B	0
	Alt 3. - Roundabout	-21%	+2	0.78 MM	1765	D	+1
50th Street & Farnam Street	No-Build	-	-	0	0	F	0
	Alt 1. - Left Turn Lanes	-19%	+1	1.36 MM	175	E	0
	Alt 2. - Left/Right Turn Lanes	-19%	-1	1.50 MM	1560	D	0
	Alt 3. - Roundabout	-21%	+2	0.78 MM	1025	F	+1
Saddle Creek Road & Farnam Street	No-Build	-	-	0	0	F	0
	Alt 1. - Left Turn Lanes	-4%	+1	2.66 MM	7,366	E	-4
	Alt 2. - Dual Left Turn Lanes	-4%	-1	3.00 MM	15,258	D	+1
	Alt 3. - Roundabout	-21%	+2	2.73 MM	12,600	F	0
42nd Street & Farnam/Harney Streets+	No-Build	-	-	0	0	B	0
	Alt 1. a, b, c - Grid Network	0%	+1	3.55 MM	10,900	B	+1
	Alt 2. - East "S" Curve	+18%	-1	3.48 MM	21,700	B	+1
	Alt 3. - West "S" Curve	+57%	-1	3.61 MM	26,750	B	+1
	Alt 4. a, b - Roundabout / Peanut	-21%	0	3.55 MM	28,700	C	+3

**Improvements include: Crossing Distance Increasing/Decreasing, Refuge Provided/Removed, Ped Signal Phasing Improved/Reduced.*

+ 42nd Street Vehicle Safety is based on Conflict Point increase/decrease in addition to CMFs

APPENDIX D. TRAFFIC CONTROL DEVICE WARRANTS

MUTCD Volume-based Warrant Evaluation - Two-way (2021) - AM
49th St & Farnam St

Major Street: Farnam St
Minor Street: 49th St
Major Street Approach Speed: 30 MPH
Option: Low speed, urban community
Time Period: AM

WARRANT 1, Condition A - Minimum Vehicular Volume | 100% Satisfied | No

	Number of lanes moving traffic	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	1	500 (400)	1083	907	1064	834	628	776	609	746
Highest Apprch. Minor Street	1	150 (120)	25	24	23	20	16	15	15	8

WARRANT 1, Condition B - Interruption of Continuous Traffic | 100% Satisfied | No

	Number of lanes moving traffic	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	1	750 (600)	1083	907	1064	834	628	776	609	746
Highest Apprch. Minor Street	1	75 (60)	25	24	23	20	16	15	15	8

WARRANT 1, Condition A and Condition B | 80% Satisfied | No

WARRANT 2, Four Hour Volume | 100% Satisfied | No

	Number of lanes moving traffic	Peak Hour	2nd Highest	3rd Highest	4th Highest
Both Apprchs. Major Street	1	1083	907	1064	834
Highest Apprch. Minor Street	1	25	24	23	20

MUTCD Volume-based Warrant Evaluation - Two-way (2021) - PM
49th St & Farnam St

Major Street: Farnam St
Minor Street: 49th St
Major Street Approach Speed: 30 MPH
Option: Low speed, urban community
Time Period: PM

WARRANT 1, Condition A - Minimum Vehicular Volume | 100% Satisfied | No

	Number of lanes moving traffic	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	1	500 (400)	1165	975	1145	897	675	834	655	803
Highest Apprch. Minor Street	1	150 (120)	36	35	34	29	23	21	21	12

WARRANT 1, Condition B - Interruption of Continuous Traffic | 100% Satisfied | No

	Number of lanes moving traffic	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	1	750 (600)	1165	975	1145	897	675	834	655	803
Highest Apprch. Minor Street	1	75 (60)	36	35	34	29	23	21	21	12

WARRANT 1, Condition A and Condition B | 80% Satisfied | No

WARRANT 2, Four Hour Volume | 100% Satisfied | No

	Number of lanes moving traffic	Peak Hour	2nd Highest	3rd Highest	4th Highest
Both Apprchs. Major Street	1	1165	975	1145	897
Highest Apprch. Minor Street	1	36	35	34	29

MUTCD Volume-based Warrant Evaluation - Two-way (2040) - AM
49th St & Farnam St

Major Street: Farnam St
Minor Street: 49th St
Major Street Approach Speed: 30 MPH
Option: Low speed, urban community
Time Period: AM

WARRANT 1, Condition A - Minimum Vehicular Volume | 100% Satisfied | No

	Number of lanes moving traffic	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	1	500 (400)	1220	1021	1199	939	707	874	686	841
Highest Apprch. Minor Street	1	150 (120)	30	29	28	24	19	18	17	10

WARRANT 1, Condition B - Interruption of Continuous Traffic | 100% Satisfied | No

	Number of lanes moving traffic	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	1	750 (600)	1220	1021	1199	939	707	874	686	841
Highest Apprch. Minor Street	1	75 (60)	30	29	28	24	19	18	17	10

WARRANT 1, Condition A and Condition B | 80% Satisfied | No

WARRANT 2, Four Hour Volume | 100% Satisfied | No

	Number of lanes moving traffic	Peak Hour	2nd Highest	3rd Highest	4th Highest
Both Apprchs. Major Street	1	1220	1021	1199	939
Highest Apprch. Minor Street	1	30	29	28	24

MUTCD Volume-based Warrant Evaluation - Two-way (2021) - PM
49th St & Farnam St

Major Street: Farnam St
Minor Street: 49th St
Major Street Approach Speed: 30 MPH
Option: Low speed, urban community
Time Period: PM

FELSBURG HOLT & ULLEVIG
connecting & enhancing communities

WARRANT 1, Condition A - Minimum Vehicular Volume | 100% Satisfied | No

	Number of lanes moving traffic	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	1	500 (400)	1455	1218	1430	1120	844	1042	818	1002
Highest Apprch. Minor Street	1	150 (120)	45	43	42	36	29	27	26	14

WARRANT 1, Condition B - Interruption of Continuous Traffic | 100% Satisfied | No

	Number of lanes moving traffic	Vehicles per hour 100% (80%)	Peak Hour	2nd Highest	3rd Highest	4th Highest	5th Highest	6th Highest	7th Highest	8th Highest
Both Apprchs. Major Street	1	750 (600)	1455	1218	1430	1120	844	1042	818	1002
Highest Apprch. Minor Street	1	75 (60)	45	43	42	36	29	27	26	14

WARRANT 1, Condition A and Condition B | 80% Satisfied | No

WARRANT 2, Four Hour Volume | 100% Satisfied | No

	Number of lanes moving traffic	Peak Hour	2nd Highest	3rd Highest	4th Highest
Both Apprchs. Major Street	1	1455	1218	1430	1120
Highest Apprch. Minor Street	1	45	43	42	36

APPENDIX E. AUXILIARY LANE ANALYSIS

Farnam Street Corridor Study

Alternatives Turn Lane Lengths

FELSBURG HOLT & ULLEVIG

Intersection	Alternative	EB Left-turn Lane Lengths (Feet)	EB Right-turn Lane Lengths (Feet)	WB Left-turn Lane Lengths (Feet)	WB Right-turn Lane Lengths (Feet)	NB Left-turn Lane Lengths (Feet)	NB Right-turn Lane Lengths (Feet)	SB Left-turn Lane Lengths (Feet)	SB Right-turn Lane Lengths (Feet)
52nd Street & Farnam Street	No-Build	-	35	-	40	-	40	-	25
	Alt 1. - Left Turn Lanes	80	-	100	-	-	40	-	25
	Alt 2. - Left/Right Turn Lanes	80	65	100	100	-	40	-	25
	Alt 3. - Roundabout	-	-	-	-	-	-	-	-
50th Street with Farnam Street	No-Build	-	40	-	40	-	45	-	40
	Alt 1. - Left Turn Lanes	90	-	95	-	-	45	-	40
	Alt 2. - Left/Right Turn Lanes	90	75	95	75	-	45	-	40
	Alt 3. - Roundabout	-	-	-	-	-	-	-	-
Saddle Creek Road & Farnam Street	No-Build	110	-	85	60	75	-	125	-
	Alt 1. - Left Turn Lanes	140	205	185	-	75	-	125	-
	Alt 2. - Dual Left Turn Lanes	135/190	-	140/190	175	75	240	125	-
	Alt 3. - Roundabout	-	-	-	-	-	-	-	-
42nd Street & Farnam Street	No-Build	-	-	-	-	120	-	95	-
	Alt 1. a, b, c - Grid Network	150	-	100	-	320	-	95	-
	Alt 2. - East "S" Curve	150	-	100	-	320	-	95	-
	Alt 3. - West "S" Curve	150	95	100	-	140	-	95	-
	Alt 4. a, b - Roundabout / Peanut	-	-	-	-	210	90	150	-

**If two measurements are shown, dual lanes present. Inside turn-lane lengths are listed first.*

Farnam Street Corridor Study

Warrant Analysis for Two-way Existing (2021) Operations

Intersections (w/ Farnam Street)		**Farnam Street;** Warrant Analysis for Two-way Existing (2021) Operations							
		Existing Traf. Control	**Minor Approach***		**Left-turn Lane***		**Right-turn Lane***		**MUTCD Signal Warrants**
			Northbound	Southbound	Eastbound	Westbound	Eastbound	Westbound	
1220	Dodge Street	Signal	-	-	-	-	-	-	-
27	Happy Hollow Blvd & Dodge	Signal	-	-	-	-	-	-	-
28	Happy Hollow Blvd	Signal	Yes (AM/PM)	-	Yes (AM/PM)	Yes (AM/PM)	Yes (PM)	No	Warrant 1-B, 2
9057	57th Street	TWSC	-	-	-	-	-	-	-
379	52nd Street	Signal	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	No	No	No
371	51st Street	Ped. Signal	-	-	-	-	-	-	-
362	50th Street	Signal	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	No	Yes (PM)	Warrant 1-B, 2
9049	49th Street	TWSC	Yes (PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (PM)	No	No	No
-	48th Street	TWSC	-	-	-	-	-	-	-
9046	46th Street	TWSC	-	Yes (AM/PM)	Yes (AM/PM)	-	-	No	No
76	Saddle Creek Road	Signal	-	-	-	-	-	-	-
340	44th Street	Signal	Yes (PM)	No	Yes (AM/PM)	Yes (AM/PM)	No	No	No
323	42nd Street	Signal	Yes (AM/PM)	Yes (AM/PM)	-	Yes (AM/PM)	-	No	Warrant 1-A & B, 2
307	40th Street	Signal	Yes (PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	No	No	Warrant 1-B
326	42nd Street & Harney Street	Signal	Yes (AM/PM)	-	-	-	No	-	Warrant 1-A & B, 2
309	40th Street & Harney Street	Signal	No	No	-	-	No	-	No

*NCHRP 457 methodology TWSC = Two-way Stop Controlled - = Warrants not analyzed/applicable AM / PM = Warranted, for listed peak period(s)

Farnam Street Corridor Study

Warrant Analysis for Two-way Future (2040) Operations

Intersections (w/ Farnam Street)		**Farnam Street;** Warrant Analysis for Two-way Future (2040) Operations							
		Existing Traf. Control	**Minor Approach***		**Left-turn Lane***		**Right-turn Lane***		**MUTCD Signal Warrants**
			Northbound	Southbound	Eastbound	Westbound	Eastbound	Westbound	
1220	Dodge Street	Signal	-	-	-	-	-	-	-
27	Happy Hollow Blvd & Dodge	Signal	-	-	-	-	-	-	-
28	Happy Hollow Blvd	Signal	Yes (AM/PM)	-	Yes (AM/PM)	Yes (AM/PM)	Yes (PM)	No	Warrant 1-B, 2
9057	57th Street	TWSC	-	-	-	-	-	-	-
379	52nd Street	Signal	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	No	Yes (PM)	Warrant 1-B, 2
371	51st Street	Ped. Signal	-	-	-	-	-	-	-
362	50th Street	Signal	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	No	Yes (PM)	Warrant 1-A & B, 2
9049	49th Street	TWSC	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (PM)	No	Yes (PM)	No
-	48th Street	TWSC	-	-	-	-	-	-	-
9046	46th Street	TWSC	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	No	Yes (PM)	Warrant 1-B, 2
76	Saddle Creek Road	Signal	-	-	-	-	-	-	-
340	44th Street	Signal	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	No	No	Warrant 2
323	42nd Street	Signal	Yes (AM/PM)	Yes (AM/PM)	-	Yes (AM/PM)	-	No	Warrant 1-A & B, 2
307	40th Street	Signal	Yes (PM)	Yes (AM/PM)	Yes (AM/PM)	Yes (AM/PM)	No	Yes (AM/PM)	Warrant 1-B
326	42nd Street & Harney Street	Signal	Yes (AM/PM)	-	-	-	No	-	Warrant 1-A & B, 2
309	40th Street & Harney Street	Signal	No	No	-	-	No	-	No

*NCHRP 457 methodology TWSC = Two-way Stop Controlled - = Warrants not analyzed/applicable AM / PM = Warranted, for listed peak period(s)

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1083
Percentage of right-turns on minor road, %:	38%
Minor-road volume (one direction), veh/h:	8

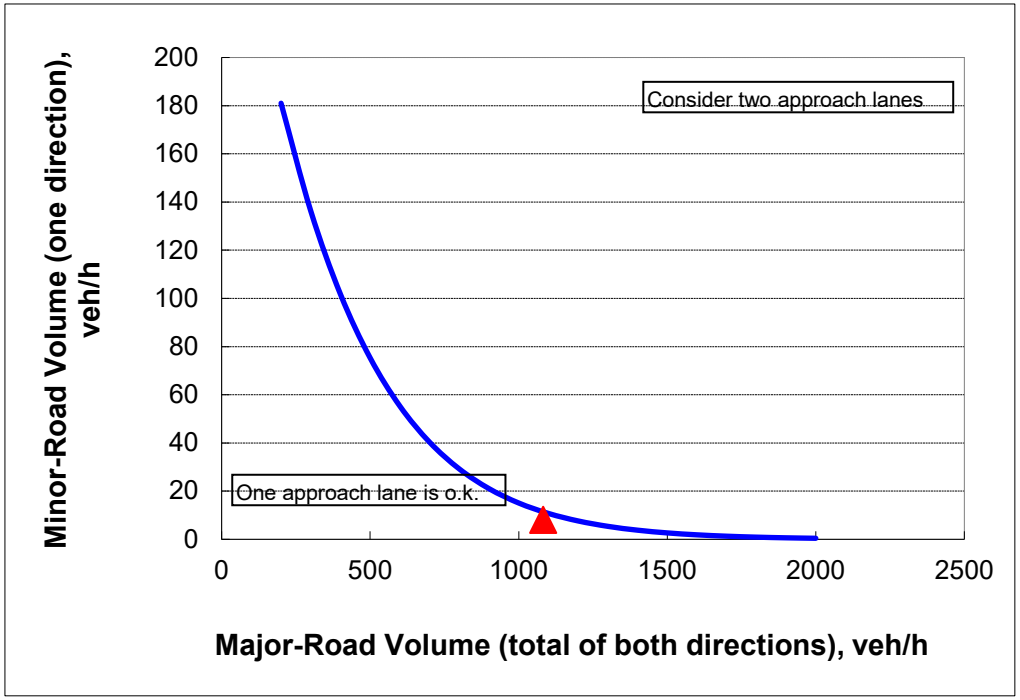
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	11
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	10	5
Left-turn and through capacity, veh/h:	15	8.0

* according to Table 17 - 5 of the HCM



49th St & Farnam St Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **AM**
Minor Road: **49th St**
Direction: **Northbound**
NCHRP Analysis: **Minor-road Approach**

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1083
Percentage of right-turns on minor road, %:	29%
Minor-road volume (one direction), veh/h:	35

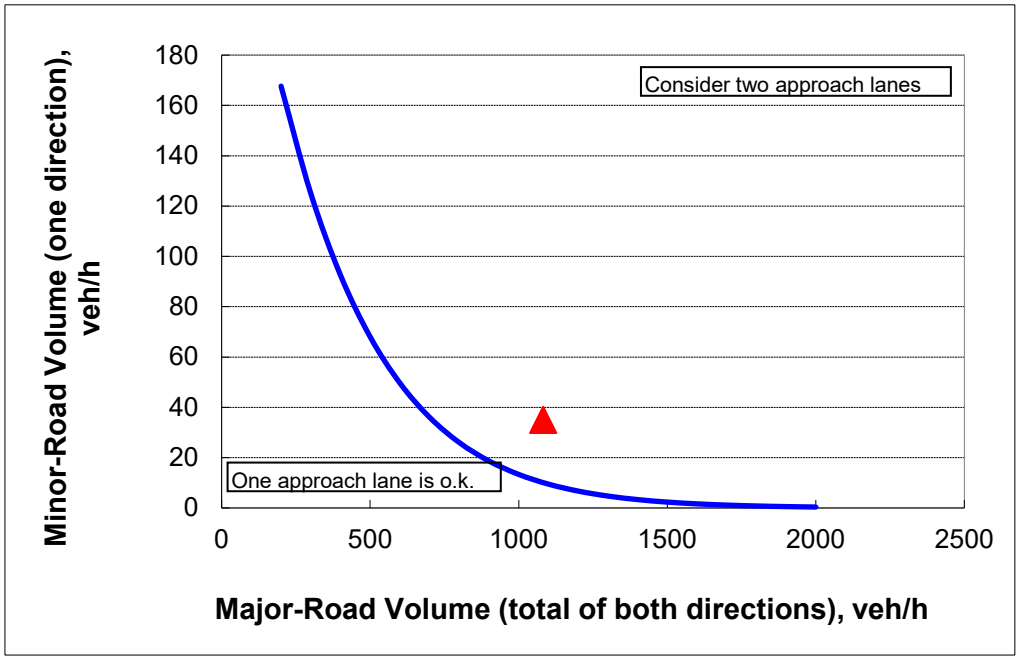
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	10
Guidance for determining minor-road approach geometry:	
Consider TWO approach lanes	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	10	5
Left-turn and through capacity, veh/h:	15	8.0

* according to Table 17 - 5 of the HCM



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **AM**
Minor Road: **49th St**
Direction: **Southbound**
NCHRP Analysis: **Minor-road Approach**

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

2-lane roadway

INPUT

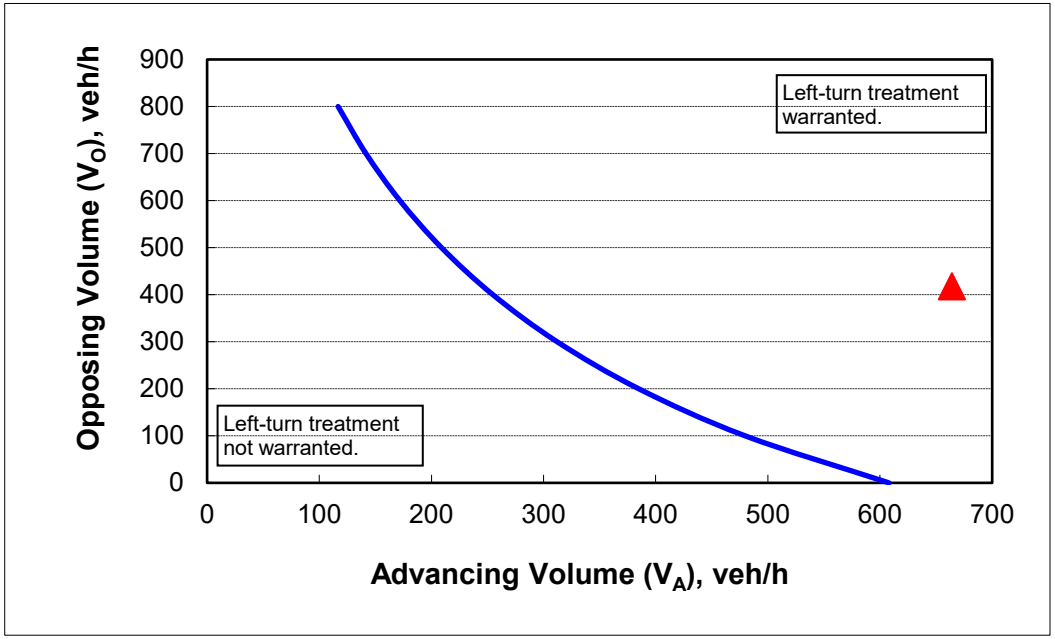
Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	664
Opposing volume (V_O), veh/h:	418

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	246
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	5.0
Critical headway, s:	10.0
Average time left-turn vehicle to clear advancing lane, s:	4.0



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **AM**
Major Road: **Farnam St**
Direction: **Eastbound**
NCHRP Analysis: **Major-road Left-turn Lane**

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

2-lane roadway

INPUT

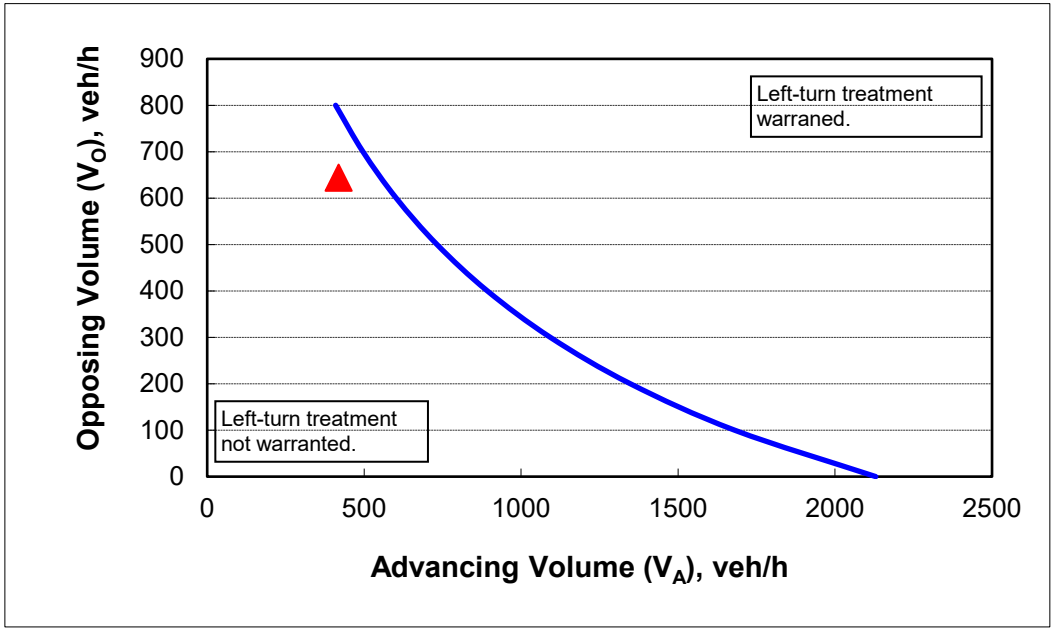
Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	419
Opposing volume (V_O), veh/h:	644

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	553
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	5.0
Critical headway, s:	10.0
Average time left-turn vehicle to clear advancing lane, s:	4.0



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **AM**
Major Road: **Farnam St**
Direction: **Westbound**
NCHRP Analysis: **Major-road Left-turn Lane**

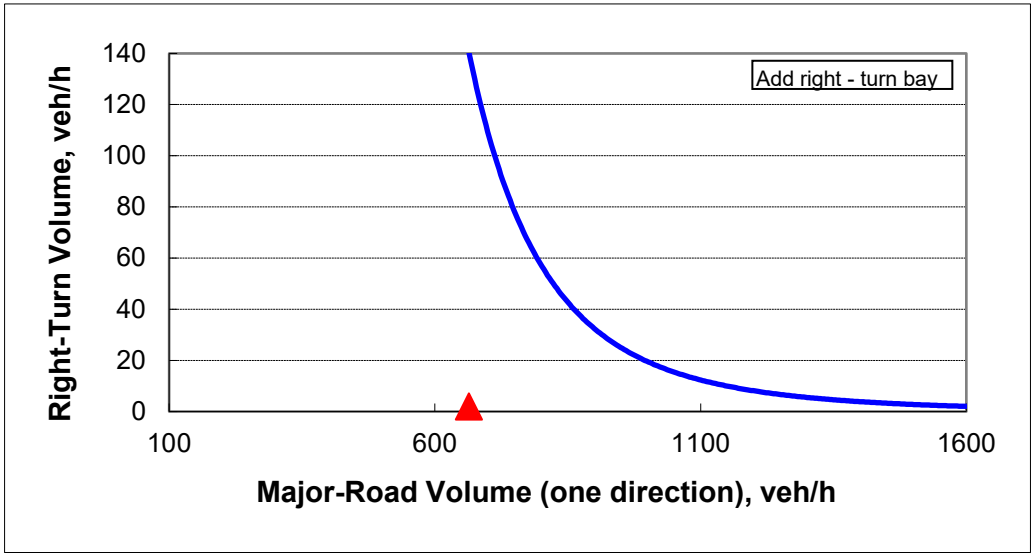
Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	664
Right-turn volume, veh/h:	2

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	141
Guidance for determining the need for a major-road right-turn bay for a :	
Do NOT add right-turn bay.	



49th St & Farnam St Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **AM**
Major Road: **Farnam St**
Direction: **Eastbound**
NCHRP Analysis: **Major-road Right-turn Lane**

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	419
Right-turn volume, veh/h:	13

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1293
Guidance for determining the need for a major-road right-turn bay for a :	
Do NOT add right-turn bay.	

49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **AM**
Major Road: **Farnam St**
Direction: **Westbound**
NCHRP Analysis: **Major-road Right-turn Lane**

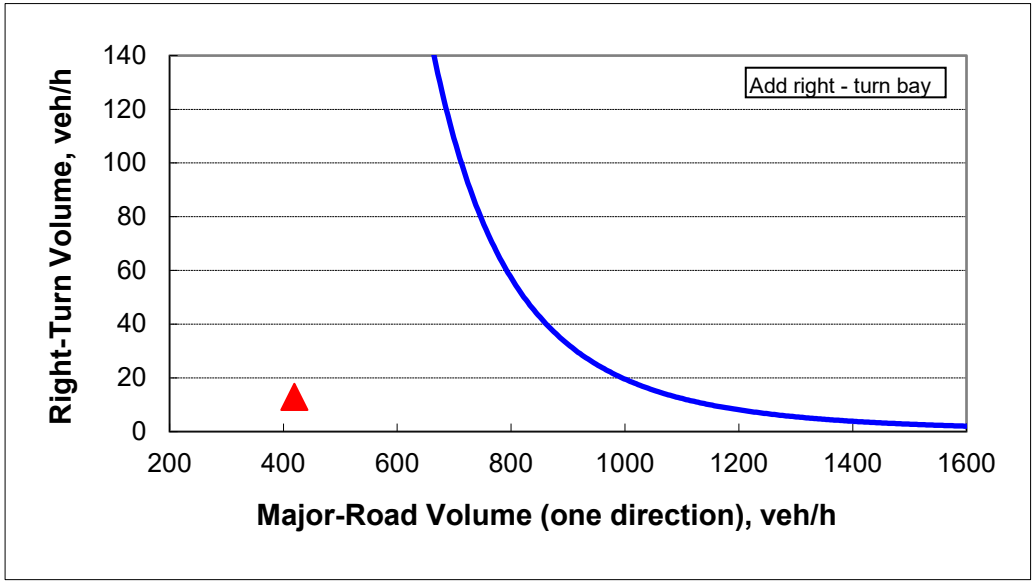


Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1165
Percentage of right-turns on minor road, %:	18%
Minor-road volume (one direction), veh/h:	11

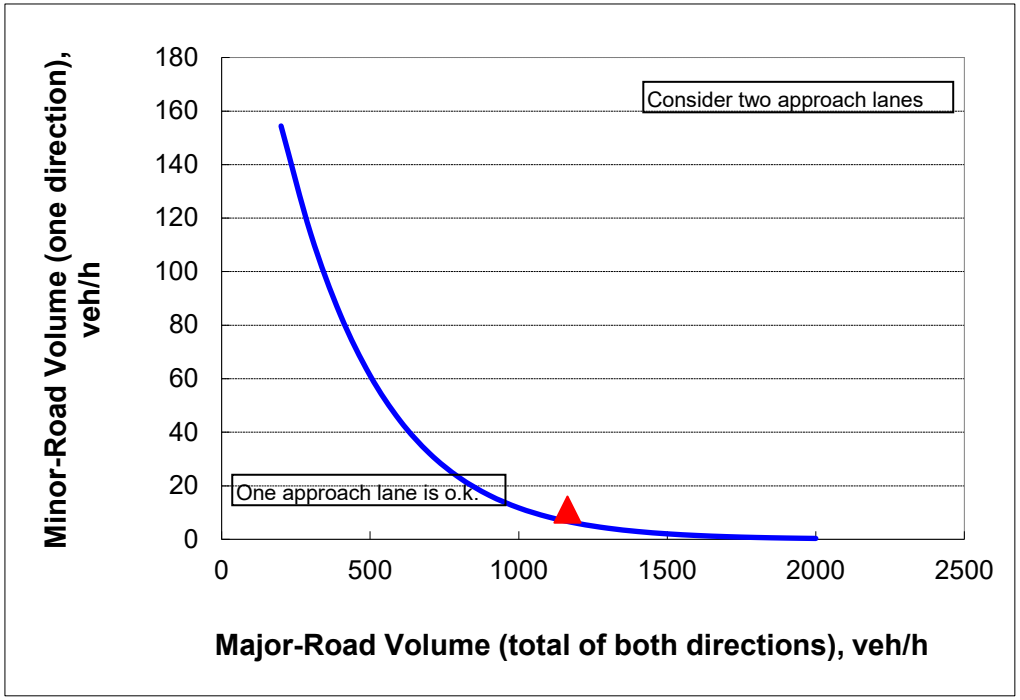
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	7
Guidance for determining minor-road approach geometry:	
Consider TWO approach lanes	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	10	5
Left-turn and through capacity, veh/h:	15	8.0

* according to Table 17 - 5 of the HCM



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **PM**
Minor Road: **49th St**
Direction: **Northbound**
NCHRP Analysis: **Minor-road Approach**

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1165
Percentage of right-turns on minor road, %:	50%
Minor-road volume (one direction), veh/h:	72

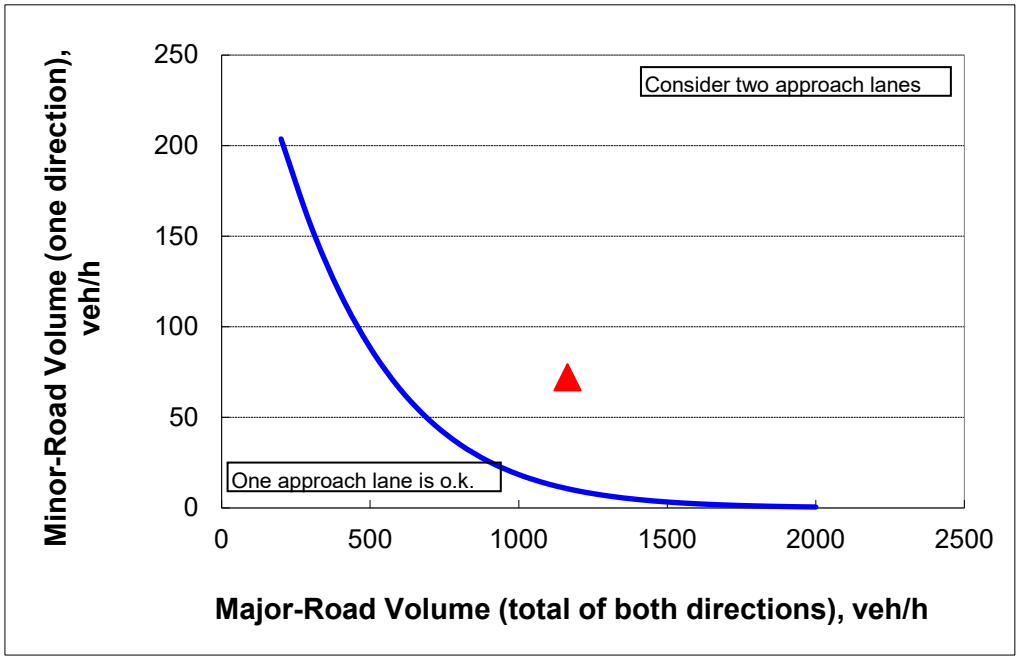
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	11
Guidance for determining minor-road approach geometry:	
Consider TWO approach lanes	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	10	5
Left-turn and through capacity, veh/h:	15	8.0

* according to Table 17 - 5 of the HCM



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **PM**
Minor Road: **49th St**
Direction: **Southbound**
NCHRP Analysis: **Minor-road Approach**

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

2-lane roadway

INPUT

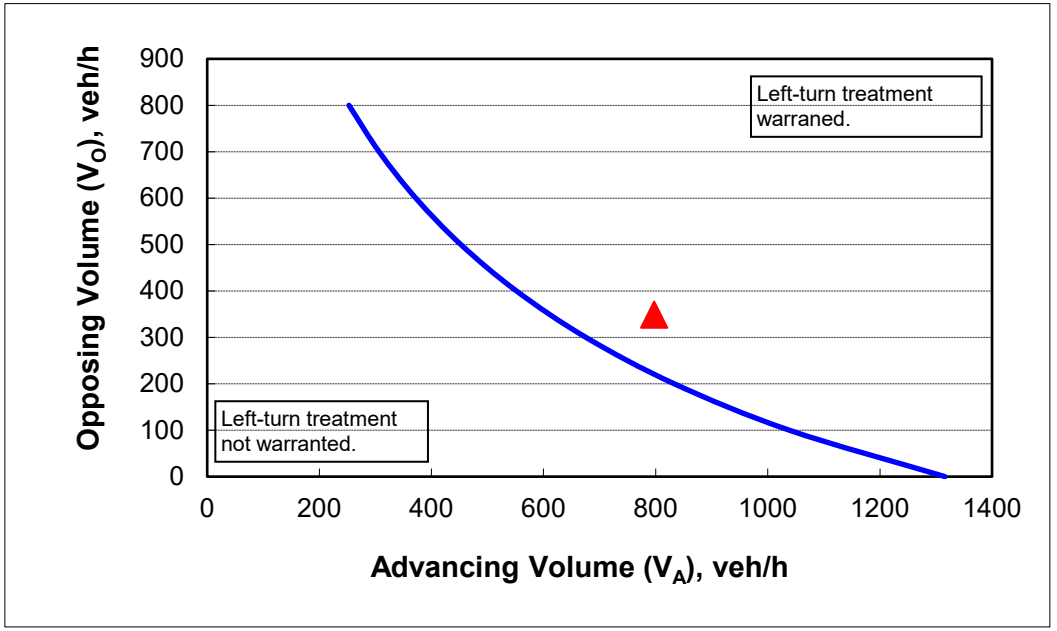
Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	797
Opposing volume (V_O), veh/h:	349

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	611
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	5.0
Critical headway, s:	10.0
Average time left-turn vehicle to clear advancing lane, s:	4.0



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **PM**
Major Road: **Farnam St**
Direction: **Westbound**
NCHRP Analysis: **Major-road Left-turn Lane**

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	797
Right-turn volume, veh/h:	42

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	58
Guidance for determining the need for a major-road right-turn bay for a :	
Do NOT add right-turn bay.	

49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **PM**
Major Road: **Farnam St**
Direction: **Westbound**
NCHRP Analysis: **Major-road Right-turn Lane**

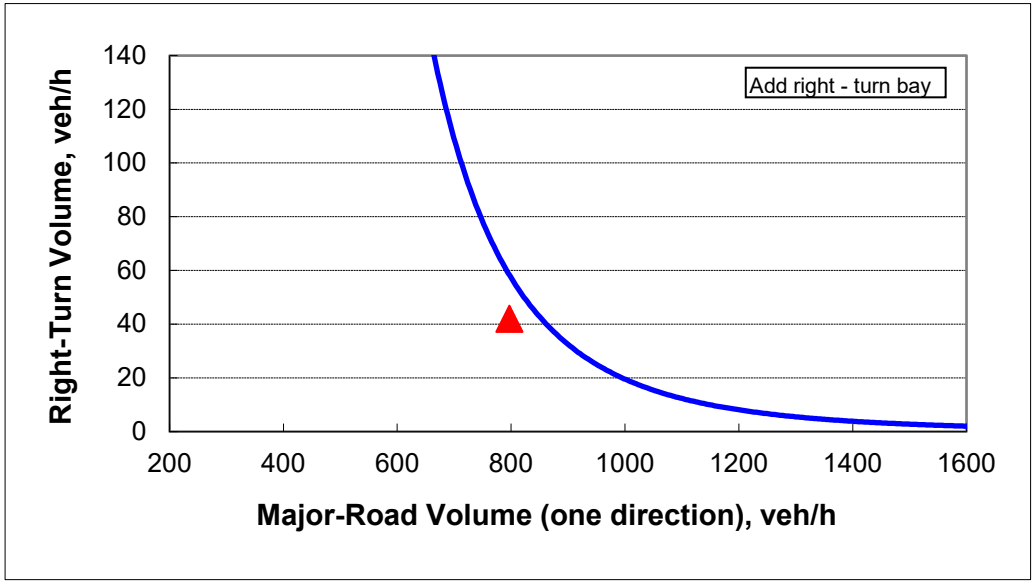


Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1220
Percentage of right-turns on minor road, %:	50%
Minor-road volume (one direction), veh/h:	10

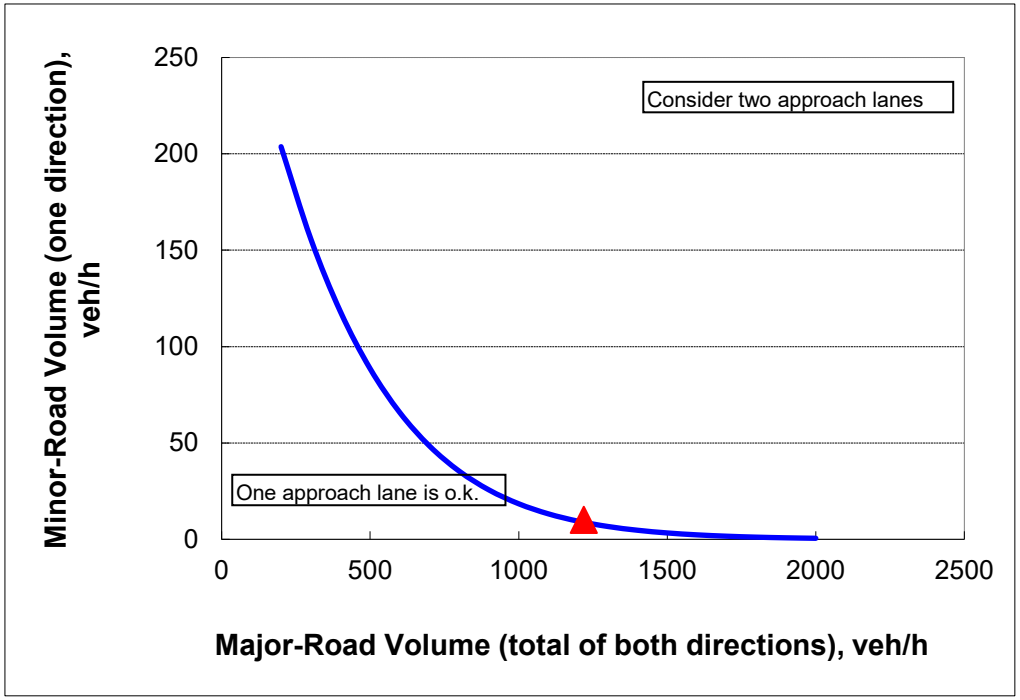
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	9
Guidance for determining minor-road approach geometry:	
Consider TWO approach lanes	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	10	5
Left-turn and through capacity, veh/h:	15	8.0

* according to Table 17 - 5 of the HCM



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2040)**
Time Period: **AM**
Minor Road: **49th St**
Direction: **Northbound**
NCHRP Analysis: **Minor-road Approach**

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1220
Percentage of right-turns on minor road, %:	25%
Minor-road volume (one direction), veh/h:	40

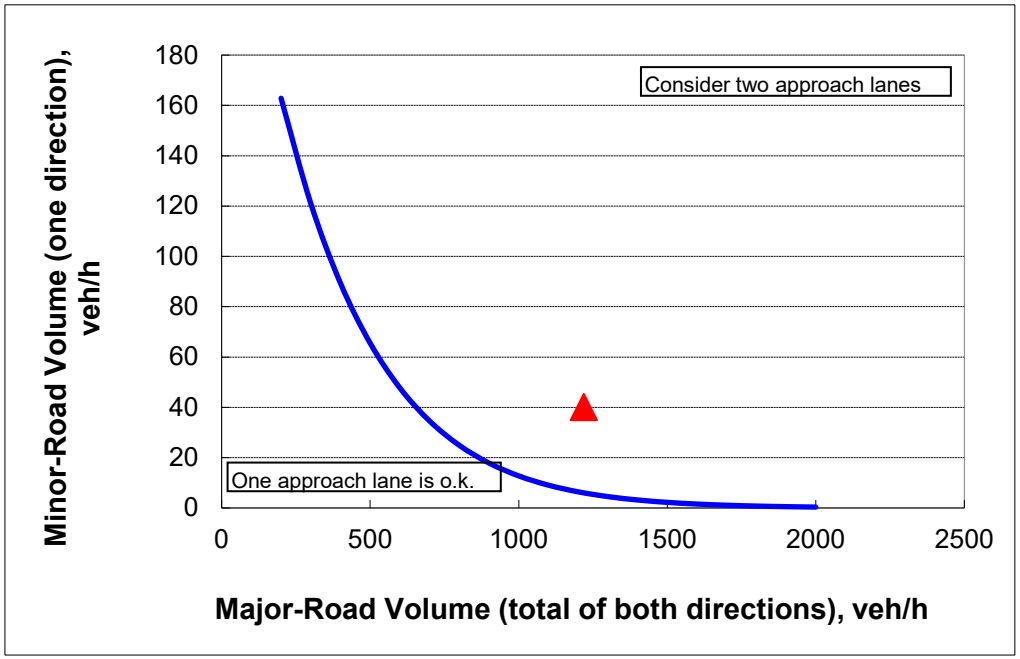
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	6
Guidance for determining minor-road approach geometry:	
Consider TWO approach lanes	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	10	5
Left-turn and through capacity, veh/h:	15	8.0

* according to Table 17 - 5 of the HCM



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2040)**
Time Period: **AM**
Minor Road: **49th St**
Direction: **Southbound**
NCHRP Analysis: **Minor-road Approach**

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

2-lane roadway

INPUT

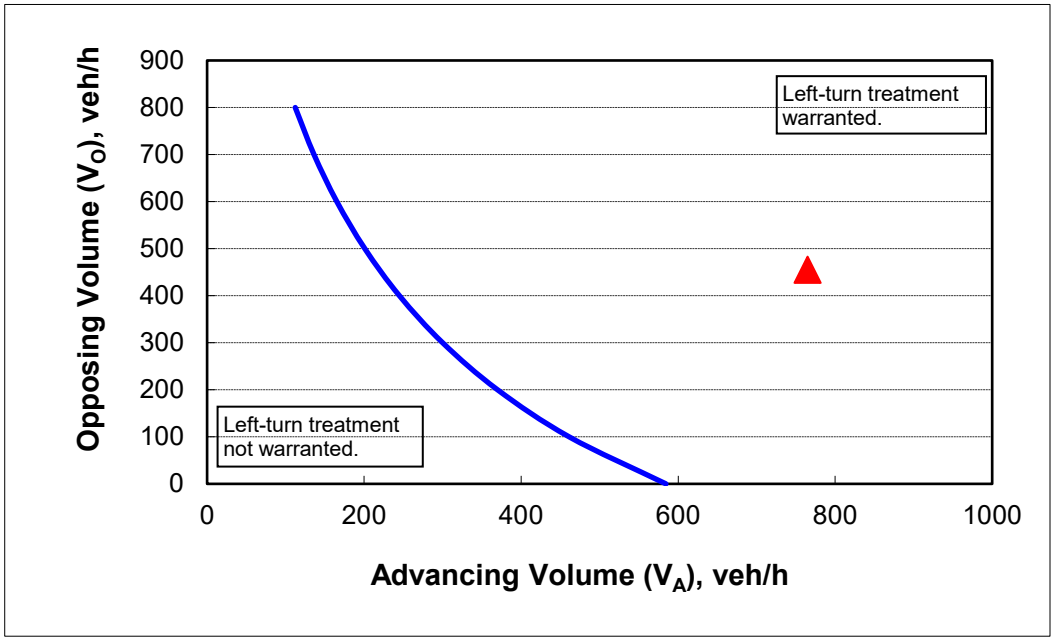
Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	3%
Advancing volume (V_A), veh/h:	765
Opposing volume (V_O), veh/h:	455

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	220
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	5.0
Critical headway, s:	10.0
Average time left-turn vehicle to clear advancing lane, s:	4.0



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2040)**
Time Period: **AM**
Major Road: **Farnam St**
Direction: **Eastbound**
NCHRP Analysis: **Major-road Left-turn Lane**

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	455
Right-turn volume, veh/h:	15

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	869
Guidance for determining the need for a major-road right-turn bay for a :	
Do NOT add right-turn bay.	

49th St & Farnam St Intersection #: **9049**

Scenario: **Two-way (2040)**
Time Period: **AM**
Major Road: **Farnam St**
Direction: **Westbound**
NCHRP Analysis: **Major-road Right-turn Lane**

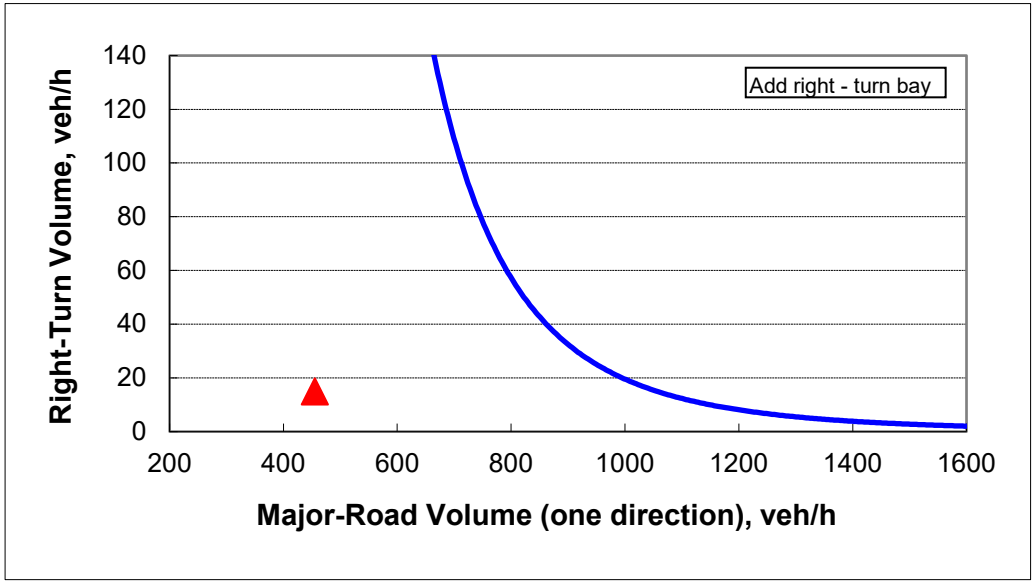


Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1455
Percentage of right-turns on minor road, %:	47%
Minor-road volume (one direction), veh/h:	85

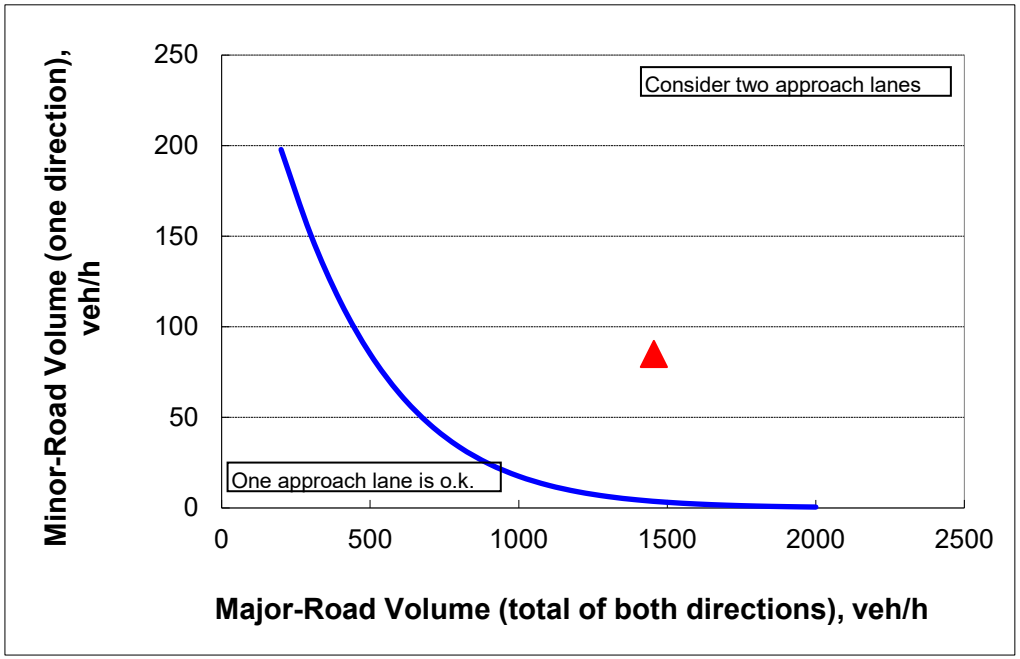
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	4
Guidance for determining minor-road approach geometry:	
Consider TWO approach lanes	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	10	5
Left-turn and through capacity, veh/h:	15	8.0

* according to Table 17 - 5 of the HCM



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **PM**
Minor Road: **49th St**
Direction: **Southbound**
NCHRP Analysis: **Minor-road Approach**

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

2-lane roadway

INPUT

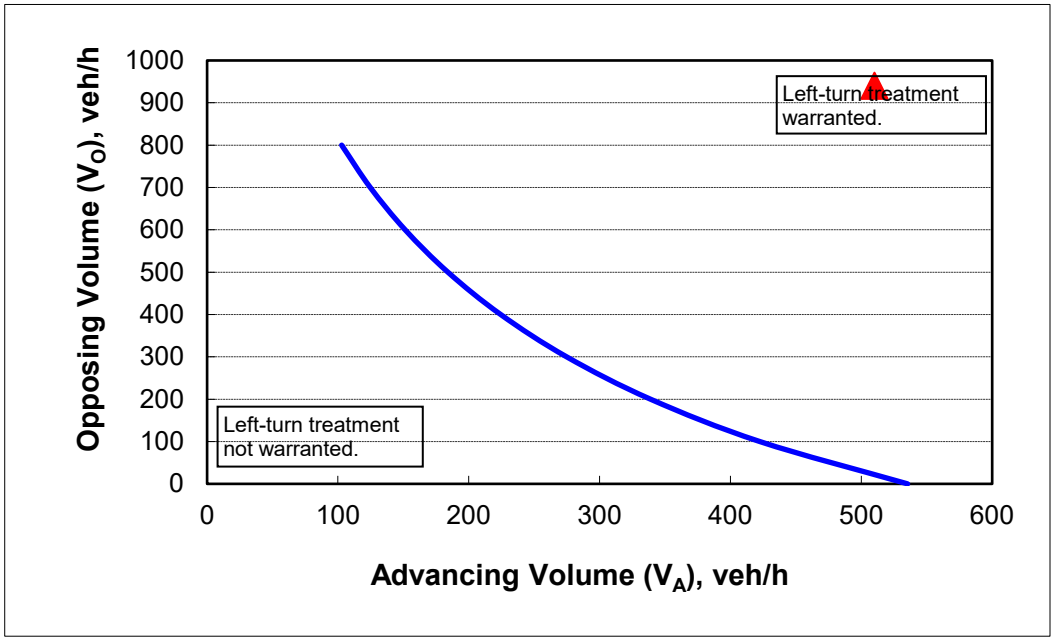
Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	4%
Advancing volume (V_A), veh/h:	510
Opposing volume (V_O), veh/h:	940

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	79
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	5.0
Critical headway, s:	10.0
Average time left-turn vehicle to clear advancing lane, s:	4.0



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **PM**
Major Road: **Farnam St**
Direction: **Eastbound**
NCHRP Analysis: **Major-road Left-turn Lane**

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

2-lane roadway

INPUT

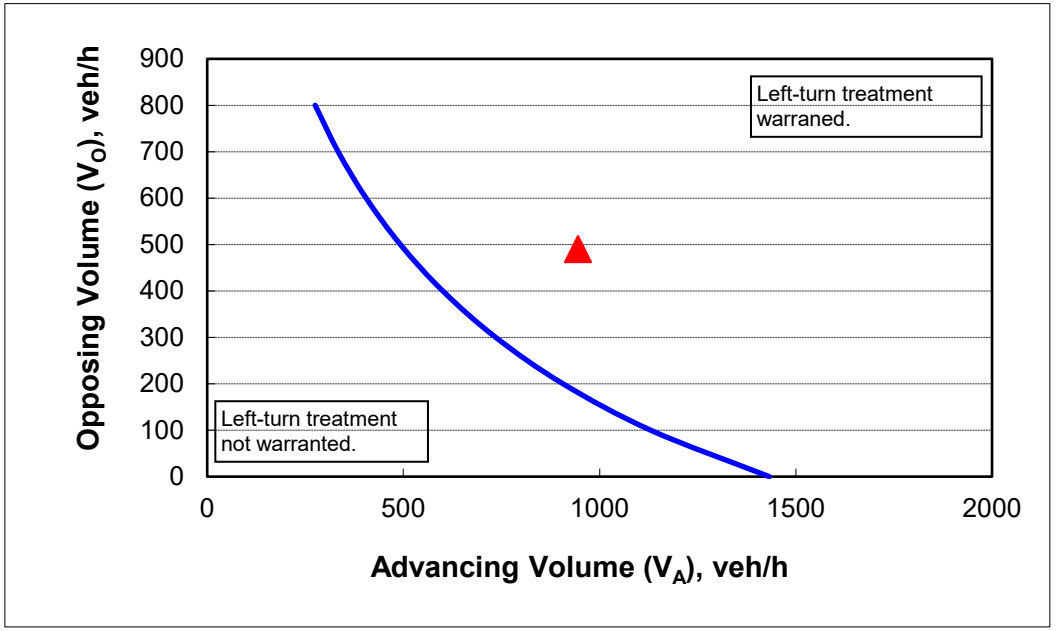
Variable	Value
85th percentile speed, mph:	30
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	945
Opposing volume (V_O), veh/h:	490

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	502
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	5.0
Critical headway, s:	10.0
Average time left-turn vehicle to clear advancing lane, s:	4.0



49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **PM**
Major Road: **Farnam St**
Direction: **Westbound**
NCHRP Analysis: **Major-road Left-turn Lane**

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	945
Right-turn volume, veh/h:	50

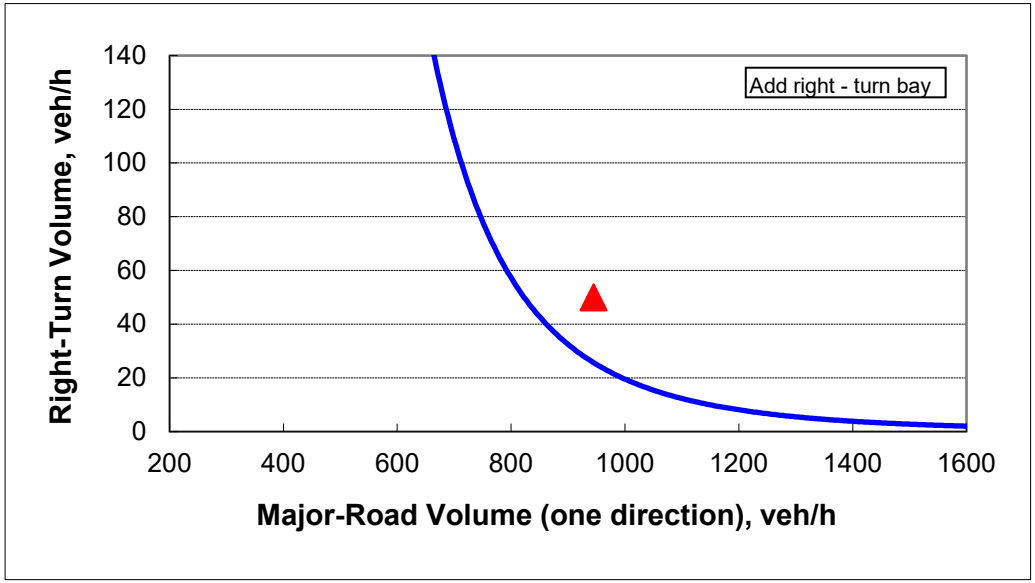
OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	26
Guidance for determining the need for a major-road right-turn bay for a :	
Add right-turn bay.	

49th St & Farnam St

Intersection #: **9049**

Scenario: **Two-way (2021)**
Time Period: **PM**
Major Road: **Farnam St**
Direction: **Westbound**
NCHRP Analysis: **Major-road Right-turn Lane**



APPENDIX F. ANALYSIS SOFTWARE REPORTS

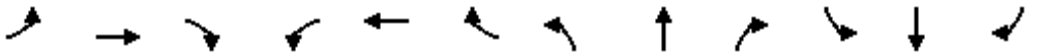
Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	2467	1850	218	26	46	473
v/c Ratio	0.77	0.84	0.46	0.06	0.19	1.04
Control Delay	9.1	17.5	14.9	0.8	28.9	88.4
Queue Delay	0.0	0.0	1.6	0.0	0.0	0.0
Total Delay	9.1	17.5	16.5	0.8	28.9	88.4
Queue Length 50th (ft)	334	388	39	0	21	~294
Queue Length 95th (ft)	397	500	59	m1	50	#480
Internal Link Dist (ft)	220	1083	121			464
Turn Bay Length (ft)					100	
Base Capacity (vph)	3197	2212	474	424	241	454
Starvation Cap Reductn	0	0	127	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.84	0.63	0.06	0.19	1.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2220	0	0	1581	84	0	196	23	41	309	117
Future Volume (veh/h)	0	2220	0	0	1581	84	0	196	23	41	309	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	2467	0	0	1757	0	0	218	26	46	343	130
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	0	0	2	2	0	2	2	2	2	2
Cap, veh/h	0	3211	0	0	2235		0	476	403	284	329	125
Arrive On Green	0.00	1.00	0.00	0.00	0.63	0.00	0.00	0.51	0.51	0.25	0.25	0.25
Sat Flow, veh/h	0	5443	0	0	3741	0	0	1870	1585	1136	1292	490
Grp Volume(v), veh/h	0	2467	0	0	1757	0	0	218	26	46	0	473
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1777	0	0	1870	1585	1136	0	1782
Q Serve(g_s), s	0.0	0.0	0.0	0.0	32.7	0.0	0.0	6.7	0.7	3.1	0.0	22.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	32.7	0.0	0.0	6.7	0.7	9.8	0.0	22.9
Prop In Lane	0.00		0.00	0.00		0.00	0.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	0	3211	0	0	2235		0	476	403	284	0	453
V/C Ratio(X)	0.00	0.77	0.00	0.00	0.79		0.00	0.46	0.06	0.16	0.00	1.04
Avail Cap(c_a), veh/h	0	3211	0	0	2235		0	476	403	284	0	453
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.74	0.00	0.00	1.00	0.00	0.00	0.91	0.91	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	12.3	0.0	0.0	18.1	16.7	31.6	0.0	33.6
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	2.9	0.0	0.0	0.2	0.0	0.1	0.0	53.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.0	0.0	11.6	0.0	0.0	2.5	0.3	0.9	0.0	16.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.4	0.0	0.0	15.1	0.0	0.0	18.4	16.7	31.6	0.0	87.5
LnGrp LOS	A	A	A	A	B		A	B	B	C	A	F
Approach Vol, veh/h		2467			1757	A		244			519	
Approach Delay, s/veh		1.4			15.1			18.2			82.5	
Approach LOS		A			B			B			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		62.0		28.0		62.0		28.0				
Change Period (Y+Rc), s		* 5.4		* 5.1		* 5.4		* 5.1				
Max Green Setting (Gmax), s		* 57		* 23		* 57		* 23				
Max Q Clear Time (g_c+I1), s		0.0		24.9		0.0		8.7				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			15.5									
HCM 6th LOS			B									

Notes

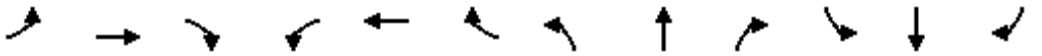
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	851	173	219	24	340
v/c Ratio	0.59	1.05	0.42	0.09	0.65
Control Delay	11.4	116.0	27.8	1.5	5.6
Queue Delay	1.3	0.0	0.0	0.0	2.7
Total Delay	12.7	116.0	27.8	1.5	8.4
Queue Length 50th (ft)	231	94	94	0	8
Queue Length 95th (ft)	292	#203	146	m1	m7
Internal Link Dist (ft)	97		531		121
Turn Bay Length (ft)					
Base Capacity (vph)	1447	188	589	300	592
Starvation Cap Reductn	365	0	0	0	151
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.79	0.92	0.37	0.08	0.77

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	641	41	0	0	0	147	177	9	20	289	0
Future Volume (veh/h)	42	641	41	0	0	0	147	177	9	20	289	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	754	48				173	208	11	24	340	0
Peak Hour Factor	0.85	0.85	0.85				0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2				2	2	2	2	2	2
Cap, veh/h	113	1816	121				253	559	30	343	594	0
Arrive On Green	0.56	0.56	0.56				0.32	0.32	0.32	0.32	0.32	0.00
Sat Flow, veh/h	203	3270	219				1040	1760	93	1162	1870	0
Grp Volume(v), veh/h	449	0	402				173	0	219	24	340	0
Grp Sat Flow(s),veh/h/ln	1860	0	1831				1040	0	1854	1162	1870	0
Q Serve(g_s), s	12.7	0.0	11.3				15.0	0.0	8.2	1.5	13.6	0.0
Cycle Q Clear(g_c), s	12.7	0.0	11.3				28.6	0.0	8.2	9.7	13.6	0.0
Prop In Lane	0.11		0.12				1.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	1033	0	1017				253	0	589	343	594	0
V/C Ratio(X)	0.43	0.00	0.40				0.68	0.00	0.37	0.07	0.57	0.00
Avail Cap(c_a), veh/h	1033	0	1017				253	0	589	343	594	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.00	0.74				1.00	0.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	11.7	0.0	11.4				37.5	0.0	23.8	27.5	25.6	0.0
Incr Delay (d2), s/veh	1.0	0.0	0.9				6.2	0.0	0.1	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	4.5				4.2	0.0	3.5	0.4	5.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	0.0	12.2				43.7	0.0	23.9	27.5	25.7	0.0
LnGrp LOS	B	A	B				D	A	C	C	C	A
Approach Vol, veh/h		851						392			364	
Approach Delay, s/veh		12.5						32.6			25.8	
Approach LOS		B						C			C	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		57.0		33.0				33.0				
Change Period (Y+Rc), s		* 7		4.4				4.4				
Max Green Setting (Gmax), s		* 50		28.6				28.6				
Max Q Clear Time (g_c+I1), s		0.0		15.6				30.6				
Green Ext Time (p_c), s		0.0		0.5				0.0				

Intersection Summary		
HCM 6th Ctrl Delay		20.4
HCM 6th LOS		C

Notes

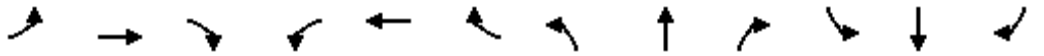
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	645	150	150	6	817	261	950
v/c Ratio	0.09	0.49	0.66	0.17	0.04	0.85	0.80	0.55
Control Delay	18.8	19.9	39.9	0.4	26.6	41.5	36.5	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	19.9	39.9	0.4	26.6	41.5	36.5	17.6
Queue Length 50th (ft)	18	124	69	0	2	229	91	189
Queue Length 95th (ft)	42	174	#162	0	13	#368	174	247
Internal Link Dist (ft)		368				880		1134
Turn Bay Length (ft)	125		100	60	100		125	
Base Capacity (vph)	532	1322	227	897	159	964	388	1729
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.49	0.66	0.17	0.04	0.85	0.67	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	385	195	135	0	135	5	550	185	235	850	5
Future Volume (veh/h)	45	385	195	135	0	135	5	550	185	235	850	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	50	428	217	150	0	150	6	611	206	261	944	6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	547	865	434	263	1343	599	258	788	265	353	1770	11
Arrive On Green	0.38	0.38	0.38	0.38	0.00	0.38	0.30	0.30	0.30	0.12	0.49	0.49
Sat Flow, veh/h	1237	2290	1150	785	3554	1585	590	2610	879	1781	3620	23
Grp Volume(v), veh/h	50	331	314	150	0	150	6	416	401	261	463	487
Grp Sat Flow(s),veh/h/ln	1237	1777	1663	785	1777	1585	590	1777	1712	1781	1777	1866
Q Serve(g_s), s	2.4	12.8	13.0	16.3	0.0	5.9	0.6	19.2	19.2	8.6	16.2	16.2
Cycle Q Clear(g_c), s	2.4	12.8	13.0	29.3	0.0	5.9	0.6	19.2	19.2	8.6	16.2	16.2
Prop In Lane	1.00		0.69	1.00		1.00	1.00		0.51	1.00		0.01
Lane Grp Cap(c), veh/h	547	671	628	263	1343	599	258	536	517	353	869	912
V/C Ratio(X)	0.09	0.49	0.50	0.57	0.00	0.25	0.02	0.78	0.78	0.74	0.53	0.53
Avail Cap(c_a), veh/h	547	671	628	263	1343	599	258	536	517	455	869	912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	21.4	21.5	32.7	0.0	19.2	22.2	28.6	28.7	20.1	15.9	15.9
Incr Delay (d2), s/veh	0.3	2.6	2.8	8.7	0.0	1.0	0.2	10.5	10.9	3.0	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	5.6	5.4	3.7	0.0	2.2	0.1	9.3	9.1	3.6	6.6	6.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.5	24.0	24.3	41.4	0.0	20.2	22.3	39.1	39.6	23.1	18.2	18.1
LnGrp LOS	B	C	C	D	A	C	C	D	D	C	B	B
Approach Vol, veh/h		695			300			823			1211	
Approach Delay, s/veh		23.7			30.8			39.2			19.2	
Approach LOS		C			C			D			B	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		40.0		50.0		40.0	16.8	33.2				
Change Period (Y+Rc), s		* 6		* 6		* 6	6.0	* 6				
Max Green Setting (Gmax), s		* 34		* 44		* 34	16.0	* 22				
Max Q Clear Time (g_c+I1), s		4.4		0.0		31.3	10.6	2.6				
Green Ext Time (p_c), s		0.2		0.0		0.2	0.3	0.2				

Intersection Summary		
HCM 6th Ctrl Delay		26.9
HCM 6th LOS		C

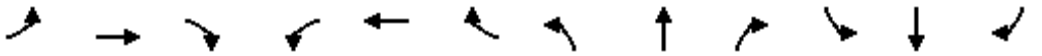
Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	77	528	68	39	224
v/c Ratio	0.09	0.29	0.18	0.13	0.57
Control Delay	2.1	7.0	17.3	18.3	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.2
Total Delay	2.1	7.0	17.3	18.3	26.5
Queue Length 50th (ft)	1	41	21	12	73
Queue Length 95th (ft)	22	81	50	29	119
Internal Link Dist (ft)	585	1102	121		598
Turn Bay Length (ft)				90	
Base Capacity (vph)	898	1830	641	486	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	87
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.29	0.11	0.08	0.40

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	58	2	30	391	86	5	46	14	37	143	72
Future Volume (veh/h)	14	58	2	30	391	86	5	46	14	37	143	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	60	2	31	407	90	5	48	15	39	149	75
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	862	27	147	1761	378	70	206	60	298	196	99
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	237	1328	42	124	2712	582	35	1228	358	1339	1173	591
Grp Volume(v), veh/h	77	0	0	281	0	247	68	0	0	39	0	224
Grp Sat Flow(s),veh/h/ln	1607	0	0	1821	0	1597	1621	0	0	1339	0	1764
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	7.3
Cycle Q Clear(g_c), s	0.9	0.0	0.0	3.7	0.0	3.8	7.3	0.0	0.0	2.1	0.0	7.3
Prop In Lane	0.19		0.03	0.11		0.36	0.07		0.22	1.00		0.33
Lane Grp Cap(c), veh/h	1115	0	0	1249	0	1037	336	0	0	298	0	295
V/C Ratio(X)	0.07	0.00	0.00	0.23	0.00	0.24	0.20	0.00	0.00	0.13	0.00	0.76
Avail Cap(c_a), veh/h	1115	0	0	1249	0	1037	679	0	0	565	0	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.99	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	3.9	0.0	0.0	4.3	0.0	4.4	21.6	0.0	0.0	21.7	0.0	23.8
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.4	0.0	0.5	0.3	0.0	0.0	0.2	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	1.1	0.0	1.0	0.8	0.0	0.0	0.5	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.0	0.0	0.0	4.8	0.0	4.9	21.9	0.0	0.0	21.9	0.0	27.8
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	C
Approach Vol, veh/h		77			528			68			263	
Approach Delay, s/veh		4.0			4.8			21.9			26.9	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.0		16.0		44.0		16.0				
Change Period (Y+Rc), s		* 5		* 6		* 5		* 6				
Max Green Setting (Gmax), s		* 27		* 22		* 27		* 22				
Max Q Clear Time (g_c+I1), s		0.0		9.3		0.0		9.3				
Green Ext Time (p_c), s		0.0		0.8		0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

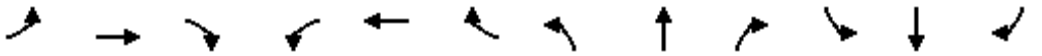
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	594	39	65	198
v/c Ratio	0.40	0.05	0.15	0.35
Control Delay	6.4	0.1	14.1	12.5
Queue Delay	0.0	0.0	0.0	0.5
Total Delay	6.4	0.1	14.1	13.1
Queue Length 50th (ft)	21	1	12	68
Queue Length 95th (ft)	27	m0	37	112
Internal Link Dist (ft)	257		187	121
Turn Bay Length (ft)				
Base Capacity (vph)	1470	723	431	561
Starvation Cap Reductn	0	0	0	126
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.05	0.15	0.46

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



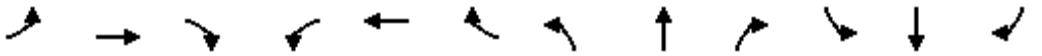
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	494	34	0	0	0	0	36	21	69	106	0
Future Volume (vph)	29	494	34	0	0	0	0	36	21	69	106	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0					5.0			5.0	
Lane Util. Factor		0.95	1.00					1.00			1.00	
Frt		1.00	0.85					0.95			1.00	
Flt Protected		1.00	1.00					1.00			0.98	
Satd. Flow (prot)		3529	1583					1770			1827	
Flt Permitted		1.00	1.00					1.00			0.87	
Satd. Flow (perm)		3529	1583					1770			1624	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	33	561	39	0	0	0	0	41	24	78	120	0
RTOR Reduction (vph)	0	0	23	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	594	16	0	0	0	0	47	0	0	198	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	2 1	
Permitted Phases	4		4							2 1		
Actuated Green, G (s)		25.0	25.0					14.0			21.0	
Effective Green, g (s)		25.0	25.0					14.0			21.0	
Actuated g/C Ratio		0.42	0.42					0.23			0.35	
Clearance Time (s)		5.0	5.0					5.0				
Lane Grp Cap (vph)		1470	659					413			592	
v/s Ratio Prot								0.03			c0.04	
v/s Ratio Perm		0.17	0.01								c0.08	
v/c Ratio		0.40	0.02					0.11			0.33	
Uniform Delay, d1		12.3	10.3					18.1			14.4	
Progression Factor		0.45	1.00					1.00			0.88	
Incremental Delay, d2		0.8	0.1					0.6			1.5	
Delay (s)		6.3	10.4					18.7			14.1	
Level of Service		A	B					B			B	
Approach Delay (s)		6.5			0.0			18.7			14.1	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	463	104	309	26	344
v/c Ratio	0.38	0.25	0.37	0.06	0.41
Control Delay	10.1	3.4	2.3	9.9	12.3
Queue Delay	0.0	0.4	0.6	0.0	0.0
Total Delay	10.1	3.8	2.9	9.9	12.3
Queue Length 50th (ft)	34	4	6	5	73
Queue Length 95th (ft)	50	m7	11	17	130
Internal Link Dist (ft)	585		118		603
Turn Bay Length (ft)		75		150	
Base Capacity (vph)	1211	416	827	446	829
Starvation Cap Reductn	0	99	225	0	0
Spillback Cap Reductn	65	0	0	0	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.40	0.33	0.51	0.06	0.42

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



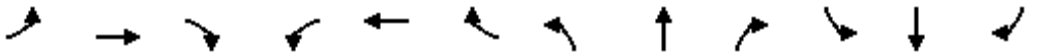
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	116	272	34	95	217	65	24	260	53
Future Volume (veh/h)	0	0	0	116	272	34	95	217	65	24	260	53
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h				127	299	37	104	238	71	26	286	58
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				2	2	2	2	2	2	2	2	2
Cap, veh/h				331	830	106	453	623	186	456	679	138
Arrive On Green				0.73	0.73	0.73	0.30	0.30	0.30	0.45	0.45	0.45
Sat Flow, veh/h				903	2264	289	1037	1383	413	1070	1509	306
Grp Volume(v), veh/h				230	0	233	104	0	309	26	0	344
Grp Sat Flow(s),veh/h/ln				1638	0	1818	1037	0	1796	1070	0	1815
Q Serve(g_s), s				3.1	0.0	2.8	5.1	0.0	8.1	1.0	0.0	7.7
Cycle Q Clear(g_c), s				3.1	0.0	2.8	12.8	0.0	8.1	9.2	0.0	7.7
Prop In Lane				0.55		0.16	1.00		0.23	1.00		0.17
Lane Grp Cap(c), veh/h				601	0	667	453	0	808	456	0	817
V/C Ratio(X)				0.38	0.00	0.35	0.23	0.00	0.38	0.06	0.00	0.42
Avail Cap(c_a), veh/h				601	0	667	453	0	808	456	0	817
HCM Platoon Ratio				2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)				0.97	0.00	0.97	0.80	0.00	0.80	1.00	0.00	1.00
Uniform Delay (d), s/veh				5.5	0.0	5.4	19.2	0.0	14.4	14.5	0.0	11.2
Incr Delay (d2), s/veh				1.8	0.0	1.4	0.9	0.0	1.1	0.2	0.0	1.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.1	0.0	1.1	1.4	0.0	3.4	0.3	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				7.3	0.0	6.8	20.2	0.0	15.5	14.7	0.0	12.8
LnGrp LOS				A	A	A	C	A	B	B	A	B
Approach Vol, veh/h					463			413			370	
Approach Delay, s/veh					7.1			16.7			12.9	
Approach LOS					A			B			B	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				32.0		28.0		32.0				
Change Period (Y+Rc), s				5.0		6.0		5.0				
Max Green Setting (Gmax), s				27.0		22.0		27.0				
Max Q Clear Time (g_c+I1), s				11.2		0.0		14.8				
Green Ext Time (p_c), s				1.4		0.0		1.5				

Intersection Summary		
HCM 6th Ctrl Delay		12.0
HCM 6th LOS		B

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	746	490	422
v/c Ratio	0.40	0.57	0.49
Control Delay	11.8	14.2	9.9
Queue Delay	0.0	0.0	1.2
Total Delay	11.8	14.2	11.1
Queue Length 50th (ft)	66	113	71
Queue Length 95th (ft)	95	190	105
Internal Link Dist (ft)	188	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	1858	860	869
Starvation Cap Reductn	0	0	243
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.40	0.57	0.67

Intersection Summary



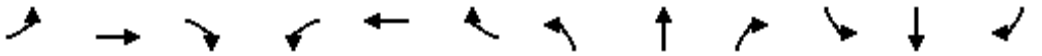
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	550	88	0	0	0	0	351	85	0	376	0
Future Volume (veh/h)	26	550	88	0	0	0	0	351	85	0	376	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	0
Adj Flow Rate, veh/h	29	618	99				0	394	96	0	422	0
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	72	1609	264				0	678	165	0	873	0
Arrive On Green	0.37	0.37	0.37				0.00	0.47	0.47	0.00	0.93	0.00
Sat Flow, veh/h	195	4388	720				0	1453	354	0	1870	0
Grp Volume(v), veh/h	277	230	239				0	0	490	0	422	0
Grp Sat Flow(s),veh/h/ln	1861	1702	1741				0	0	1807	0	1870	0
Q Serve(g_s), s	6.6	5.9	6.1				0.0	0.0	11.9	0.0	1.6	0.0
Cycle Q Clear(g_c), s	6.6	5.9	6.1				0.0	0.0	11.9	0.0	1.6	0.0
Prop In Lane	0.10		0.41				0.00		0.20	0.00		0.00
Lane Grp Cap(c), veh/h	682	624	638				0	0	843	0	873	0
V/C Ratio(X)	0.41	0.37	0.37				0.00	0.00	0.58	0.00	0.48	0.00
Avail Cap(c_a), veh/h	682	624	638				0	0	843	0	873	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	0.00	0.91	0.00
Uniform Delay (d), s/veh	14.1	13.9	14.0				0.0	0.0	11.7	0.0	1.1	0.0
Incr Delay (d2), s/veh	1.8	1.7	1.7				0.0	0.0	2.9	0.0	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.3	2.4				0.0	0.0	4.7	0.0	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.9	15.6	15.6				0.0	0.0	14.6	0.0	2.9	0.0
LnGrp LOS	B	B	B				A	A	B	A	A	A
Approach Vol, veh/h		746						490			422	
Approach Delay, s/veh		15.7						14.6			2.9	
Approach LOS		B						B			A	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		27.0		33.0				33.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		22.0		28.0				28.0				
Max Q Clear Time (g_c+I1), s		8.6		3.6				13.9				
Green Ext Time (p_c), s		2.6		1.7				1.9				

Intersection Summary												
HCM 6th Ctrl Delay			12.1									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	45	870	73	293	27	19	45	20	30
v/c Ratio	0.05	0.31	0.15	0.10	0.13	0.08	0.18	0.10	0.12
Control Delay	3.0	2.9	3.3	1.6	24.5	23.3	10.2	23.9	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.0	2.9	3.3	1.6	24.5	23.3	10.2	23.9	21.2
Queue Length 50th (ft)	4	48	2	1	9	6	0	6	8
Queue Length 95th (ft)	11	72	16	4	27	22	23	22	27
Internal Link Dist (ft)		409		587		292			593
Turn Bay Length (ft)	150		125				115		
Base Capacity (vph)	872	2841	494	2869	571	714	634	571	699
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.31	0.15	0.10	0.05	0.03	0.07	0.04	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	665	100	64	242	16	24	17	40	18	22	4
Future Volume (veh/h)	40	665	100	64	242	16	24	17	40	18	22	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	756	114	73	275	18	27	19	45	20	25	5
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	824	2207	333	515	2414	157	266	226	191	269	183	37
Arrive On Green	0.71	0.71	0.71	0.24	0.24	0.24	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1086	3096	467	637	3387	220	1380	1870	1585	1338	1513	303
Grp Volume(v), veh/h	45	434	436	73	144	149	27	19	45	20	0	30
Grp Sat Flow(s),veh/h/ln	1086	1777	1786	637	1777	1831	1380	1870	1585	1338	0	1816
Q Serve(g_s), s	0.9	5.6	5.6	5.7	3.8	3.8	1.1	0.5	1.5	0.8	0.0	0.9
Cycle Q Clear(g_c), s	4.8	5.6	5.6	11.3	3.8	3.8	2.0	0.5	1.5	1.4	0.0	0.9
Prop In Lane	1.00		0.26	1.00		0.12	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	824	1266	1273	515	1266	1305	266	226	191	269	0	219
V/C Ratio(X)	0.05	0.34	0.34	0.14	0.11	0.11	0.10	0.08	0.24	0.07	0.00	0.14
Avail Cap(c_a), veh/h	824	1266	1273	515	1266	1305	628	717	608	621	0	696
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	3.9	3.3	3.3	13.2	8.0	8.1	24.5	23.4	23.9	24.0	0.0	23.6
Incr Delay (d2), s/veh	0.1	0.6	0.6	0.6	0.2	0.2	0.2	0.2	0.6	0.1	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.3	1.3	1.0	1.0	1.0	0.3	0.2	0.6	0.3	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.0	3.9	3.9	13.8	8.2	8.2	24.6	23.6	24.5	24.2	0.0	23.9
LnGrp LOS	A	A	A	B	A	A	C	C	C	C	A	C
Approach Vol, veh/h		915			366			91			50	
Approach Delay, s/veh		3.9			9.3			24.4			24.0	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		47.8		12.2		47.8		12.2				
Change Period (Y+Rc), s		* 5		5.0		* 5		5.0				
Max Green Setting (Gmax), s		* 27		23.0		* 27		23.0				
Max Q Clear Time (g_c+I1), s		6.8		3.4		13.3		4.0				
Green Ext Time (p_c), s		0.2		0.1		0.1		0.3				

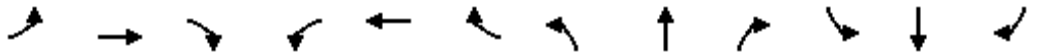
Intersection Summary		
HCM 6th Ctrl Delay		7.3
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	NBT	NBR	SBT
Lane Group Flow (vph)	705	62	214	56	243
v/c Ratio	0.52	0.07	0.43	0.12	0.54
Control Delay	10.6	3.6	21.0	5.8	23.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	3.6	21.0	5.8	23.6
Queue Length 50th (ft)	103	2	65	0	77
Queue Length 95th (ft)	191	18	109	20	127
Internal Link Dist (ft)	586		1892		587
Turn Bay Length (ft)		65		50	
Base Capacity (vph)	1350	892	652	590	590
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	0.07	0.33	0.09	0.41

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	610	56	0	0	0	0	195	51	40	181	0
Future Volume (veh/h)	32	610	56	0	0	0	0	195	51	40	181	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	35	670	62				0	214	56	44	199	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	84	1671	898				0	467	396	117	377	0
Arrive On Green	0.57	0.57	0.57				0.00	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	148	2949	1585				0	1870	1585	184	1507	0
Grp Volume(v), veh/h	440	265	62				0	214	56	243	0	0
Grp Sat Flow(s),veh/h/ln	1863	1234	1585				0	1870	1585	1691	0	0
Q Serve(g_s), s	8.0	7.1	1.1				0.0	5.8	1.6	1.6	0.0	0.0
Cycle Q Clear(g_c), s	8.0	7.1	1.1				0.0	5.8	1.6	7.4	0.0	0.0
Prop In Lane	0.08		1.00				0.00		1.00	0.18		0.00
Lane Grp Cap(c), veh/h	1056	700	898				0	467	396	494	0	0
V/C Ratio(X)	0.42	0.38	0.07				0.00	0.46	0.14	0.49	0.00	0.00
Avail Cap(c_a), veh/h	1056	700	898				0	655	555	660	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.4	7.2	5.9				0.0	19.1	17.5	19.5	0.0	0.0
Incr Delay (d2), s/veh	1.2	1.5	0.1				0.0	0.7	0.2	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	1.7	0.3				0.0	2.5	0.6	2.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.5	8.7	6.0				0.0	19.8	17.7	20.2	0.0	0.0
LnGrp LOS	A	A	A				A	B	B	C	A	A
Approach Vol, veh/h		767						270			243	
Approach Delay, s/veh		8.4						19.3			20.2	
Approach LOS		A						B			C	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		40.0		20.0				20.0				
Change Period (Y+Rc), s		* 6		* 5				* 5				
Max Green Setting (Gmax), s		* 28		* 21				* 21				
Max Q Clear Time (g_c+I1), s		0.0		9.4				7.8				
Green Ext Time (p_c), s		0.0		0.7				0.9				

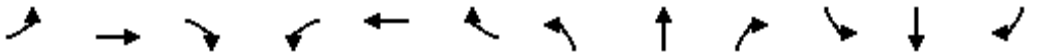
Intersection Summary	
HCM 6th Ctrl Delay	12.9
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	NBT	NBR	SBT
Lane Group Flow (vph)	714	23	178	35	184
v/c Ratio	0.44	0.02	0.38	0.08	0.43
Control Delay	7.9	1.8	21.1	7.2	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	1.8	21.1	7.2	22.3
Queue Length 50th (ft)	100	0	53	0	56
Queue Length 95th (ft)	165	6	99	17	104
Internal Link Dist (ft)	1750		1279		589
Turn Bay Length (ft)		65		65	
Base Capacity (vph)	1626	1060	683	603	617
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.44	0.02	0.26	0.06	0.30

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	632	21	0	0	0	0	162	32	32	136	0
Future Volume (veh/h)	17	632	21	0	0	0	0	162	32	32	136	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	19	695	23				0	178	35	35	149	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	46	1763	925				0	467	396	119	391	0
Arrive On Green	0.58	0.58	0.58				0.00	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	80	3021	1585				0	1870	1585	189	1568	0
Grp Volume(v), veh/h	446	268	23				0	178	35	184	0	0
Grp Sat Flow(s),veh/h/ln	1866	1234	1585				0	1870	1585	1757	0	0
Q Serve(g_s), s	7.8	6.9	0.4				0.0	4.7	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.8	6.9	0.4				0.0	4.7	1.0	4.9	0.0	0.0
Prop In Lane	0.04		1.00				0.00		1.00	0.19		0.00
Lane Grp Cap(c), veh/h	1089	721	925				0	467	396	510	0	0
V/C Ratio(X)	0.41	0.37	0.02				0.00	0.38	0.09	0.36	0.00	0.00
Avail Cap(c_a), veh/h	1089	721	925				0	686	581	706	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.79	0.79	0.79				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.8	6.6	5.3				0.0	18.7	17.3	18.7	0.0	0.0
Incr Delay (d2), s/veh	0.9	1.2	0.0				0.0	0.5	0.1	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	1.6	0.1				0.0	2.0	0.4	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	7.8	5.3				0.0	19.2	17.4	19.2	0.0	0.0
LnGrp LOS	A	A	A				A	B	B	B	A	A
Approach Vol, veh/h		737						213			184	
Approach Delay, s/veh		7.7						18.9			19.2	
Approach LOS		A						B			B	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		40.0		20.0				20.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		28.0		22.0				22.0				
Max Q Clear Time (g_c+I1), s		0.0		6.9				6.7				
Green Ext Time (p_c), s		0.0		0.6				0.7				

Intersection Summary												
HCM 6th Ctrl Delay			11.7									
HCM 6th LOS			B									

Lane Group	EBT	EBR	WBT	NBL
Lane Group Flow (vph)	2467	804	1887	163
v/c Ratio	0.63	0.62	0.69	0.43
Control Delay	5.4	5.0	2.4	54.9
Queue Delay	0.2	1.5	0.2	0.1
Total Delay	5.6	6.6	2.6	55.0
Queue Length 50th (ft)	177	81	51	40
Queue Length 95th (ft)	212	157	m83	m45
Internal Link Dist (ft)	880		220	97
Turn Bay Length (ft)		50		
Base Capacity (vph)	3925	1288	2731	858
Starvation Cap Reductn	0	0	209	119
Spillback Cap Reductn	566	293	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.73	0.81	0.75	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2220	724	0	1698	147	0
Future Volume (veh/h)	2220	724	0	1698	147	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	2467	804	0	1887	163	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	4822	1497	0	3356	0	0
Arrive On Green	0.94	0.94	0.00	1.00	0.00	0.00
Sat Flow, veh/h	5274	1585	0	3741	0	0
Grp Volume(v), veh/h	2467	804	0	1887	0	0
Grp Sat Flow(s),veh/h/ln	1702	1585	0	1777	0	0
Q Serve(g_s), s	4.7	5.1	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.7	5.1	0.0	0.0	0.0	0.0
Prop In Lane		1.00	0.00		0.00	0.00
Lane Grp Cap(c), veh/h	4822	1497	0	3356	0	0
V/C Ratio(X)	0.51	0.54	0.00	0.56	0.00	0.00
Avail Cap(c_a), veh/h	4822	1497	0	3356	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.44	0.00	0.00
Uniform Delay (d), s/veh	0.3	0.3	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	1.4	0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.6	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.7	1.7	0.0	0.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h	3271			1887	0	
Approach Delay, s/veh	0.9			0.3	0.0	
Approach LOS	A			A		

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	90.0				90.0	0.0
Change Period (Y+Rc), s	5.0				* 5	5.5
Max Green Setting (Gmax), s	57.0				* 57	22.5
Max Q Clear Time (g_c+I1), s	0.0				0.0	0.0
Green Ext Time (p_c), s	0.0				0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	0.7
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	669	0	0	0	0	0	0	0	55	0	0
Future Vol, veh/h	30	669	0	0	0	0	0	0	0	55	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	1084279808		-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	743	0	0	0	0	0	0	0	61	0	0

Major/Minor	Major1			Minor1			Minor2		
Conflicting Flow All	0	0	0	-	809	372	438	809	-
Stage 1	-	-	-	-	809	-	0	0	-
Stage 2	-	-	-	-	0	-	438	809	-
Critical Hdwy	4.14	-	-	-	6.54	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-	-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	4.02	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	-	-	-	0	313	625	502	313	0
Stage 1	-	-	-	0	392	-	-	-	0
Stage 2	-	-	-	0	-	-	567	392	0
Platoon blocked, %		-	-						
Mov Cap-1 Maneuver	-	-	-	-	313	625	502	313	-
Mov Cap-2 Maneuver	-	-	-	-	313	-	502	313	-
Stage 1	-	-	-	-	392	-	-	-	-
Stage 2	-	-	-	-	-	-	567	392	-

Approach	EB	NB	SB
HCM Control Delay, s		0	13.2
HCM LOS		A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	502
HCM Lane V/C Ratio	-	-	-	-	0.122
HCM Control Delay (s)	0	-	-	-	13.2
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	20	679	2	0	0	0	0	5	3	2	17	9	0
Future Vol, veh/h	20	679	2	0	0	0	0	5	3	2	17	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	1082	423	296	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	754	2	0	0	0	0	6	3	2	19	10	0

Major/Minor	Major1					Minor1			Minor2			
Conflicting Flow All	0	0	0			-	799	378	0	424	800	-
Stage 1	-	-	-			-	799	-	0	0	0	-
Stage 2	-	-	-			-	0	-	0	424	800	-
Critical Hdwy	4.14	-	-			-	6.54	6.94	-	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-			-	5.54	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-			-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-			-	4.02	3.32	-	3.52	4.02	-
Pot Cap-1 Maneuver	-	-	-			0	317	620	0	514	317	0
Stage 1	-	-	-			0	396	-	0	-	-	0
Stage 2	-	-	-			0	-	-	0	578	395	0
Platoon blocked, %		-	-						-			
Mov Cap-1 Maneuver	-	-	-			-	317	620	0	504	317	-
Mov Cap-2 Maneuver	-	-	-			-	317	-	0	504	317	-
Stage 1	-	-	-			-	396	-	0	-	-	-
Stage 2	-	-	-			-	-	-	0	567	395	-

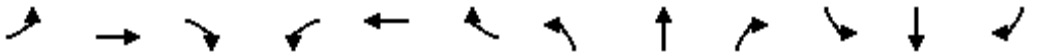
Approach	EB	NB	SB
HCM Control Delay, s		14.5	14.2
HCM LOS		B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	388	-	-	-	419
HCM Lane V/C Ratio	0.023	-	-	-	0.069
HCM Control Delay (s)	14.5	-	-	-	14.2
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1674	2201	407	43	22	302
v/c Ratio	0.86	0.79	0.66	0.08	0.12	0.51
Control Delay	8.8	18.6	26.9	7.6	23.0	27.8
Queue Delay	0.0	0.0	53.6	0.0	0.0	0.4
Total Delay	8.8	18.6	80.5	7.6	23.0	28.2
Queue Length 50th (ft)	66	338	208	5	9	136
Queue Length 95th (ft)	133	404	318	m19	27	216
Internal Link Dist (ft)	220	1083	121			464
Turn Bay Length (ft)					100	
Base Capacity (vph)	1950	2780	618	545	188	597
Starvation Cap Reductn	0	0	246	0	0	0
Spillback Cap Reductn	0	0	0	0	0	69
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.79	1.09	0.08	0.12	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1624	0	0	1964	171	0	395	42	21	225	68
Future Volume (veh/h)	0	1624	0	0	1964	171	0	395	42	21	225	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	1674	0	0	2025	0	0	407	43	22	232	70
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	2	2	0	2	2	2	2	2
Cap, veh/h	0	1958	0	0	2814		0	621	527	232	458	138
Arrive On Green	0.00	1.00	0.00	0.00	0.55	0.00	0.00	0.44	0.44	0.33	0.33	0.33
Sat Flow, veh/h	0	3741	0	0	5443	0	0	1870	1585	940	1379	416
Grp Volume(v), veh/h	0	1674	0	0	2025	0	0	407	43	22	0	302
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1702	0	0	1870	1585	940	0	1795
Q Serve(g_s), s	0.0	0.0	0.0	0.0	26.6	0.0	0.0	15.4	1.4	1.8	0.0	12.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	26.6	0.0	0.0	15.4	1.4	17.2	0.0	12.2
Prop In Lane	0.00		0.00	0.00		0.00	0.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	0	1958	0	0	2814		0	621	527	232	0	596
V/C Ratio(X)	0.00	0.85	0.00	0.00	0.72		0.00	0.65	0.08	0.09	0.00	0.51
Avail Cap(c_a), veh/h	0	1958	0	0	2814		0	621	527	232	0	596
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	15.0	0.0	0.0	21.1	17.2	32.4	0.0	24.1
Incr Delay (d2), s/veh	0.0	5.0	0.0	0.0	1.6	0.0	0.0	5.3	0.3	0.8	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.4	0.0	0.0	9.5	0.0	0.0	6.7	0.6	0.5	0.0	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.0	0.0	0.0	16.6	0.0	0.0	26.4	17.5	33.2	0.0	27.2
LnGrp LOS	A	A	A	A	B		A	C	B	C	A	C
Approach Vol, veh/h		1674			2025	A		450			324	
Approach Delay, s/veh		5.0			16.6			25.5			27.6	
Approach LOS		A			B			C			C	

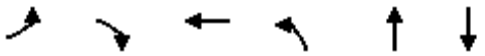
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		55.0		35.0		55.0		35.0				
Change Period (Y+Rc), s		* 5.4		* 5.1		* 5.4		* 5.1				
Max Green Setting (Gmax), s		* 50		* 30		* 50		* 30				
Max Q Clear Time (g_c+I1), s		0.0		19.2		0.0		17.4				
Green Ext Time (p_c), s		0.0		0.5		0.0		0.6				

Intersection Summary		
HCM 6th Ctrl Delay	14.0	
HCM 6th LOS	B	

Notes

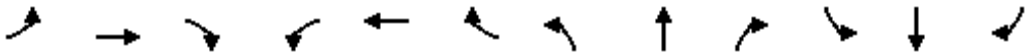
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	146	187	682	37	272	242
v/c Ratio	0.49	0.20	0.43	0.11	0.43	0.38
Control Delay	17.2	1.6	13.6	21.7	25.6	24.7
Queue Delay	1.2	1.5	0.2	5.9	1.2	5.2
Total Delay	18.3	3.1	13.8	27.6	26.8	29.9
Queue Length 50th (ft)	34	0	135	14	118	57
Queue Length 95th (ft)	57	17	186	37	189	130
Internal Link Dist (ft)			1750		531	121
Turn Bay Length (ft)						
Base Capacity (vph)	300	931	1574	324	633	633
Starvation Cap Reductn	47	572	0	0	0	322
Spillback Cap Reductn	6	0	293	246	186	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.52	0.53	0.47	0.61	0.78

Intersection Summary



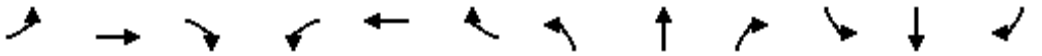
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	0	174	31	555	48	34	253	0	0	225	0
Future Volume (vph)	136	0	174	31	555	48	34	253	0	0	225	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0		7.0		7.0		4.4	4.4			4.4	
Lane Util. Factor	1.00		1.00		*0.80		1.00	1.00			1.00	
Frt	1.00		0.85		0.99		1.00	1.00			1.00	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583		2939		1770	1863			1863	
Flt Permitted	0.30		1.00		1.00		0.51	1.00			1.00	
Satd. Flow (perm)	563		1583		2939		955	1863			1863	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	146	0	187	33	597	52	37	272	0	0	242	0
RTOR Reduction (vph)	0	0	87	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	146	0	100	0	676	0	37	272	0	0	242	0
Turn Type	Perm		Perm	Perm	NA		Perm	NA			NA	
Protected Phases					6			8			4	
Permitted Phases	2		2	6			8					
Actuated Green, G (s)	48.0		48.0		48.0		30.6	30.6			30.6	
Effective Green, g (s)	48.0		48.0		48.0		30.6	30.6			30.6	
Actuated g/C Ratio	0.53		0.53		0.53		0.34	0.34			0.34	
Clearance Time (s)	7.0		7.0		7.0		4.4	4.4			4.4	
Lane Grp Cap (vph)	300		844		1567		324	633			633	
v/s Ratio Prot								c0.15			0.13	
v/s Ratio Perm	c0.26		0.06		0.23		0.04					
v/c Ratio	0.49		0.12		0.43		0.11	0.43			0.38	
Uniform Delay, d1	13.2		10.5		12.7		20.4	23.0			22.5	
Progression Factor	0.81		0.66		1.00		1.00	1.00			1.00	
Incremental Delay, d2	5.3		0.3		0.9		0.7	2.1			1.6	
Delay (s)	16.0		7.2		13.6		21.1	25.1			24.2	
Level of Service	B		A		B		C	C			C	
Approach Delay (s)		11.1			13.6			24.6			24.2	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	140	280	565	290	145	1183	161	845
v/c Ratio	0.27	0.15	0.85	0.60	0.52	0.40	0.77	0.62	0.54
Control Delay	31.7	16.2	53.8	29.8	12.3	11.8	25.9	23.0	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	16.2	53.8	29.8	12.3	11.8	25.9	23.0	19.8
Queue Length 50th (ft)	18	19	154	151	54	33	284	37	175
Queue Length 95th (ft)	49	42	#295	207	134	59	398	91	244
Internal Link Dist (ft)		368		409			880		1134
Turn Bay Length (ft)	125		100		60	100		125	
Base Capacity (vph)	153	928	329	943	554	494	1538	329	1565
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.15	0.85	0.60	0.52	0.29	0.77	0.49	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	80	50	260	525	270	135	1000	100	150	725	60
Future Volume (veh/h)	38	80	50	260	525	270	135	1000	100	150	725	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	86	54	280	565	290	145	1075	108	161	780	65
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	158	577	336	372	948	423	394	1514	152	298	1556	130
Arrive On Green	0.27	0.27	0.27	0.18	0.18	0.18	0.06	0.46	0.46	0.07	0.47	0.47
Sat Flow, veh/h	646	2162	1259	1249	3554	1585	1781	3261	327	1781	3321	277
Grp Volume(v), veh/h	41	69	71	280	565	290	145	585	598	161	417	428
Grp Sat Flow(s),veh/h/ln	646	1777	1644	1249	1777	1585	1781	1777	1811	1781	1777	1821
Q Serve(g_s), s	5.4	2.7	3.0	20.0	13.2	15.4	3.8	23.7	23.7	4.2	14.7	14.7
Cycle Q Clear(g_c), s	18.5	2.7	3.0	23.0	13.2	15.4	3.8	23.7	23.7	4.2	14.7	14.7
Prop In Lane	1.00		0.77	1.00		1.00	1.00		0.18	1.00		0.15
Lane Grp Cap(c), veh/h	158	474	438	372	948	423	394	825	841	298	832	853
V/C Ratio(X)	0.26	0.15	0.16	0.75	0.60	0.69	0.37	0.71	0.71	0.54	0.50	0.50
Avail Cap(c_a), veh/h	158	474	438	372	948	423	576	825	841	413	832	853
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	25.2	25.3	38.0	32.5	33.4	12.3	19.3	19.3	15.5	16.6	16.6
Incr Delay (d2), s/veh	4.0	0.7	0.8	12.3	2.6	8.2	0.2	5.1	5.1	0.6	2.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.2	1.2	7.6	6.2	7.1	1.4	10.2	10.4	1.6	6.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.1	25.8	26.1	50.3	35.1	41.6	12.5	24.4	24.3	16.1	18.8	18.7
LnGrp LOS	D	C	C	D	D	D	B	C	C	B	B	B
Approach Vol, veh/h		181			1135			1328			1006	
Approach Delay, s/veh		29.4			40.5			23.1			18.3	
Approach LOS		C			D			C			B	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		30.0	11.8	48.2		30.0	12.2	47.8				
Change Period (Y+Rc), s		* 6	6.0	* 6		* 6	6.0	* 6				
Max Green Setting (Gmax), s		* 24	15.0	* 33		* 24	12.0	* 36				
Max Q Clear Time (g_c+I1), s		20.5	5.8	0.0		25.0	6.2	0.0				
Green Ext Time (p_c), s		0.0	0.2	0.0		0.0	0.1	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			27.5									
HCM 6th LOS			C									

Notes

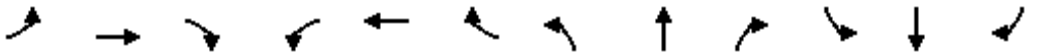
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	87	945	186	52	178
v/c Ratio	0.10	0.49	0.54	0.21	0.49
Control Delay	1.1	8.0	26.1	21.0	25.5
Queue Delay	0.0	0.0	1.0	0.0	0.0
Total Delay	1.1	8.0	27.2	21.0	25.5
Queue Length 50th (ft)	2	82	73	16	58
Queue Length 95th (ft)	m4	150	128	39	100
Internal Link Dist (ft)	585	1102	121		598
Turn Bay Length (ft)				90	
Base Capacity (vph)	838	1917	453	320	472
Starvation Cap Reductn	0	0	110	0	0
Spillback Cap Reductn	2	2	0	0	3
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.49	0.54	0.16	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	60	5	24	767	107	26	140	11	49	115	54
Future Volume (veh/h)	18	60	5	24	767	107	26	140	11	49	115	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	19	63	5	25	807	113	27	147	12	52	121	57
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	686	51	88	1964	271	87	215	16	290	201	95
Arrive On Green	0.65	0.65	0.65	0.65	0.65	0.65	0.06	0.06	0.06	0.17	0.17	0.17
Sat Flow, veh/h	223	1057	78	39	3026	417	110	1285	96	1227	1202	566
Grp Volume(v), veh/h	87	0	0	504	0	441	186	0	0	52	0	178
Grp Sat Flow(s),veh/h/ln	1358	0	0	1855	0	1627	1492	0	0	1227	0	1768
Q Serve(g_s), s	0.1	0.0	0.0	0.0	0.0	7.8	2.1	0.0	0.0	0.0	0.0	5.6
Cycle Q Clear(g_c), s	7.9	0.0	0.0	7.8	0.0	7.8	7.7	0.0	0.0	2.9	0.0	5.6
Prop In Lane	0.22		0.06	0.05		0.26	0.15		0.06	1.00		0.32
Lane Grp Cap(c), veh/h	955	0	0	1267	0	1056	319	0	0	290	0	296
V/C Ratio(X)	0.09	0.00	0.00	0.40	0.00	0.42	0.58	0.00	0.00	0.18	0.00	0.60
Avail Cap(c_a), veh/h	955	0	0	1267	0	1056	488	0	0	411	0	472
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.91	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	3.9	0.0	0.0	5.1	0.0	5.1	26.9	0.0	0.0	22.0	0.0	23.1
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.9	0.0	1.2	1.5	0.0	0.0	0.3	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	2.4	0.0	2.1	2.9	0.0	0.0	0.6	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.1	0.0	0.0	6.0	0.0	6.3	28.5	0.0	0.0	22.3	0.0	25.1
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	C
Approach Vol, veh/h		87			945			186			230	
Approach Delay, s/veh		4.1			6.1			28.5			24.4	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.9		16.1		43.9		16.1				
Change Period (Y+Rc), s		* 5		* 6		* 5		* 6				
Max Green Setting (Gmax), s		* 33		* 16		* 33		* 16				
Max Q Clear Time (g_c+I1), s		0.0		7.6		0.0		9.7				
Green Ext Time (p_c), s		0.0		0.6		0.0		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

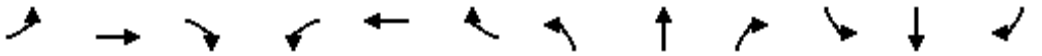
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	350	183	162
v/c Ratio	0.24	0.42	0.31
Control Delay	7.2	20.8	14.1
Queue Delay	0.0	0.0	0.3
Total Delay	7.2	20.8	14.4
Queue Length 50th (ft)	23	50	56
Queue Length 95th (ft)	m32	99	101
Internal Link Dist (ft)	257	187	121
Turn Bay Length (ft)			
Base Capacity (vph)	1459	438	523
Starvation Cap Reductn	0	0	94
Spillback Cap Reductn	134	1	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.26	0.42	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



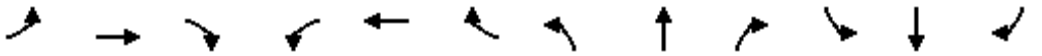
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	251	13	0	0	0	0	130	33	74	70	0
Future Volume (vph)	47	251	13	0	0	0	0	130	33	74	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		0.99						1.00			0.98	
Satd. Flow (prot)		3490						1812			1816	
Flt Permitted		0.99						1.00			0.79	
Satd. Flow (perm)		3490						1812			1466	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	53	282	15	0	0	0	0	146	37	83	79	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	345	0	0	0	0	0	168	0	0	162	0
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	2 1	
Permitted Phases	4									2 1		
Actuated Green, G (s)		25.0						14.0			21.0	
Effective Green, g (s)		25.0						14.0			21.0	
Actuated g/C Ratio		0.42						0.23			0.35	
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		1454						422			553	
v/s Ratio Prot								c0.09			c0.03	
v/s Ratio Perm		0.10									0.07	
v/c Ratio		0.24						0.40			0.29	
Uniform Delay, d1		11.3						19.4			14.1	
Progression Factor		0.60						1.00			1.06	
Incremental Delay, d2		0.4						2.8			1.3	
Delay (s)		7.2						22.2			16.3	
Level of Service		A						C			B	
Approach Delay (s)		7.2			0.0			22.2			16.3	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	992	150	423	21	244
v/c Ratio	0.66	0.38	0.62	0.09	0.36
Control Delay	10.6	7.1	8.7	13.7	14.9
Queue Delay	0.0	0.9	2.5	0.0	0.0
Total Delay	10.6	8.0	11.2	13.7	14.9
Queue Length 50th (ft)	130	8	19	5	59
Queue Length 95th (ft)	64	m14	43	18	109
Internal Link Dist (ft)	585		118		603
Turn Bay Length (ft)		75		150	
Base Capacity (vph)	1502	396	678	245	678
Starvation Cap Reductn	0	90	147	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.66	0.49	0.80	0.09	0.36

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	119	812	21	144	356	50	20	204	30
Future Volume (veh/h)	0	0	0	119	812	21	144	356	50	20	204	30
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h				124	846	22	150	371	52	21	212	31
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				2	2	2	2	2	2	2	2	2
Cap, veh/h				188	1358	37	427	588	82	363	585	86
Arrive On Green				0.90	0.90	0.90	0.73	0.73	0.73	0.37	0.37	0.37
Sat Flow, veh/h				419	3017	82	1137	1605	225	964	1595	233
Grp Volume(v), veh/h				492	0	500	150	0	423	21	0	243
Grp Sat Flow(s),veh/h/ln				1662	0	1856	1137	0	1830	964	0	1828
Q Serve(g_s), s				4.4	0.0	3.5	5.0	0.0	6.9	1.0	0.0	5.8
Cycle Q Clear(g_c), s				4.4	0.0	3.5	10.8	0.0	6.9	7.9	0.0	5.8
Prop In Lane				0.25		0.04	1.00		0.12	1.00		0.13
Lane Grp Cap(c), veh/h				748	0	835	427	0	671	363	0	670
V/C Ratio(X)				0.66	0.00	0.60	0.35	0.00	0.63	0.06	0.00	0.36
Avail Cap(c_a), veh/h				748	0	835	427	0	671	363	0	670
HCM Platoon Ratio				2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh				1.9	0.0	1.8	8.3	0.0	6.0	17.2	0.0	13.9
Incr Delay (d2), s/veh				4.5	0.0	3.2	2.3	0.0	4.5	0.3	0.0	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	0.0	1.3	0.9	0.0	2.3	0.2	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				6.4	0.0	5.0	10.6	0.0	10.4	17.5	0.0	15.4
LnGrp LOS				A	A	A	B	A	B	B	A	B
Approach Vol, veh/h					992			573			264	
Approach Delay, s/veh					5.7			10.5			15.6	
Approach LOS					A			B			B	

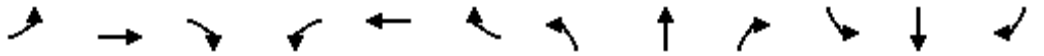
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				27.0		33.0		27.0				
Change Period (Y+Rc), s				5.0		6.0		5.0				
Max Green Setting (Gmax), s				22.0		27.0		22.0				
Max Q Clear Time (g_c+I1), s				9.9		0.0		12.8				
Green Ext Time (p_c), s				0.8		0.0		1.8				

Intersection Summary		
HCM 6th Ctrl Delay		8.6
HCM 6th LOS		A

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	385	629	344
v/c Ratio	0.23	0.68	0.37
Control Delay	11.0	15.7	7.5
Queue Delay	0.0	0.5	1.1
Total Delay	11.0	16.2	8.6
Queue Length 50th (ft)	26	155	55
Queue Length 95th (ft)	45	261	m85
Internal Link Dist (ft)	188	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	1690	925	931
Starvation Cap Reductn	0	0	360
Spillback Cap Reductn	0	70	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.23	0.74	0.60

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	244	93	0	0	0	0	526	65	0	323	0
Future Volume (veh/h)	24	244	93	0	0	0	0	526	65	0	323	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	0
Adj Flow Rate, veh/h	26	260	99				0	560	69	0	344	0
Peak Hour Factor	0.94	0.94	0.94				0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	112	1178	439				0	816	101	0	935	0
Arrive On Green	0.33	0.33	0.33				0.00	0.50	0.50	0.00	1.00	0.00
Sat Flow, veh/h	337	3535	1318				0	1633	201	0	1870	0
Grp Volume(v), veh/h	143	119	123				0	0	629	0	344	0
Grp Sat Flow(s),veh/h/ln	1854	1702	1633				0	0	1834	0	1870	0
Q Serve(g_s), s	3.3	3.0	3.2				0.0	0.0	15.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	3.0	3.2				0.0	0.0	15.7	0.0	0.0	0.0
Prop In Lane	0.18		0.81				0.00		0.11	0.00		0.00
Lane Grp Cap(c), veh/h	618	567	544				0	0	917	0	935	0
V/C Ratio(X)	0.23	0.21	0.23				0.00	0.00	0.69	0.00	0.37	0.00
Avail Cap(c_a), veh/h	618	567	544				0	0	917	0	935	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	14.4	14.3	14.4				0.0	0.0	11.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.9	0.8	1.0				0.0	0.0	4.2	0.0	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.2	1.2				0.0	0.0	6.3	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.3	15.2	15.4				0.0	0.0	15.6	0.0	1.1	0.0
LnGrp LOS	B	B	B				A	A	B	A	A	A
Approach Vol, veh/h		385						629			344	
Approach Delay, s/veh		15.3						15.6			1.1	
Approach LOS		B						B			A	

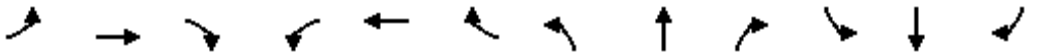
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		25.0		35.0				35.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		20.0		30.0				30.0				
Max Q Clear Time (g_c+I1), s		5.3		2.0				17.7				
Green Ext Time (p_c), s		1.3		1.4				2.4				

Intersection Summary												
HCM 6th Ctrl Delay			11.8									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	339	32	1038	99	34	45	22	85
v/c Ratio	0.04	0.12	0.04	0.37	0.55	0.13	0.18	0.12	0.30
Control Delay	4.8	3.7	3.8	4.4	47.1	33.3	11.5	33.3	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.8	3.7	3.8	4.4	47.1	33.3	11.5	33.3	12.7
Queue Length 50th (ft)	2	26	4	85	54	17	0	11	5
Queue Length 95th (ft)	m7	m48	13	149	98	42	28	31	43
Internal Link Dist (ft)		409		587		292			593
Turn Bay Length (ft)	150		125				115		
Base Capacity (vph)	383	2771	808	2793	334	476	438	349	469
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.12	0.04	0.37	0.30	0.07	0.10	0.06	0.18

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	290	25	30	945	20	92	32	42	20	9	70
Future Volume (veh/h)	15	290	25	30	945	20	92	32	42	20	9	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	312	27	32	1016	22	99	34	45	22	10	75
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	426	2454	211	852	2635	57	212	277	234	254	28	211
Arrive On Green	1.00	1.00	1.00	0.74	0.74	0.74	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	544	3311	285	1041	3556	77	1313	1870	1585	1320	190	1424
Grp Volume(v), veh/h	16	167	172	32	508	530	99	34	45	22	0	85
Grp Sat Flow(s),veh/h/ln	544	1777	1819	1041	1777	1856	1313	1870	1585	1320	0	1614
Q Serve(g_s), s	0.4	0.0	0.0	0.7	9.3	9.3	6.6	1.4	2.2	1.3	0.0	4.3
Cycle Q Clear(g_c), s	9.7	0.0	0.0	0.7	9.3	9.3	10.9	1.4	2.2	2.7	0.0	4.3
Prop In Lane	1.00		0.16	1.00		0.04	1.00		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	426	1317	1348	852	1317	1376	212	277	234	254	0	239
V/C Ratio(X)	0.04	0.13	0.13	0.04	0.39	0.39	0.47	0.12	0.19	0.09	0.00	0.36
Avail Cap(c_a), veh/h	426	1317	1348	852	1317	1376	353	478	405	396	0	412
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.7	0.0	0.0	3.1	4.2	4.2	39.4	33.3	33.6	34.5	0.0	34.5
Incr Delay (d2), s/veh	0.2	0.2	0.2	0.1	0.9	0.8	1.6	0.2	0.4	0.1	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.1	0.1	2.9	3.0	2.2	0.7	0.9	0.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.8	0.2	0.2	3.2	5.1	5.0	41.0	33.5	34.0	34.6	0.0	35.4
LnGrp LOS	A	A	A	A	A	A	D	C	C	C	A	D
Approach Vol, veh/h		355			1070			178			107	
Approach Delay, s/veh		0.2			5.0			37.8			35.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.7		18.3		71.7		18.3				
Change Period (Y+Rc), s		* 5		5.0		* 5		5.0				
Max Green Setting (Gmax), s		* 57		23.0		* 57		23.0				
Max Q Clear Time (g_c+I1), s		11.7		6.3		2.7		12.9				
Green Ext Time (p_c), s		0.1		0.3		0.2		0.5				

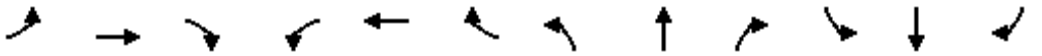
Intersection Summary		
HCM 6th Ctrl Delay		9.3
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	881	96	333	279	40
v/c Ratio	0.56	0.11	0.66	0.52	0.08
Control Delay	11.8	4.0	25.2	21.3	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	4.0	25.2	21.3	3.8
Queue Length 50th (ft)	116	4	107	86	0
Queue Length 95th (ft)	207	25	164	133	13
Internal Link Dist (ft)	575		1892	587	
Turn Bay Length (ft)		65			65
Base Capacity (vph)	1570	871	617	652	589
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.11	0.54	0.43	0.07

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	66	727	86	28	272	0	0	251	36
Future Volume (veh/h)	0	0	0	66	727	86	28	272	0	0	251	36
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				73	808	96	31	302	0	0	279	40
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				124	1440	740	85	390	0	0	468	396
Arrive On Green				0.47	0.47	0.47	0.25	0.25	0.00	0.00	0.25	0.25
Sat Flow, veh/h				267	3087	1585	77	1562	0	0	1870	1585
Grp Volume(v), veh/h				508	373	96	333	0	0	0	279	40
Grp Sat Flow(s),veh/h/ln				1857	1496	1585	1639	0	0	0	1870	1585
Q Serve(g_s), s				12.1	10.6	2.1	3.9	0.0	0.0	0.0	7.9	1.2
Cycle Q Clear(g_c), s				12.1	10.6	2.1	11.7	0.0	0.0	0.0	7.9	1.2
Prop In Lane				0.14		1.00	0.09		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				867	698	740	475	0	0	0	468	396
V/C Ratio(X)				0.59	0.53	0.13	0.70	0.00	0.00	0.00	0.60	0.10
Avail Cap(c_a), veh/h				867	698	740	650	0	0	0	655	555
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.7	11.4	9.1	21.0	0.0	0.0	0.0	19.8	17.3
Incr Delay (d2), s/veh				2.9	2.9	0.4	2.1	0.0	0.0	0.0	1.2	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.9	3.5	0.7	4.4	0.0	0.0	0.0	3.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				14.7	14.3	9.4	23.1	0.0	0.0	0.0	21.1	17.4
LnGrp LOS				B	B	A	C	A	A	A	C	B
Approach Vol, veh/h					977			333			319	
Approach Delay, s/veh					14.0			23.1			20.6	
Approach LOS					B			C			C	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				20.0		34.0		20.0				
Change Period (Y+Rc), s				* 5		6.0		* 5				
Max Green Setting (Gmax), s				* 21		28.0		* 21				
Max Q Clear Time (g_c+I1), s				9.9		0.0		13.7				
Green Ext Time (p_c), s				1.0		0.0		0.8				

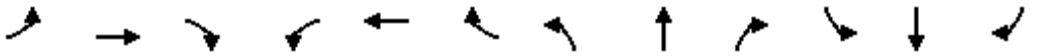
Intersection Summary		
HCM 6th Ctrl Delay	17.1	
HCM 6th LOS	B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	787	82	255	235	13
v/c Ratio	0.47	0.09	0.54	0.47	0.03
Control Delay	9.1	2.9	23.4	21.8	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	2.9	23.4	21.8	2.2
Queue Length 50th (ft)	88	2	81	73	0
Queue Length 95th (ft)	155	18	129	117	4
Internal Link Dist (ft)	556		1279	589	
Turn Bay Length (ft)		65			65
Base Capacity (vph)	1679	927	651	683	603
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.09	0.39	0.34	0.02

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	101	600	73	21	206	0	0	209	12
Future Volume (veh/h)	0	0	0	101	600	73	21	206	0	0	209	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				113	674	82	24	231	0	0	235	13
Peak Hour Factor				0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				215	1345	740	87	432	0	0	467	396
Arrive On Green				0.47	0.47	0.47	0.25	0.25	0.00	0.00	0.25	0.25
Sat Flow, veh/h				461	2883	1585	86	1729	0	0	1870	1585
Grp Volume(v), veh/h				453	334	82	255	0	0	0	235	13
Grp Sat Flow(s),veh/h/ln				1847	1496	1585	1814	0	0	0	1870	1585
Q Serve(g_s), s				10.4	9.2	1.7	0.0	0.0	0.0	0.0	6.5	0.4
Cycle Q Clear(g_c), s				10.4	9.2	1.7	7.1	0.0	0.0	0.0	6.5	0.4
Prop In Lane				0.25		1.00	0.09		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				862	698	740	519	0	0	0	467	396
V/C Ratio(X)				0.53	0.48	0.11	0.49	0.00	0.00	0.00	0.50	0.03
Avail Cap(c_a), veh/h				862	698	740	725	0	0	0	686	581
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.97	0.97	0.97	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				11.3	11.0	9.0	19.5	0.0	0.0	0.0	19.3	17.0
Incr Delay (d2), s/veh				2.2	2.3	0.3	0.7	0.0	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.1	3.0	0.6	2.9	0.0	0.0	0.0	2.7	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.5	13.3	9.3	20.3	0.0	0.0	0.0	20.1	17.1
LnGrp LOS				B	B	A	C	A	A	A	C	B
Approach Vol, veh/h					869			255			248	
Approach Delay, s/veh					13.0			20.3			20.0	
Approach LOS					B			C			B	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				20.0		33.0		20.0				
Change Period (Y+Rc), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				22.0		28.0		22.0				
Max Q Clear Time (g_c+I1), s				8.5		0.0		9.1				
Green Ext Time (p_c), s				0.8		0.0		0.8				

Intersection Summary		
HCM 6th Ctrl Delay		15.6
HCM 6th LOS		B

Lane Group	EBT	EBR	WBT	NBL
Lane Group Flow (vph)	1674	320	2095	607
v/c Ratio	0.85	0.35	0.74	0.54
Control Delay	22.4	8.6	2.4	25.0
Queue Delay	0.1	0.0	0.2	53.7
Total Delay	22.4	8.6	2.6	78.7
Queue Length 50th (ft)	395	61	21	91
Queue Length 95th (ft)	504	113	24	149
Internal Link Dist (ft)	880		220	97
Turn Bay Length (ft)		50		
Base Capacity (vph)	1966	923	2825	1125
Starvation Cap Reductn	0	0	167	595
Spillback Cap Reductn	9	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.35	0.79	1.15

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1624	310	0	2032	589	0
Future Volume (veh/h)	1624	310	0	2032	589	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	1674	320	0	2095	607	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	1974	881	0	2837	0	0
Arrive On Green	0.56	0.56	0.00	1.00	0.11	0.00
Sat Flow, veh/h	3647	1585	0	5443	0	0
Grp Volume(v), veh/h	1674	320	0	2095	0	0
Grp Sat Flow(s),veh/h/ln	1777	1585	0	1702	0	0
Q Serve(g_s), s	35.6	10.1	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	35.6	10.1	0.0	0.0	0.0	0.0
Prop In Lane		1.00	0.00		0.00	0.00
Lane Grp Cap(c), veh/h	1974	881	0	2837	0	0
V/C Ratio(X)	0.85	0.36	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	1974	881	0	2837	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	0.33	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	16.8	11.1	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.8	1.2	0.0	1.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.0	3.5	0.0	0.5	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.6	12.3	0.0	1.8	0.0	0.0
LnGrp LOS	C	B	A	A	A	A
Approach Vol, veh/h	1994			2095	0	
Approach Delay, s/veh	20.1			1.8	0.0	
Approach LOS	C			A		

Timer - Assigned Phs	2			6	8
Phs Duration (G+Y+Rc), s	55.0			55.0	35.0
Change Period (Y+Rc), s	5.0			* 5	5.5
Max Green Setting (Gmax), s	50.0			* 50	29.5
Max Q Clear Time (g_c+I1), s	0.0			0.0	0.0
Green Ext Time (p_c), s	0.0			0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	10.7
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	0	0	800	51	0	0	0	1	0	0	37
Future Vol, veh/h	0	0	0	0	800	51	0	0	0	1	0	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	941	60	0	0	0	1	0	0	44

Major/Minor	Major2			Minor1			Minor2				
Conflicting Flow All	0	0	0	471	1001	-	0	-	971	501	
Stage 1	-	-	-	0	0	-	0	-	971	-	
Stage 2	-	-	-	471	1001	-	0	-	0	-	
Critical Hdwy	4.14	-	-	7.54	6.54	-	-	-	6.54	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	5.54	-	
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-	-	-	-	
Follow-up Hdwy	2.22	-	-	3.52	4.02	-	-	-	4.02	3.32	
Pot Cap-1 Maneuver	-	-	-	476	241	0	0	0	251	515	
Stage 1	-	-	-	-	-	0	0	0	329	-	
Stage 2	-	-	-	542	319	0	0	0	-	-	
Platoon blocked, %		-	-				-				
Mov Cap-1 Maneuver	-	-	-	436	241	-	0	-	251	515	
Mov Cap-2 Maneuver	-	-	-	436	241	-	0	-	251	-	
Stage 1	-	-	-	-	-	-	0	-	329	-	
Stage 2	-	-	-	496	319	-	0	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	0	0	12.6
HCM LOS		A	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-	515
HCM Lane V/C Ratio	-	-	-	-	0.085
HCM Control Delay (s)	0	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	-	-	-	-	0.3

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	840	42	4	7	0	0	20	36
Future Vol, veh/h	0	0	0	5	840	42	4	7	0	0	20	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	913	46	4	8	0	0	22	39

Major/Minor	Major2			Minor1			Minor2			
Conflicting Flow All	0	0	0	478	969	-	-	946	480	
Stage 1	-	-	-	0	0	-	-	946	-	
Stage 2	-	-	-	478	969	-	-	0	-	
Critical Hdwy	4.14	-	-	7.54	6.54	-	-	6.54	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-	
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-	-	-	
Follow-up Hdwy	2.22	-	-	3.52	4.02	-	-	4.02	3.32	
Pot Cap-1 Maneuver	-	-	-	470	252	0	0	260	532	
Stage 1	-	-	-	-	-	0	0	338	-	
Stage 2	-	-	-	537	330	0	0	-	-	
Platoon blocked, %		-	-							
Mov Cap-1 Maneuver	-	-	-	407	252	-	-	260	532	
Mov Cap-2 Maneuver	-	-	-	407	252	-	-	260	-	
Stage 1	-	-	-	-	-	-	-	338	-	
Stage 2	-	-	-	466	330	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s		17.8	16
HCM LOS		C	C

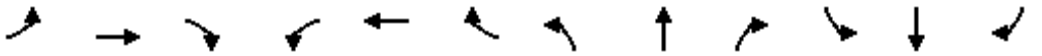
Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	293	-	-	-	387
HCM Lane V/C Ratio	0.041	-	-	-	0.157
HCM Control Delay (s)	17.8	-	-	-	16
HCM Lane LOS	C	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	2502	1850	247	26	47	472
v/c Ratio	0.83	0.88	0.46	0.05	0.18	0.92
Control Delay	7.9	22.8	16.9	2.7	25.0	55.5
Queue Delay	0.0	0.0	1.8	0.0	0.0	0.0
Total Delay	7.9	22.8	18.7	2.7	25.0	55.5
Queue Length 50th (ft)	75	460	52	1	19	250
Queue Length 95th (ft)	81	#665	90	m5	47	#420
Internal Link Dist (ft)	220	1083	121			464
Turn Bay Length (ft)					100	
Base Capacity (vph)	3026	2093	577	510	281	553
Starvation Cap Reductn	0	0	193	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.88	0.64	0.05	0.17	0.85

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2252	0	0	1581	84	0	222	23	42	308	117
Future Volume (veh/h)	0	2252	0	0	1581	84	0	222	23	42	308	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	2502	0	0	1757	0	0	247	26	47	342	130
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	0	0	2	2	0	2	2	2	2	2
Cap, veh/h	0	3060	0	0	2129		0	531	450	309	367	139
Arrive On Green	0.00	1.00	0.00	0.00	0.60	0.00	0.00	0.57	0.57	0.28	0.28	0.28
Sat Flow, veh/h	0	5443	0	0	3741	0	0	1870	1585	1106	1291	491
Grp Volume(v), veh/h	0	2502	0	0	1757	0	0	247	26	47	0	472
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1777	0	0	1870	1585	1106	0	1782
Q Serve(g_s), s	0.0	0.0	0.0	0.0	35.3	0.0	0.0	7.0	0.7	3.2	0.0	23.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	35.3	0.0	0.0	7.0	0.7	10.1	0.0	23.2
Prop In Lane	0.00		0.00	0.00		0.00	0.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	0	3060	0	0	2129		0	531	450	309	0	506
V/C Ratio(X)	0.00	0.82	0.00	0.00	0.83		0.00	0.46	0.06	0.15	0.00	0.93
Avail Cap(c_a), veh/h	0	3060	0	0	2129		0	580	491	337	0	552
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.63	0.00	0.00	1.00	0.00	0.00	0.94	0.94	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	14.3	0.0	0.0	15.4	14.1	29.6	0.0	31.4
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.0	3.8	0.0	0.0	0.2	0.0	0.1	0.0	21.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.0	0.0	13.1	0.0	0.0	2.5	0.2	0.8	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.6	0.0	0.0	18.1	0.0	0.0	15.6	14.1	29.7	0.0	52.5
LnGrp LOS	A	A	A	A	B		A	B	B	C	A	D
Approach Vol, veh/h		2502			1757	A		273			519	
Approach Delay, s/veh		1.6			18.1			15.5			50.5	
Approach LOS		A			B			B			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		59.3		30.7		59.3		30.7				
Change Period (Y+Rc), s		* 5.4		* 5.1		* 5.4		* 5.1				
Max Green Setting (Gmax), s		* 52		* 28		* 52		* 28				
Max Q Clear Time (g_c+I1), s		0.0		25.2		0.0		9.0				
Green Ext Time (p_c), s		0.0		0.4		0.0		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	13.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

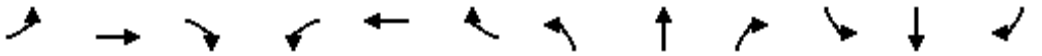
Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	764	498	173	219	22	340
v/c Ratio	0.09	0.69	0.48	1.09	0.43	0.09	0.67
Control Delay	5.9	12.6	13.5	131.8	27.8	1.6	6.5
Queue Delay	0.7	1.1	61.4	7.3	0.0	0.0	1.4
Total Delay	6.6	13.8	74.9	139.1	27.8	1.6	7.9
Queue Length 50th (ft)	6	284	152	~103	98	1	9
Queue Length 95th (ft)	m10	410	246	#194	138	m0	m8
Internal Link Dist (ft)		97	1750		531		121
Turn Bay Length (ft)							
Base Capacity (vph)	524	1110	1039	203	650	329	654
Starvation Cap Reductn	321	155	0	0	0	0	157
Spillback Cap Reductn	0	0	784	14	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.80	1.95	0.92	0.34	0.07	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	609	41	25	372	26	147	177	9	19	289	0
Future Volume (veh/h)	42	609	41	25	372	26	147	177	9	19	289	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	716	48	29	438	0	173	208	11	22	340	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	350	934	63	65	799		274	589	31	365	625	0
Arrive On Green	0.54	0.54	0.54	0.54	0.54	0.00	0.33	0.33	0.33	0.33	0.33	0.00
Sat Flow, veh/h	951	1733	116	42	1482	0	1040	1760	93	1162	1870	0
Grp Volume(v), veh/h	49	0	764	467	0	0	173	0	219	22	340	0
Grp Sat Flow(s),veh/h/ln	951	0	1849	1524	0	0	1040	0	1854	1162	1870	0
Q Serve(g_s), s	0.0	0.0	29.2	2.7	0.0	0.0	14.6	0.0	8.0	1.3	13.3	0.0
Cycle Q Clear(g_c), s	9.3	0.0	29.2	31.9	0.0	0.0	27.9	0.0	8.0	9.3	13.3	0.0
Prop In Lane	1.00		0.06	0.06		0.00	1.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	350	0	997	864	0		274	0	620	365	625	0
V/C Ratio(X)	0.14	0.00	0.77	0.54	0.00		0.63	0.00	0.35	0.06	0.54	0.00
Avail Cap(c_a), veh/h	350	0	997	864	0		291	0	651	384	657	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.00	0.71	0.95	0.00	0.00	1.00	0.00	1.00	0.28	0.28	0.00
Uniform Delay (d), s/veh	11.7	0.0	16.3	13.1	0.0	0.0	35.7	0.0	22.6	26.1	24.4	0.0
Incr Delay (d2), s/veh	0.6	0.0	4.1	2.3	0.0	0.0	2.8	0.0	0.1	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	12.3	5.9	0.0	0.0	3.8	0.0	3.4	0.4	5.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.3	0.0	20.4	15.4	0.0	0.0	38.5	0.0	22.7	26.1	24.5	0.0
LnGrp LOS	B	A	C	B	A		D	A	C	C	C	A
Approach Vol, veh/h		813			467	A		392			362	
Approach Delay, s/veh		19.9			15.4			29.7			24.6	
Approach LOS		B			B			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		55.5		34.5		55.5		34.5				
Change Period (Y+Rc), s		* 7		4.4		* 7		4.4				
Max Green Setting (Gmax), s		* 47		31.6		* 47		31.6				
Max Q Clear Time (g_c+I1), s		0.0		15.3		0.0		29.9				
Green Ext Time (p_c), s		0.0		0.5		0.0		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

Notes

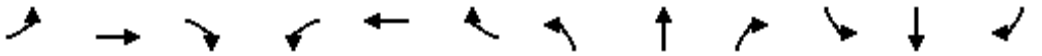
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	50	599	150	361	150	49	774	261	985
v/c Ratio	0.14	0.48	0.66	0.29	0.23	0.28	0.70	0.77	0.55
Control Delay	21.2	20.2	39.1	19.5	3.1	28.0	30.5	31.1	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.2	20.2	39.1	19.5	3.1	28.0	30.5	31.1	16.2
Queue Length 50th (ft)	19	114	62	54	0	21	201	81	188
Queue Length 95th (ft)	46	163	#136	74	21	53	267	#172	245
Internal Link Dist (ft)		368		409			880		1134
Turn Bay Length (ft)	125		100		60	100		125	
Base Capacity (vph)	345	1250	226	1258	659	177	1112	347	1801
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.48	0.66	0.29	0.23	0.28	0.70	0.75	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	344	195	135	325	135	44	511	185	235	850	37
Future Volume (veh/h)	45	344	195	135	325	135	44	511	185	235	850	37
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	50	382	217	150	361	150	49	568	206	261	944	41
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	363	781	437	258	1264	564	267	835	302	383	1773	77
Arrive On Green	0.36	0.36	0.36	0.71	0.71	0.71	0.33	0.33	0.33	0.12	0.51	0.51
Sat Flow, veh/h	889	2196	1230	820	3554	1585	571	2556	925	1781	3469	151
Grp Volume(v), veh/h	50	308	291	150	361	150	49	394	380	261	483	502
Grp Sat Flow(s),veh/h/ln	889	1777	1649	820	1777	1585	571	1777	1704	1781	1777	1843
Q Serve(g_s), s	3.7	12.2	12.4	14.7	3.3	3.0	5.7	17.3	17.4	8.6	16.4	16.4
Cycle Q Clear(g_c), s	7.0	12.2	12.4	27.1	3.3	3.0	5.7	17.3	17.4	8.6	16.4	16.4
Prop In Lane	1.00		0.75	1.00		1.00	1.00		0.54	1.00		0.08
Lane Grp Cap(c), veh/h	363	632	586	258	1264	564	267	580	557	383	908	942
V/C Ratio(X)	0.14	0.49	0.50	0.58	0.29	0.27	0.18	0.68	0.68	0.68	0.53	0.53
Avail Cap(c_a), veh/h	363	632	586	258	1264	564	267	580	557	391	908	942
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	22.6	22.7	17.8	8.9	8.8	22.3	26.2	26.2	19.0	14.8	14.8
Incr Delay (d2), s/veh	0.8	2.7	3.0	9.0	0.6	1.1	1.5	6.3	6.6	3.8	2.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.4	5.1	2.6	1.2	1.1	0.8	8.0	7.7	3.7	6.6	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	25.3	25.7	26.9	9.4	9.9	23.8	32.5	32.9	22.8	17.0	16.9
LnGrp LOS	C	C	C	C	A	A	C	C	C	C	B	B
Approach Vol, veh/h		649			661			823			1246	
Approach Delay, s/veh		25.3			13.5			32.2			18.2	
Approach LOS		C			B			C			B	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		38.0		52.0		38.0	16.6	35.4				
Change Period (Y+Rc), s		* 6		* 6		* 6	6.0	* 6				
Max Green Setting (Gmax), s		* 32		* 46		* 32	11.0	* 29				
Max Q Clear Time (g_c+I1), s		9.0		0.0		29.1	10.6	7.7				
Green Ext Time (p_c), s		0.1		0.0		0.1	0.0	0.2				

Intersection Summary												
HCM 6th Ctrl Delay			22.0									
HCM 6th LOS			C									

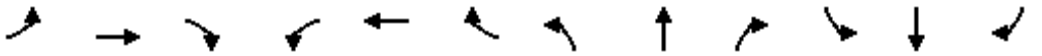
Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	210	867	68	39	224
v/c Ratio	0.22	0.47	0.18	0.13	0.58
Control Delay	4.4	8.4	20.3	18.5	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.2
Total Delay	4.4	8.4	20.3	18.5	26.8
Queue Length 50th (ft)	17	77	24	12	73
Queue Length 95th (ft)	40	143	59	30	120
Internal Link Dist (ft)	585	1102	121		598
Turn Bay Length (ft)				90	
Base Capacity (vph)	934	1856	524	398	531
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	48
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.47	0.13	0.10	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	185	2	30	716	86	5	46	14	37	143	72
Future Volume (veh/h)	14	185	2	30	716	86	5	46	14	37	143	72
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	15	193	2	31	746	90	5	48	15	39	149	75
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	1097	11	102	1988	235	70	202	59	296	195	98
Arrive On Green	1.00	1.00	1.00	0.65	0.65	0.65	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	58	1686	17	58	3055	361	34	1217	354	1339	1173	591
Grp Volume(v), veh/h	210	0	0	459	0	408	68	0	0	39	0	224
Grp Sat Flow(s),veh/h/ln	1761	0	0	1837	0	1637	1605	0	0	1339	0	1764
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	7.3
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.8	0.0	7.0	7.3	0.0	0.0	2.1	0.0	7.3
Prop In Lane	0.07		0.01	0.07		0.22	0.07		0.22	1.00		0.33
Lane Grp Cap(c), veh/h	1210	0	0	1260	0	1065	331	0	0	296	0	293
V/C Ratio(X)	0.17	0.00	0.00	0.36	0.00	0.38	0.21	0.00	0.00	0.13	0.00	0.76
Avail Cap(c_a), veh/h	1210	0	0	1260	0	1065	562	0	0	475	0	529
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	4.9	0.0	4.9	21.7	0.0	0.0	21.8	0.0	23.9
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.8	0.0	1.0	0.3	0.0	0.0	0.2	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	2.1	0.0	1.9	0.8	0.0	0.0	0.5	0.0	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.3	0.0	0.0	5.7	0.0	5.9	22.0	0.0	0.0	22.0	0.0	28.1
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	C
Approach Vol, veh/h		210			867			68			263	
Approach Delay, s/veh		0.3			5.8			22.0			27.2	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.0		16.0		44.0		16.0				
Change Period (Y+Rc), s		* 5		* 6		* 5		* 6				
Max Green Setting (Gmax), s		* 31		* 18		* 31		* 18				
Max Q Clear Time (g_c+I1), s		0.0		9.3		0.0		9.3				
Green Ext Time (p_c), s		0.0		0.7		0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

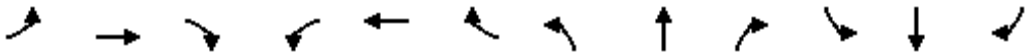
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	403	39	65	198
v/c Ratio	0.29	0.06	0.14	0.34
Control Delay	5.7	0.1	13.4	9.2
Queue Delay	0.0	0.0	0.0	0.6
Total Delay	5.7	0.1	13.4	9.8
Queue Length 50th (ft)	21	0	11	35
Queue Length 95th (ft)	27	m0	36	68
Internal Link Dist (ft)	257		187	121
Turn Bay Length (ft)				
Base Capacity (vph)	1410	698	460	589
Starvation Cap Reductn	0	0	0	153
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.29	0.06	0.14	0.45

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



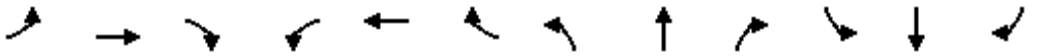
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	326	34	0	0	0	0	36	21	69	106	0
Future Volume (vph)	29	326	34	0	0	0	0	36	21	69	106	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0					5.0			5.0	
Lane Util. Factor		0.95	1.00					1.00			1.00	
Frt		1.00	0.85					0.95			1.00	
Flt Protected		1.00	1.00					1.00			0.98	
Satd. Flow (prot)		3525	1583					1770			1827	
Flt Permitted		1.00	1.00					1.00			0.87	
Satd. Flow (perm)		3525	1583					1770			1628	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	33	370	39	0	0	0	0	41	24	78	120	0
RTOR Reduction (vph)	0	0	23	0	0	0	0	18	0	0	0	0
Lane Group Flow (vph)	0	403	16	0	0	0	0	47	0	0	198	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	2 1	
Permitted Phases	4		4							2 1		
Actuated Green, G (s)		24.0	24.0					15.0			22.0	
Effective Green, g (s)		24.0	24.0					15.0			22.0	
Actuated g/C Ratio		0.40	0.40					0.25			0.37	
Clearance Time (s)		5.0	5.0					5.0				
Lane Grp Cap (vph)		1410	633					442			620	
v/s Ratio Prot								0.03			c0.04	
v/s Ratio Perm		0.11	0.01								c0.08	
v/c Ratio		0.29	0.02					0.11			0.32	
Uniform Delay, d1		12.2	10.9					17.3			13.6	
Progression Factor		0.42	1.00					1.00			0.67	
Incremental Delay, d2		0.5	0.1					0.5			1.3	
Delay (s)		5.6	11.0					17.8			10.4	
Level of Service		A	B					B			B	
Approach Delay (s)		6.1			0.0			17.8			10.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	140	820	104	309	26	344
v/c Ratio	0.16	0.60	0.36	0.48	0.08	0.53
Control Delay	9.9	8.3	10.4	8.5	14.0	18.3
Queue Delay	0.0	0.0	0.3	1.0	0.0	0.0
Total Delay	9.9	8.3	10.6	9.5	14.0	18.3
Queue Length 50th (ft)	27	48	8	18	6	91
Queue Length 95th (ft)	55	62	m18	30	21	161
Internal Link Dist (ft)	48	585		118		603
Turn Bay Length (ft)			75		150	
Base Capacity (vph)	869	1359	288	647	318	647
Starvation Cap Reductn	0	0	24	152	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.60	0.39	0.62	0.08	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	127	0	116	597	34	95	217	65	24	260	53
Future Volume (veh/h)	0	127	0	116	597	34	95	217	65	24	260	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	140	0	127	656	37	104	238	71	26	286	58
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	2	0	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	873	0	276	1288	71	325	484	144	410	528	107
Arrive On Green	0.00	0.47	0.00	0.93	0.93	0.93	0.70	0.70	0.70	0.35	0.35	0.35
Sat Flow, veh/h	0	1870	0	423	2759	153	1037	1383	413	1070	1509	306
Grp Volume(v), veh/h	0	140	0	415	0	405	104	0	309	26	0	344
Grp Sat Flow(s),veh/h/ln	0	1870	0	1660	0	1674	1037	0	1796	1070	0	1815
Q Serve(g_s), s	0.0	2.6	0.0	0.0	0.0	1.9	4.5	0.0	4.7	1.1	0.0	9.1
Cycle Q Clear(g_c), s	0.0	2.6	0.0	1.6	0.0	1.9	13.7	0.0	4.7	5.8	0.0	9.1
Prop In Lane	0.00		0.00	0.31		0.09	1.00		0.23	1.00		0.17
Lane Grp Cap(c), veh/h	0	873	0	853	0	781	325	0	629	410	0	635
V/C Ratio(X)	0.00	0.16	0.00	0.49	0.00	0.52	0.32	0.00	0.49	0.06	0.00	0.54
Avail Cap(c_a), veh/h	0	873	0	853	0	781	325	0	629	410	0	635
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.88	0.00	0.88	0.85	0.00	0.85	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.2	0.0	1.1	0.0	1.1	11.3	0.0	6.6	16.3	0.0	15.6
Incr Delay (d2), s/veh	0.0	0.4	0.0	1.7	0.0	2.2	2.2	0.0	2.3	0.3	0.0	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.0	0.0	0.7	0.0	0.8	0.8	0.0	1.6	0.3	0.0	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.6	0.0	2.9	0.0	3.3	13.5	0.0	8.9	16.6	0.0	18.9
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	B
Approach Vol, veh/h		140			820			413			370	
Approach Delay, s/veh		9.6			3.1			10.1			18.8	
Approach LOS		A			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.0		26.0		34.0		26.0				
Change Period (Y+Rc), s		* 6		5.0		* 6		5.0				
Max Green Setting (Gmax), s		* 28		21.0		* 28		21.0				
Max Q Clear Time (g_c+I1), s		0.0		11.1		0.0		15.7				
Green Ext Time (p_c), s		0.0		1.1		0.0		0.9				

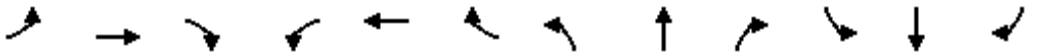
Intersection Summary		
HCM 6th Ctrl Delay		8.6
HCM 6th LOS		A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	557	490	422
v/c Ratio	0.34	0.52	0.44
Control Delay	14.0	11.3	6.5
Queue Delay	0.0	0.1	0.7
Total Delay	14.0	11.4	7.2
Queue Length 50th (ft)	46	99	55
Queue Length 95th (ft)	70	167	72
Internal Link Dist (ft)	188	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	1618	951	962
Starvation Cap Reductn	0	0	257
Spillback Cap Reductn	0	28	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	0.53	0.60

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	382	88	0	0	0	0	351	85	0	376	0
Future Volume (veh/h)	26	382	88	0	0	0	0	351	85	0	376	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	0
Adj Flow Rate, veh/h	29	429	99				0	394	96	0	422	0
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	82	1284	299				0	751	183	0	966	0
Arrive On Green	0.32	0.32	0.32				0.00	0.52	0.52	0.00	1.00	0.00
Sat Flow, veh/h	260	4054	945				0	1453	354	0	1870	0
Grp Volume(v), veh/h	207	172	178				0	0	490	0	422	0
Grp Sat Flow(s),veh/h/ln	1857	1702	1700				0	0	1807	0	1870	0
Q Serve(g_s), s	5.1	4.6	4.8				0.0	0.0	10.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.1	4.6	4.8				0.0	0.0	10.8	0.0	0.0	0.0
Prop In Lane	0.14		0.56				0.00		0.20	0.00		0.00
Lane Grp Cap(c), veh/h	588	539	538				0	0	933	0	966	0
V/C Ratio(X)	0.35	0.32	0.33				0.00	0.00	0.52	0.00	0.44	0.00
Avail Cap(c_a), veh/h	588	539	538				0	0	933	0	966	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	15.8	15.6	15.6				0.0	0.0	9.6	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.7	1.6	1.6				0.0	0.0	2.1	0.0	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.9	1.9				0.0	0.0	4.0	0.0	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.4	17.1	17.3				0.0	0.0	11.7	0.0	1.4	0.0
LnGrp LOS	B	B	B				A	A	B	A	A	A
Approach Vol, veh/h		557						490			422	
Approach Delay, s/veh		17.3						11.7			1.4	
Approach LOS		B						B			A	

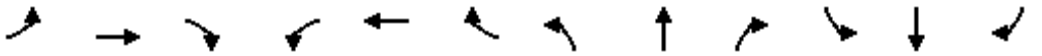
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		24.0		36.0				36.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		19.0		31.0				31.0				
Max Q Clear Time (g_c+I1), s		7.1		2.0				12.8				
Green Ext Time (p_c), s		1.8		1.8				2.0				

Intersection Summary												
HCM 6th Ctrl Delay			10.9									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	45	823	73	662	27	19	45	20	30
v/c Ratio	0.07	0.28	0.14	0.22	0.21	0.11	0.24	0.16	0.17
Control Delay	1.7	1.8	2.9	2.3	41.7	38.5	15.1	40.1	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.7	1.8	2.9	2.3	41.7	38.5	15.1	40.1	35.1
Queue Length 50th (ft)	3	38	7	35	15	10	0	11	13
Queue Length 95th (ft)	m6	53	18	53	39	30	30	32	39
Internal Link Dist (ft)		409		587		292			593
Turn Bay Length (ft)	150		125				115		
Base Capacity (vph)	622	2903	528	2946	259	351	335	262	347
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.28	0.14	0.22	0.10	0.05	0.13	0.08	0.09

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	624	100	64	567	16	24	17	40	18	22	4
Future Volume (veh/h)	40	624	100	64	567	16	24	17	40	18	22	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	709	114	73	644	18	27	19	45	20	25	5
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	666	2461	395	614	2834	79	178	161	137	183	131	26
Arrive On Green	1.00	1.00	1.00	0.80	0.80	0.80	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	773	3066	493	665	3531	99	1380	1870	1585	1338	1513	303
Grp Volume(v), veh/h	45	411	412	73	324	338	27	19	45	20	0	30
Grp Sat Flow(s),veh/h/ln	773	1777	1782	665	1777	1853	1380	1870	1585	1338	0	1816
Q Serve(g_s), s	0.3	0.0	0.0	2.2	4.0	4.0	1.7	0.8	2.4	1.3	0.0	1.4
Cycle Q Clear(g_c), s	4.3	0.0	0.0	2.2	4.0	4.0	3.1	0.8	2.4	2.1	0.0	1.4
Prop In Lane	1.00		0.28	1.00		0.05	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	666	1426	1430	614	1426	1487	178	161	137	183	0	157
V/C Ratio(X)	0.07	0.29	0.29	0.12	0.23	0.23	0.15	0.12	0.33	0.11	0.00	0.19
Avail Cap(c_a), veh/h	666	1426	1430	614	1426	1487	319	353	299	320	0	343
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.1	0.0	0.0	2.0	2.1	2.1	39.6	38.0	38.7	38.9	0.0	38.2
Incr Delay (d2), s/veh	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.3	1.4	0.3	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.2	0.2	1.0	1.0	0.6	0.4	1.0	0.4	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.3	0.4	0.4	2.4	2.5	2.5	40.0	38.3	40.1	39.2	0.0	38.8
LnGrp LOS	A	A	A	A	A	A	D	D	D	D	A	D
Approach Vol, veh/h		868			735			91			50	
Approach Delay, s/veh		0.4			2.5			39.7			38.9	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		77.2		12.8		77.2		12.8				
Change Period (Y+Rc), s		* 5		5.0		* 5		5.0				
Max Green Setting (Gmax), s		* 63		17.0		* 63		17.0				
Max Q Clear Time (g_c+I1), s		6.3		4.1		4.2		5.1				
Green Ext Time (p_c), s		0.2		0.1		0.2		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	4.4	
HCM 6th LOS	A	

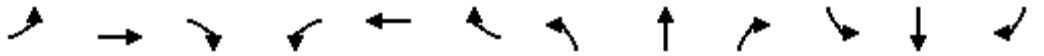
Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	667	62	436	22	215	56	241	23
v/c Ratio	0.66	0.07	0.45	0.02	0.50	0.13	0.57	0.05
Control Delay	7.0	0.3	9.5	1.6	24.1	6.7	25.9	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	0.3	9.5	1.6	24.1	6.7	25.9	2.2
Queue Length 50th (ft)	20	0	82	0	67	0	76	0
Queue Length 95th (ft)	34	1	140	5	124	23	140	6
Internal Link Dist (ft)	586		575		1892		587	
Turn Bay Length (ft)		65		65		50		65
Base Capacity (vph)	1017	916	965	912	429	437	422	437
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.07	0.45	0.02	0.50	0.13	0.57	0.05

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	575	56	35	362	20	28	167	51	38	181	21
Future Volume (veh/h)	32	575	56	35	362	20	28	167	51	38	181	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	632	62	38	398	22	31	184	56	42	199	23
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	520	898	65	499	898	69	208	396	70	174	396
Arrive On Green	0.19	0.19	0.19	0.57	0.57	0.57	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	0	917	1585	0	880	1585	0	830	1585	0	695	1585
Grp Volume(v), veh/h	667	0	62	436	0	22	215	0	56	241	0	23
Grp Sat Flow(s),veh/h/ln	917	0	1585	880	0	1585	830	0	1585	695	0	1585
Q Serve(g_s), s	0.0	0.0	1.9	0.0	0.0	0.4	0.0	0.0	1.6	0.0	0.0	0.7
Cycle Q Clear(g_c), s	34.0	0.0	1.9	34.0	0.0	0.4	15.0	0.0	1.6	15.0	0.0	0.7
Prop In Lane	0.05		1.00	0.09		1.00	0.14		1.00	0.17		1.00
Lane Grp Cap(c), veh/h	583	0	898	564	0	898	276	0	396	244	0	396
V/C Ratio(X)	1.14	0.00	0.07	0.77	0.00	0.02	0.78	0.00	0.14	0.99	0.00	0.06
Avail Cap(c_a), veh/h	583	0	898	564	0	898	276	0	396	244	0	396
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.00	0.92	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	11.4	15.3	0.0	5.7	19.6	0.0	17.5	21.2	0.0	17.1
Incr Delay (d2), s/veh	82.6	0.0	0.1	9.9	0.0	0.1	13.2	0.0	0.2	53.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.6	0.0	0.6	5.4	0.0	0.1	3.4	0.0	0.6	6.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	101.1	0.0	11.5	25.2	0.0	5.8	32.8	0.0	17.7	74.8	0.0	17.2
LnGrp LOS	F	A	B	C	A	A	C	A	B	E	A	B
Approach Vol, veh/h		729			458			271			264	
Approach Delay, s/veh		93.5			24.3			29.7			69.8	
Approach LOS		F			C			C			E	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	40.0	20.0	40.0	20.0
Change Period (Y+Rc), s	* 6	* 5	* 6	* 5
Max Green Setting (Gmax), s	* 34	* 15	* 34	* 15
Max Q Clear Time (g_c+I1), s	0.0	17.0	0.0	17.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	61.4
HCM 6th LOS	E

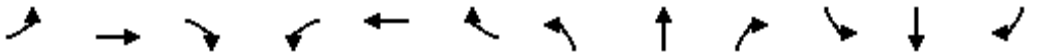
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	677	23	439	12	178	35	182	20
v/c Ratio	0.55	0.02	0.36	0.01	0.41	0.08	0.43	0.05
Control Delay	9.8	1.6	2.4	0.0	22.1	7.5	22.7	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	1.6	2.4	0.0	22.1	7.5	22.7	4.4
Queue Length 50th (ft)	142	0	17	0	54	0	55	0
Queue Length 95th (ft)	237	5	27	m0	103	18	106	9
Internal Link Dist (ft)	1750		556		1279		589	
Turn Bay Length (ft)		65		65		65		65
Base Capacity (vph)	1223	1067	1212	1067	439	422	422	422
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.02	0.36	0.01	0.41	0.08	0.43	0.05

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	599	21	14	386	11	19	143	32	30	136	18
Future Volume (veh/h)	17	599	21	14	386	11	19	143	32	30	136	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	19	658	23	15	424	12	21	157	35	33	149	20
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	73	1069	925	74	1062	925	92	429	396	115	398	396
Arrive On Green	0.58	0.58	0.58	0.19	0.19	0.19	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	19	1832	1585	20	1820	1585	98	1719	1585	175	1595	1585
Grp Volume(v), veh/h	677	0	23	439	0	12	178	0	35	182	0	20
Grp Sat Flow(s),veh/h/ln	1852	0	1585	1840	0	1585	1818	0	1585	1770	0	1585
Q Serve(g_s), s	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0	1.0	0.0	0.0	0.6
Cycle Q Clear(g_c), s	14.2	0.0	0.4	12.3	0.0	0.4	4.7	0.0	1.0	4.9	0.0	0.6
Prop In Lane	0.03		1.00	0.03		1.00	0.12		1.00	0.18		1.00
Lane Grp Cap(c), veh/h	1142	0	925	1136	0	925	521	0	396	513	0	396
V/C Ratio(X)	0.59	0.00	0.02	0.39	0.00	0.01	0.34	0.00	0.09	0.35	0.00	0.05
Avail Cap(c_a), veh/h	1142	0	925	1136	0	925	521	0	396	513	0	396
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.00	0.69	0.98	0.00	0.98	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.2	0.0	5.3	15.1	0.0	10.2	18.7	0.0	17.3	18.7	0.0	17.1
Incr Delay (d2), s/veh	1.6	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.1	0.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	0.1	6.3	0.0	0.1	1.9	0.0	0.4	2.0	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.7	0.0	5.3	16.0	0.0	10.3	19.0	0.0	17.4	19.1	0.0	17.2
LnGrp LOS	A	A	A	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		700			451			213			202	
Approach Delay, s/veh		9.6			15.9			18.8			18.9	
Approach LOS		A			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		15.0		35.0		15.0				
Max Q Clear Time (g_c+I1), s		0.0		6.9		0.0		6.7				
Green Ext Time (p_c), s		0.0		0.4		0.0		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			13.8									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	NBL
Lane Group Flow (vph)	2502	769	1887	577
v/c Ratio	0.72	0.65	0.78	0.85
Control Delay	10.6	8.1	2.4	50.4
Queue Delay	0.1	0.4	0.2	55.7
Total Delay	10.7	8.5	2.6	106.1
Queue Length 50th (ft)	286	123	37	163
Queue Length 95th (ft)	372	257	40	m214
Internal Link Dist (ft)	880		220	97
Turn Bay Length (ft)		50		
Base Capacity (vph)	3491	1178	2430	781
Starvation Cap Reductn	0	0	109	412
Spillback Cap Reductn	180	102	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.76	0.71	0.81	1.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2252	692	0	1698	519	0
Future Volume (veh/h)	2252	692	0	1698	519	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	2502	769	0	1887	577	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	4822	1497	0	3356	0	0
Arrive On Green	0.94	0.94	0.00	1.00	0.00	0.00
Sat Flow, veh/h	5274	1585	0	3741	0	0
Grp Volume(v), veh/h	2502	769	0	1887	0	0
Grp Sat Flow(s),veh/h/ln	1702	1585	0	1777	0	0
Q Serve(g_s), s	4.8	4.7	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.8	4.7	0.0	0.0	0.0	0.0
Prop In Lane		1.00	0.00		0.00	0.00
Lane Grp Cap(c), veh/h	4822	1497	0	3356	0	0
V/C Ratio(X)	0.52	0.51	0.00	0.56	0.00	0.00
Avail Cap(c_a), veh/h	4822	1497	0	3356	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	0.33	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.35	0.00	0.00
Uniform Delay (d), s/veh	0.3	0.3	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	1.3	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.5	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.7	1.5	0.0	0.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h	3271			1887	0	
Approach Delay, s/veh	0.9			0.2	0.0	
Approach LOS	A			A		

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	90.0				90.0	0.0
Change Period (Y+Rc), s	5.0				* 5	5.5
Max Green Setting (Gmax), s	59.0				* 59	20.5
Max Q Clear Time (g_c+I1), s	0.0				0.0	0.0
Green Ext Time (p_c), s	0.0				0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	0.6
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	631	0	0	388	18	0	0	0	52	0	31
Future Vol, veh/h	30	631	0	0	388	18	0	0	0	52	0	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	701	0	0	431	20	0	0	0	58	0	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	451	0	0	701	0	0	1225	1218	701	1208	1208	441
Stage 1	-	-	-	-	-	-	767	767	-	441	441	-
Stage 2	-	-	-	-	-	-	458	451	-	767	767	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1109	-	-	896	-	-	156	181	439	160	183	616
Stage 1	-	-	-	-	-	-	395	411	-	595	577	-
Stage 2	-	-	-	-	-	-	583	571	-	395	411	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1109	-	-	896	-	-	142	172	439	154	174	616
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	172	-	154	174	-
Stage 1	-	-	-	-	-	-	376	391	-	566	577	-
Stage 2	-	-	-	-	-	-	550	571	-	376	391	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	0	34
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1109	-	-	896	-	-	214
HCM Lane V/C Ratio	-	0.03	-	-	-	-	-	0.431
HCM Control Delay (s)	0	8.3	0	-	0	-	-	34
HCM Lane LOS	A	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	2

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	642	2	1	405	13	2	3	3	16	9	10
Future Vol, veh/h	20	642	2	1	405	13	2	3	3	16	9	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	713	2	1	450	14	2	3	3	18	10	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	464	0	0	715	0	0	1228	1224	714	1220	1218	457
Stage 1	-	-	-	-	-	-	758	758	-	459	459	-
Stage 2	-	-	-	-	-	-	470	466	-	761	759	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1097	-	-	885	-	-	155	179	431	157	181	604
Stage 1	-	-	-	-	-	-	399	415	-	582	566	-
Stage 2	-	-	-	-	-	-	574	562	-	398	415	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1097	-	-	885	-	-	142	173	431	149	175	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	173	-	149	175	-
Stage 1	-	-	-	-	-	-	386	401	-	563	565	-
Stage 2	-	-	-	-	-	-	552	561	-	379	401	-

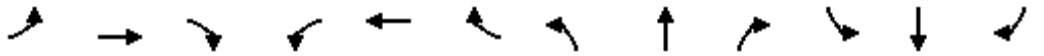
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0	23.1	27.3
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	208	1097	-	-	885	-	-	200
HCM Lane V/C Ratio	0.043	0.02	-	-	0.001	-	-	0.194
HCM Control Delay (s)	23.1	8.3	0	-	9.1	0	-	27.3
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.7

Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1159	2304	402	10	12	311
v/c Ratio	0.59	0.83	0.65	0.02	0.06	0.52
Control Delay	8.3	19.9	24.8	0.4	21.8	28.1
Queue Delay	0.0	0.0	10.5	0.0	0.0	0.0
Total Delay	8.3	19.9	35.2	0.4	21.8	28.1
Queue Length 50th (ft)	80	367	155	0	5	141
Queue Length 95th (ft)	93	438	302	m0	18	222
Internal Link Dist (ft)	220	1083	121			464
Turn Bay Length (ft)					100	
Base Capacity (vph)	1950	2779	618	545	192	597
Starvation Cap Reductn	0	0	186	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.83	0.93	0.02	0.06	0.52

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1124	0	0	2059	176	0	390	10	12	234	68
Future Volume (veh/h)	0	1124	0	0	2059	176	0	390	10	12	234	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	1159	0	0	2123	0	0	402	10	12	241	70
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	2	2	0	2	2	2	2	2
Cap, veh/h	0	1958	0	0	2814		0	621	527	280	463	134
Arrive On Green	0.00	1.00	0.00	0.00	0.55	0.00	0.00	0.66	0.66	0.33	0.33	0.33
Sat Flow, veh/h	0	3741	0	0	5443	0	0	1870	1585	974	1393	405
Grp Volume(v), veh/h	0	1159	0	0	2123	0	0	402	10	12	0	311
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1702	0	0	1870	1585	974	0	1798
Q Serve(g_s), s	0.0	0.0	0.0	0.0	28.8	0.0	0.0	11.4	0.2	0.9	0.0	12.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	28.8	0.0	0.0	11.4	0.2	12.3	0.0	12.6
Prop In Lane	0.00		0.00	0.00		0.00	0.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	0	1958	0	0	2814		0	621	527	280	0	597
V/C Ratio(X)	0.00	0.59	0.00	0.00	0.75		0.00	0.65	0.02	0.04	0.00	0.52
Avail Cap(c_a), veh/h	0	1958	0	0	2814		0	621	527	280	0	597
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	15.5	0.0	0.0	12.0	10.1	28.7	0.0	24.3
Incr Delay (d2), s/veh	0.0	1.3	0.0	0.0	1.9	0.0	0.0	5.1	0.1	0.3	0.0	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.0	0.0	10.3	0.0	0.0	4.0	0.1	0.2	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.3	0.0	0.0	17.5	0.0	0.0	17.1	10.2	29.0	0.0	27.5
LnGrp LOS	A	A	A	A	B		A	B	B	C	A	C
Approach Vol, veh/h		1159			2123	A		412			323	
Approach Delay, s/veh		1.3			17.5			17.0			27.5	
Approach LOS		A			B			B			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		55.0		35.0		55.0		35.0				
Change Period (Y+Rc), s		* 5.4		* 5.1		* 5.4		* 5.1				
Max Green Setting (Gmax), s		* 50		* 30		* 50		* 30				
Max Q Clear Time (g_c+I1), s		0.0		14.6		0.0		13.4				
Green Ext Time (p_c), s		0.0		0.5		0.0		0.6				

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

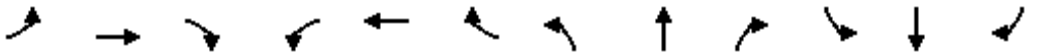
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	146	725	574	37	272	10	242
v/c Ratio	0.29	0.64	0.53	0.18	0.59	0.05	0.52
Control Delay	8.5	10.3	11.7	29.2	34.7	19.0	19.1
Queue Delay	2.8	16.2	15.5	59.4	1.2	0.0	1.2
Total Delay	11.3	26.4	27.2	88.6	35.9	19.0	20.3
Queue Length 50th (ft)	29	154	164	17	132	1	30
Queue Length 95th (ft)	m44	207	249	43	214	m5	85
Internal Link Dist (ft)		97	1750		531		121
Turn Bay Length (ft)							
Base Capacity (vph)	504	1127	1076	208	464	183	467
Starvation Cap Reductn	260	398	0	0	0	0	86
Spillback Cap Reductn	41	0	490	168	66	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.99	0.98	0.93	0.68	0.05	0.64

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	500	174	31	460	43	34	221	32	9	225	0
Future Volume (veh/h)	136	500	174	31	460	43	34	221	32	9	225	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	146	538	187	33	495	0	37	238	34	10	242	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	589	825	287	80	1067		239	402	57	213	470	0
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.00	0.25	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	902	1326	461	61	1715	0	1138	1601	229	1107	1870	0
Grp Volume(v), veh/h	146	0	725	528	0	0	37	0	272	10	242	0
Grp Sat Flow(s),veh/h/ln	902	0	1787	1775	0	0	1138	0	1829	1107	1870	0
Q Serve(g_s), s	0.0	0.0	23.2	0.0	0.0	0.0	2.6	0.0	11.8	0.7	10.0	0.0
Cycle Q Clear(g_c), s	12.3	0.0	23.2	13.4	0.0	0.0	12.6	0.0	11.8	12.5	10.0	0.0
Prop In Lane	1.00		0.26	0.06		0.00	1.00		0.13	1.00		0.00
Lane Grp Cap(c), veh/h	589	0	1112	1147	0		239	0	459	213	470	0
V/C Ratio(X)	0.25	0.00	0.65	0.46	0.00		0.15	0.00	0.59	0.05	0.52	0.00
Avail Cap(c_a), veh/h	589	0	1112	1147	0		239	0	459	213	470	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.8	0.0	10.8	8.9	0.0	0.0	34.4	0.0	29.6	35.1	29.0	0.0
Incr Delay (d2), s/veh	1.0	0.0	3.0	1.3	0.0	0.0	1.4	0.0	5.5	0.4	4.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	8.9	5.2	0.0	0.0	0.8	0.0	5.8	0.2	4.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.8	0.0	13.8	10.3	0.0	0.0	35.8	0.0	35.2	35.6	33.0	0.0
LnGrp LOS	A	A	B	B	A		D	A	D	D	C	A
Approach Vol, veh/h		871			528	A		309			252	
Approach Delay, s/veh		13.1			10.3			35.2			33.1	
Approach LOS		B			B			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		63.0		27.0		63.0		27.0				
Change Period (Y+Rc), s		* 7		4.4		* 7		4.4				
Max Green Setting (Gmax), s		* 56		22.6		* 56		22.6				
Max Q Clear Time (g_c+I1), s		0.0		14.5		0.0		14.6				
Green Ext Time (p_c), s		0.0		0.3		0.0		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			18.4									
HCM 6th LOS			B									

Notes

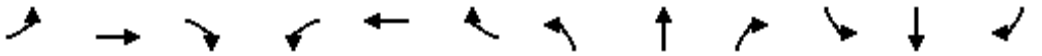
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	525	280	482	290	131	1197	161	845
v/c Ratio	0.30	0.95	0.94	0.40	0.43	0.45	0.88	0.81	0.64
Control Delay	40.1	66.2	62.3	20.2	7.0	16.7	34.1	45.9	25.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.1	66.2	62.3	20.2	7.0	16.7	34.1	45.9	25.8
Queue Length 50th (ft)	21	154	122	96	15	36	322	46	204
Queue Length 95th (ft)	53	#256	#246	98	52	66	#449	#146	270
Internal Link Dist (ft)		368		409			880		1134
Turn Bay Length (ft)	125		100		60	100		125	
Base Capacity (vph)	138	552	299	1218	668	303	1365	200	1314
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.95	0.94	0.40	0.43	0.43	0.88	0.81	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	438	50	260	448	270	122	1013	100	150	725	60
Future Volume (veh/h)	38	438	50	260	448	270	122	1013	100	150	725	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	471	54	280	482	290	131	1089	108	161	780	65
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	500	57	306	1224	546	328	1270	126	237	1300	108
Arrive On Green	0.16	0.16	0.16	0.20	0.58	0.58	0.06	0.39	0.39	0.07	0.39	0.39
Sat Flow, veh/h	698	3214	367	1781	3554	1585	1781	3265	324	1781	3321	277
Grp Volume(v), veh/h	41	260	265	280	482	290	131	592	605	161	417	428
Grp Sat Flow(s),veh/h/ln	698	1777	1804	1781	1777	1585	1781	1777	1812	1781	1777	1821
Q Serve(g_s), s	4.7	13.0	13.1	11.0	6.7	10.1	3.9	27.5	27.6	4.9	16.8	16.8
Cycle Q Clear(g_c), s	4.7	13.0	13.1	11.0	6.7	10.1	3.9	27.5	27.6	4.9	16.8	16.8
Prop In Lane	1.00		0.20	1.00		1.00	1.00		0.18	1.00		0.15
Lane Grp Cap(c), veh/h	189	276	281	306	1224	546	328	691	705	237	695	713
V/C Ratio(X)	0.22	0.94	0.95	0.91	0.39	0.53	0.40	0.86	0.86	0.68	0.60	0.60
Avail Cap(c_a), veh/h	189	276	281	306	1224	546	372	691	705	237	695	713
HCM Platoon Ratio	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.1	37.6	37.6	27.4	14.0	14.7	16.4	25.2	25.2	20.6	21.8	21.8
Incr Delay (d2), s/veh	2.6	40.5	41.5	29.0	0.9	3.5	0.3	13.0	12.9	6.2	3.8	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	8.6	8.9	6.9	2.5	3.4	1.5	13.3	13.6	2.3	7.3	7.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	78.0	79.1	56.5	14.8	18.1	16.7	38.2	38.1	26.8	25.6	25.5
LnGrp LOS	D	E	E	E	B	B	B	D	D	C	C	C
Approach Vol, veh/h		566			1052			1328			1006	
Approach Delay, s/veh		75.6			26.8			36.0			25.7	
Approach LOS		E			C			D			C	

Timer - Assigned Phs	1	2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s	17.0	20.0	11.8	41.2		37.0	12.0	41.0				
Change Period (Y+Rc), s	6.0	* 6	6.0	* 6		* 6	6.0	* 6				
Max Green Setting (Gmax), s	11.0	* 14	8.0	* 33		* 31	6.0	* 35				
Max Q Clear Time (g_c+I1), s	13.0	6.7	5.9	0.0		0.0	6.9	0.0				
Green Ext Time (p_c), s	0.0	0.1	0.0	0.0		0.0	0.0	0.0				

Intersection Summary												
HCM 6th Ctrl Delay			36.6									
HCM 6th LOS			D									

Notes

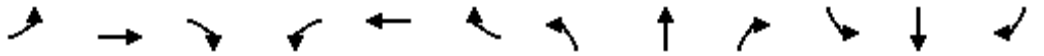
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	246	864	186	52	178
v/c Ratio	0.26	0.45	0.54	0.21	0.49
Control Delay	4.7	7.7	29.2	21.0	25.4
Queue Delay	0.0	0.0	0.8	0.0	0.1
Total Delay	4.7	7.7	30.0	21.0	25.6
Queue Length 50th (ft)	22	73	73	16	58
Queue Length 95th (ft)	m40	134	131	38	100
Internal Link Dist (ft)	585	1102	121		598
Turn Bay Length (ft)				90	
Base Capacity (vph)	946	1902	482	340	502
Starvation Cap Reductn	0	0	114	0	0
Spillback Cap Reductn	0	0	0	0	38
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.45	0.51	0.15	0.38

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	211	5	24	690	107	26	140	11	49	115	54
Future Volume (veh/h)	18	211	5	24	690	107	26	140	11	49	115	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	19	222	5	25	726	113	27	147	12	52	121	57
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	1066	23	90	1926	294	87	216	16	291	202	95
Arrive On Green	1.00	1.00	1.00	0.65	0.65	0.65	0.06	0.06	0.06	0.17	0.17	0.17
Sat Flow, veh/h	65	1644	35	42	2969	454	111	1287	96	1227	1202	566
Grp Volume(v), veh/h	246	0	0	460	0	404	186	0	0	52	0	178
Grp Sat Flow(s),veh/h/ln	1744	0	0	1844	0	1620	1495	0	0	1227	0	1768
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	7.0	2.1	0.0	0.0	0.0	0.0	5.6
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.9	0.0	7.0	7.7	0.0	0.0	2.9	0.0	5.6
Prop In Lane	0.08		0.02	0.05		0.28	0.15		0.06	1.00		0.32
Lane Grp Cap(c), veh/h	1196	0	0	1260	0	1051	320	0	0	291	0	297
V/C Ratio(X)	0.21	0.00	0.00	0.37	0.00	0.38	0.58	0.00	0.00	0.18	0.00	0.60
Avail Cap(c_a), veh/h	1196	0	0	1260	0	1051	517	0	0	432	0	501
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.00	0.00	1.00	0.00	1.00	0.93	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	4.9	0.0	4.9	26.9	0.0	0.0	22.0	0.0	23.1
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.8	0.0	1.1	1.6	0.0	0.0	0.3	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	2.1	0.0	1.9	2.9	0.0	0.0	0.6	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.4	0.0	0.0	5.7	0.0	6.0	28.5	0.0	0.0	22.3	0.0	25.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	C
Approach Vol, veh/h		246			864			186			230	
Approach Delay, s/veh		0.4			5.9			28.5			24.4	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		43.9		16.1		43.9		16.1				
Change Period (Y+Rc), s		* 5		* 6		* 5		* 6				
Max Green Setting (Gmax), s		* 32		* 17		* 32		* 17				
Max Q Clear Time (g_c+I1), s		0.0		7.6		0.0		9.7				
Green Ext Time (p_c), s		0.0		0.6		0.0		0.4				

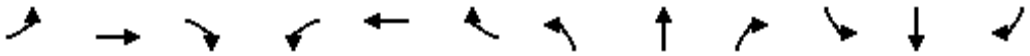
Intersection Summary	
HCM 6th Ctrl Delay	10.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	583	183	162
v/c Ratio	0.41	0.39	0.30
Control Delay	5.4	19.6	10.7
Queue Delay	0.1	0.0	0.3
Total Delay	5.5	19.6	11.0
Queue Length 50th (ft)	24	49	54
Queue Length 95th (ft)	31	96	97
Internal Link Dist (ft)	257	187	121
Turn Bay Length (ft)			
Base Capacity (vph)	1405	468	549
Starvation Cap Reductn	0	0	116
Spillback Cap Reductn	167	1	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.39	0.37

Intersection Summary



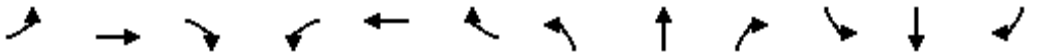
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	458	13	0	0	0	0	130	33	74	70	0
Future Volume (vph)	47	458	13	0	0	0	0	130	33	74	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.97			1.00	
Flt Protected		1.00						1.00			0.98	
Satd. Flow (prot)		3510						1812			1816	
Flt Permitted		1.00						1.00			0.79	
Satd. Flow (perm)		3510						1812			1472	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	53	515	15	0	0	0	0	146	37	83	79	0
RTOR Reduction (vph)	0	3	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	580	0	0	0	0	0	168	0	0	162	0
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	2 1	
Permitted Phases	4									2 1		
Actuated Green, G (s)		24.0						15.0			22.0	
Effective Green, g (s)		24.0						15.0			22.0	
Actuated g/C Ratio		0.40						0.25			0.37	
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		1404						453			579	
v/s Ratio Prot								c0.09			c0.03	
v/s Ratio Perm		0.17									0.07	
v/c Ratio		0.41						0.37			0.28	
Uniform Delay, d1		12.9						18.6			13.4	
Progression Factor		0.35						1.00			0.84	
Incremental Delay, d2		0.8						2.3			1.2	
Delay (s)		5.3						20.9			12.4	
Level of Service		A						C			B	
Approach Delay (s)		5.3			0.0			20.9			12.4	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	157	912	150	423	21	244
v/c Ratio	0.19	0.69	0.38	0.62	0.09	0.36
Control Delay	10.7	11.6	8.0	9.8	13.7	14.9
Queue Delay	0.0	0.0	0.9	2.5	0.0	0.0
Total Delay	10.7	11.6	8.8	12.3	13.7	14.9
Queue Length 50th (ft)	32	62	10	24	5	59
Queue Length 95th (ft)	63	80	m15	47	18	109
Internal Link Dist (ft)	48	585		118		603
Turn Bay Length (ft)			75		150	
Base Capacity (vph)	838	1319	396	678	245	678
Starvation Cap Reductn	0	0	90	147	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.69	0.49	0.80	0.09	0.36

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	151	0	119	735	21	144	356	50	20	204	30
Future Volume (veh/h)	0	151	0	119	735	21	144	356	50	20	204	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	157	0	124	766	22	150	371	52	21	212	31
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	0	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	842	0	245	1308	37	427	588	82	363	585	86
Arrive On Green	0.00	0.45	0.00	0.90	0.90	0.90	0.73	0.73	0.73	0.37	0.37	0.37
Sat Flow, veh/h	0	1870	0	374	2906	82	1137	1605	225	964	1595	233
Grp Volume(v), veh/h	0	157	0	461	0	451	150	0	423	21	0	243
Grp Sat Flow(s),veh/h/ln	0	1870	0	1675	0	1687	1137	0	1830	964	0	1828
Q Serve(g_s), s	0.0	3.0	0.0	0.0	0.0	3.5	5.0	0.0	6.9	1.0	0.0	5.8
Cycle Q Clear(g_c), s	0.0	3.0	0.0	2.9	0.0	3.5	10.8	0.0	6.9	7.9	0.0	5.8
Prop In Lane	0.00		0.00	0.27		0.05	1.00		0.12	1.00		0.13
Lane Grp Cap(c), veh/h	0	842	0	830	0	759	427	0	671	363	0	670
V/C Ratio(X)	0.00	0.19	0.00	0.55	0.00	0.59	0.35	0.00	0.63	0.06	0.00	0.36
Avail Cap(c_a), veh/h	0	842	0	830	0	759	427	0	671	363	0	670
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.9	0.0	1.8	0.0	1.8	8.3	0.0	6.0	17.2	0.0	13.9
Incr Delay (d2), s/veh	0.0	0.5	0.0	2.7	0.0	3.4	2.3	0.0	4.5	0.3	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.2	0.0	1.2	0.0	1.3	0.9	0.0	2.3	0.2	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	10.4	0.0	4.5	0.0	5.2	10.6	0.0	10.4	17.5	0.0	15.4
LnGrp LOS	A	B	A	A	A	A	B	A	B	B	A	B
Approach Vol, veh/h		157			912			573			264	
Approach Delay, s/veh		10.4			4.8			10.5			15.6	
Approach LOS		B			A			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		33.0		27.0		33.0		27.0				
Change Period (Y+Rc), s		* 6		5.0		* 6		5.0				
Max Green Setting (Gmax), s		* 27		22.0		* 27		22.0				
Max Q Clear Time (g_c+I1), s		0.0		9.9		0.0		12.8				
Green Ext Time (p_c), s		0.0		0.8		0.0		1.8				

Intersection Summary		
HCM 6th Ctrl Delay		8.5
HCM 6th LOS		A

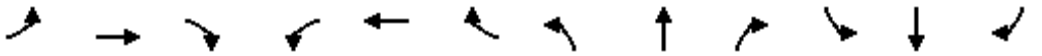
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	605	629	344
v/c Ratio	0.39	0.64	0.35
Control Delay	15.6	13.3	6.5
Queue Delay	0.0	0.4	0.9
Total Delay	15.6	13.8	7.4
Queue Length 50th (ft)	54	142	52
Queue Length 95th (ft)	82	239	m73
Internal Link Dist (ft)	188	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	1532	986	993
Starvation Cap Reductn	0	0	384
Spillback Cap Reductn	0	87	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.70	0.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	451	93	0	0	0	0	526	65	0	323	0
Future Volume (veh/h)	24	451	93	0	0	0	0	526	65	0	323	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	0
Adj Flow Rate, veh/h	26	480	99				0	560	69	0	344	0
Peak Hour Factor	0.94	0.94	0.94				0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	65	1255	263				0	871	107	0	998	0
Arrive On Green	0.30	0.30	0.30				0.00	0.53	0.53	0.00	1.00	0.00
Sat Flow, veh/h	215	4183	876				0	1633	201	0	1870	0
Grp Volume(v), veh/h	225	187	194				0	0	629	0	344	0
Grp Sat Flow(s),veh/h/ln	1860	1702	1713				0	0	1834	0	1870	0
Q Serve(g_s), s	5.8	5.2	5.4				0.0	0.0	14.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.8	5.2	5.4				0.0	0.0	14.6	0.0	0.0	0.0
Prop In Lane	0.12		0.51				0.00		0.11	0.00		0.00
Lane Grp Cap(c), veh/h	558	511	514				0	0	978	0	998	0
V/C Ratio(X)	0.40	0.37	0.38				0.00	0.00	0.64	0.00	0.34	0.00
Avail Cap(c_a), veh/h	558	511	514				0	0	978	0	998	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	16.7	16.5	16.6				0.0	0.0	9.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.2	2.0	2.1				0.0	0.0	3.2	0.0	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	2.1	2.2				0.0	0.0	5.5	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.9	18.5	18.7				0.0	0.0	13.2	0.0	0.9	0.0
LnGrp LOS	B	B	B				A	A	B	A	A	A
Approach Vol, veh/h		605						629			344	
Approach Delay, s/veh		18.7						13.2			0.9	
Approach LOS		B						B			A	

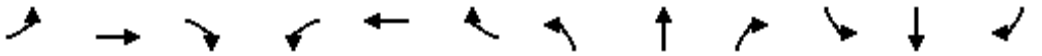
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		23.0		37.0				37.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		18.0		32.0				32.0				
Max Q Clear Time (g_c+I1), s		7.8		2.0				16.6				
Green Ext Time (p_c), s		1.9		1.4				2.6				

Intersection Summary												
HCM 6th Ctrl Delay			12.6									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	724	32	955	99	34	45	22	85
v/c Ratio	0.04	0.26	0.06	0.34	0.55	0.13	0.18	0.12	0.30
Control Delay	1.5	1.4	4.1	4.2	47.0	33.3	11.5	33.3	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.5	1.4	4.1	4.2	47.0	33.3	11.5	33.3	12.7
Queue Length 50th (ft)	0	22	4	76	54	17	0	11	5
Queue Length 95th (ft)	m0	m32	14	133	98	42	28	31	43
Internal Link Dist (ft)		409		587		292			593
Turn Bay Length (ft)	150		125				115		
Base Capacity (vph)	421	2784	549	2792	348	496	455	365	486
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.26	0.06	0.34	0.28	0.07	0.10	0.06	0.17

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	648	25	30	868	20	92	32	42	20	9	70
Future Volume (veh/h)	15	648	25	30	868	20	92	32	42	20	9	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	697	27	32	933	22	99	34	45	22	10	75
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	461	2584	100	620	2628	62	212	277	235	255	28	211
Arrive On Green	1.00	1.00	1.00	0.74	0.74	0.74	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	588	3488	135	730	3548	84	1313	1870	1585	1320	190	1424
Grp Volume(v), veh/h	16	355	369	32	467	488	99	34	45	22	0	85
Grp Sat Flow(s),veh/h/ln	588	1777	1846	730	1777	1855	1313	1870	1585	1320	0	1614
Q Serve(g_s), s	0.3	0.0	0.0	1.1	8.3	8.3	6.6	1.4	2.2	1.3	0.0	4.3
Cycle Q Clear(g_c), s	8.6	0.0	0.0	1.1	8.3	8.3	10.9	1.4	2.2	2.7	0.0	4.3
Prop In Lane	1.00		0.07	1.00		0.05	1.00		1.00	1.00		0.88
Lane Grp Cap(c), veh/h	461	1316	1367	620	1316	1374	212	277	235	255	0	239
V/C Ratio(X)	0.03	0.27	0.27	0.05	0.35	0.35	0.47	0.12	0.19	0.09	0.00	0.36
Avail Cap(c_a), veh/h	461	1316	1367	620	1316	1374	368	499	423	411	0	430
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.28	0.28	0.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.5	0.0	0.0	3.2	4.1	4.1	39.4	33.3	33.6	34.4	0.0	34.5
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.2	0.8	0.7	1.6	0.2	0.4	0.1	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.1	0.1	2.6	2.7	2.2	0.7	0.9	0.4	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.6	0.1	0.1	3.3	4.9	4.8	40.9	33.5	34.0	34.6	0.0	35.4
LnGrp LOS	A	A	A	A	A	A	D	C	C	C	A	D
Approach Vol, veh/h		740			987			178			107	
Approach Delay, s/veh		0.1			4.8			37.8			35.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		71.7		18.3		71.7		18.3				
Change Period (Y+Rc), s		* 5		5.0		* 5		5.0				
Max Green Setting (Gmax), s		* 56		24.0		* 56		24.0				
Max Q Clear Time (g_c+I1), s		10.6		6.3		3.1		12.9				
Green Ext Time (p_c), s		0.2		0.3		0.2		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			7.6									
HCM 6th LOS			A									

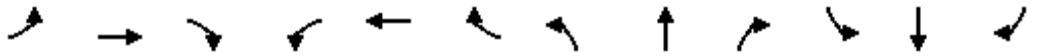
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	430	39	781	96	333	13	297	40
v/c Ratio	0.54	0.04	0.80	0.10	0.78	0.03	0.67	0.09
Control Delay	4.0	0.1	18.8	3.3	36.5	0.2	29.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.0	0.1	18.8	3.3	36.5	0.2	29.4	5.0
Queue Length 50th (ft)	7	1	199	5	112	0	97	0
Queue Length 95th (ft)	11	0	#417	21	#230	0	#189	15
Internal Link Dist (ft)	586		575		1892		587	
Turn Bay Length (ft)		65		65		50		65
Base Capacity (vph)	802	913	974	923	427	437	443	437
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.04	0.80	0.10	0.78	0.03	0.67	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	341	35	66	637	86	28	272	12	16	251	36
Future Volume (veh/h)	46	341	35	66	637	86	28	272	12	16	251	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	379	39	73	708	96	31	302	13	18	279	40
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	67	409	898	66	322	898	66	208	396	64	260	396
Arrive On Green	0.19	0.19	0.19	0.57	0.57	0.57	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	0	722	1585	0	568	1585	0	830	1585	0	1040	1585
Grp Volume(v), veh/h	430	0	39	781	0	96	333	0	13	297	0	40
Grp Sat Flow(s),veh/h/ln	722	0	1585	568	0	1585	830	0	1585	1040	0	1585
Q Serve(g_s), s	0.0	0.0	1.2	0.0	0.0	1.7	0.0	0.0	0.4	0.0	0.0	1.2
Cycle Q Clear(g_c), s	34.0	0.0	1.2	34.0	0.0	1.7	15.0	0.0	0.4	15.0	0.0	1.2
Prop In Lane	0.12		1.00	0.09		1.00	0.09		1.00	0.06		1.00
Lane Grp Cap(c), veh/h	476	0	898	387	0	898	273	0	396	324	0	396
V/C Ratio(X)	0.90	0.00	0.04	2.02	0.00	0.11	1.22	0.00	0.03	0.92	0.00	0.10
Avail Cap(c_a), veh/h	476	0	898	387	0	898	273	0	396	324	0	396
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.98	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.7	0.0	11.1	19.6	0.0	6.0	21.1	0.0	17.0	20.5	0.0	17.3
Incr Delay (d2), s/veh	22.7	0.0	0.1	466.5	0.0	0.2	127.0	0.0	0.0	29.9	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	0.4	54.1	0.0	0.5	12.8	0.0	0.1	6.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.4	0.0	11.2	486.0	0.0	6.2	148.1	0.0	17.0	50.4	0.0	17.4
LnGrp LOS	D	A	B	F	A	A	F	A	B	D	A	B
Approach Vol, veh/h		469			877			346			337	
Approach Delay, s/veh		37.0			433.5			143.2			46.5	
Approach LOS		D			F			F			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		* 6		* 5		* 6		* 5				
Max Green Setting (Gmax), s		* 34		* 15		* 34		* 15				
Max Q Clear Time (g_c+I1), s		0.0		17.0		0.0		17.0				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	228.1	
HCM 6th LOS	F	

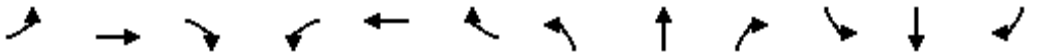
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	518	90	686	82	242	13	243	13
v/c Ratio	0.57	0.09	0.76	0.09	0.55	0.03	0.53	0.03
Control Delay	10.9	1.8	8.0	0.2	25.0	2.6	24.4	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	1.8	8.0	0.2	25.0	2.6	24.4	2.6
Queue Length 50th (ft)	103	0	20	0	76	0	76	0
Queue Length 95th (ft)	176	14	#33	1	137	5	136	5
Internal Link Dist (ft)	1750		556		1279		589	
Turn Bay Length (ft)		65		65		65		65
Base Capacity (vph)	910	960	907	949	442	422	459	422
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.09	0.76	0.09	0.55	0.03	0.53	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	403	80	101	510	73	21	194	12	7	209	12
Future Volume (veh/h)	58	403	80	101	510	73	21	194	12	7	209	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	65	453	90	113	573	82	24	218	13	8	235	13
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	68	366	925	70	210	925	88	431	396	67	460	396
Arrive On Green	0.58	0.58	0.58	0.19	0.19	0.19	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	0	628	1585	0	360	1585	87	1726	1585	19	1839	1585
Grp Volume(v), veh/h	518	0	90	686	0	82	242	0	13	243	0	13
Grp Sat Flow(s),veh/h/ln	628	0	1585	360	0	1585	1813	0	1585	1858	0	1585
Q Serve(g_s), s	0.0	0.0	1.5	0.0	0.0	2.5	0.0	0.0	0.4	0.0	0.0	0.4
Cycle Q Clear(g_c), s	35.0	0.0	1.5	35.0	0.0	2.5	6.7	0.0	0.4	6.7	0.0	0.4
Prop In Lane	0.13		1.00	0.16		1.00	0.10		1.00	0.03		1.00
Lane Grp Cap(c), veh/h	434	0	925	280	0	925	519	0	396	526	0	396
V/C Ratio(X)	1.19	0.00	0.10	2.45	0.00	0.09	0.47	0.00	0.03	0.46	0.00	0.03
Avail Cap(c_a), veh/h	434	0	925	280	0	925	519	0	396	527	0	396
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.00	0.73	0.92	0.00	0.92	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	0.0	5.5	18.0	0.0	11.1	19.4	0.0	17.0	19.4	0.0	17.0
Incr Delay (d2), s/veh	103.0	0.0	0.2	663.6	0.0	0.2	0.7	0.0	0.0	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.9	0.0	0.4	54.6	0.0	0.8	2.8	0.0	0.1	2.8	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	122.3	0.0	5.7	681.6	0.0	11.3	20.0	0.0	17.1	20.0	0.0	17.1
LnGrp LOS	F	A	A	F	A	B	C	A	B	C	A	B
Approach Vol, veh/h		608			768			255			256	
Approach Delay, s/veh		105.0			610.0			19.9			19.9	
Approach LOS		F			F			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		15.0		35.0		15.0				
Max Q Clear Time (g_c+I1), s		0.0		8.7		0.0		8.7				
Green Ext Time (p_c), s		0.0		0.5		0.0		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			287.5									
HCM 6th LOS			F									

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	NBL
Lane Group Flow (vph)	1159	835	2193	509
v/c Ratio	0.52	0.72	0.68	0.59
Control Delay	10.0	8.7	1.5	41.0
Queue Delay	0.0	0.7	0.6	56.6
Total Delay	10.0	9.4	2.1	97.6
Queue Length 50th (ft)	170	115	15	124
Queue Length 95th (ft)	218	251	17	177
Internal Link Dist (ft)	880		220	97
Turn Bay Length (ft)		50		
Base Capacity (vph)	2241	1166	3220	858
Starvation Cap Reductn	0	0	562	486
Spillback Cap Reductn	0	111	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.52	0.79	0.83	1.37

Intersection Summary

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1124	810	0	2127	494	0
Future Volume (veh/h)	1124	810	0	2127	494	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	1159	835	0	2193	509	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	2251	1004	0	3234	0	0
Arrive On Green	0.63	0.63	0.00	1.00	0.08	0.00
Sat Flow, veh/h	3647	1585	0	5443	0	0
Grp Volume(v), veh/h	1159	835	0	2193	0	0
Grp Sat Flow(s),veh/h/ln	1777	1585	0	1702	0	0
Q Serve(g_s), s	16.0	36.7	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	16.0	36.7	0.0	0.0	0.0	0.0
Prop In Lane		1.00	0.00		0.00	0.00
Lane Grp Cap(c), veh/h	2251	1004	0	3234	0	0
V/C Ratio(X)	0.51	0.83	0.00	0.68	0.00	0.00
Avail Cap(c_a), veh/h	2251	1004	0	3234	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	0.33	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.0	12.8	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	8.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	12.9	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.8	20.8	0.0	1.2	0.0	0.0
LnGrp LOS	A	C	A	A	A	A
Approach Vol, veh/h	1994			2193	0	
Approach Delay, s/veh	14.4			1.2	0.0	
Approach LOS	B			A		

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	62.0				62.0	28.0
Change Period (Y+Rc), s	5.0				* 5	5.5
Max Green Setting (Gmax), s	57.0				* 57	22.5
Max Q Clear Time (g_c+I1), s	0.0				0.0	0.0
Green Ext Time (p_c), s	0.0				0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	341	0	0	710	51	0	0	0	17	0	37
Future Vol, veh/h	24	341	0	0	710	51	0	0	0	17	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	401	0	0	835	60	0	0	0	20	0	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	895	0	0	401	0	0	1344	1352	401	1322	1322	865
Stage 1	-	-	-	-	-	-	457	457	-	865	865	-
Stage 2	-	-	-	-	-	-	887	895	-	457	457	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	758	-	-	1158	-	-	129	150	649	133	156	353
Stage 1	-	-	-	-	-	-	583	568	-	348	371	-
Stage 2	-	-	-	-	-	-	339	359	-	583	568	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	758	-	-	1158	-	-	109	143	649	128	149	353
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	143	-	128	149	-
Stage 1	-	-	-	-	-	-	555	541	-	331	371	-
Stage 2	-	-	-	-	-	-	297	359	-	555	541	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0	0	26.9
HCM LOS			A	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	758	-	-	1158	-	-	227
HCM Lane V/C Ratio	-	0.037	-	-	-	-	-	0.28
HCM Control Delay (s)	0	9.9	0	-	0	-	-	26.9
HCM Lane LOS	A	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	1.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	347	2	5	750	42	4	5	2	16	20	36
Future Vol, veh/h	19	347	2	5	750	42	4	5	2	16	20	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	377	2	5	815	46	4	5	2	17	22	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	861	0	0	379	0	0	1299	1291	378	1272	1269	838
Stage 1	-	-	-	-	-	-	420	420	-	848	848	-
Stage 2	-	-	-	-	-	-	879	871	-	424	421	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	781	-	-	1179	-	-	138	163	669	144	168	366
Stage 1	-	-	-	-	-	-	611	589	-	356	378	-
Stage 2	-	-	-	-	-	-	342	368	-	608	589	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	781	-	-	1179	-	-	107	156	669	135	161	366
Mov Cap-2 Maneuver	-	-	-	-	-	-	107	156	-	135	161	-
Stage 1	-	-	-	-	-	-	590	569	-	344	375	-
Stage 2	-	-	-	-	-	-	285	365	-	580	569	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.1	30.7	31.8
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	152	781	-	-	1179	-	-	211
HCM Lane V/C Ratio	0.079	0.026	-	-	0.005	-	-	0.371
HCM Control Delay (s)	30.7	9.7	0	-	8.1	0	-	31.8
HCM Lane LOS	D	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	1.6

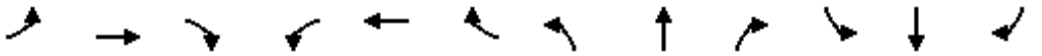
Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	2872	2155	256	33	56	556
v/c Ratio	0.90	0.97	0.54	0.08	0.27	1.22
Control Delay	12.2	31.0	16.3	1.5	31.0	151.2
Queue Delay	0.0	0.0	1.6	0.0	0.0	0.0
Total Delay	12.2	31.0	17.9	1.5	31.0	151.2
Queue Length 50th (ft)	460	555	46	0	26	~393
Queue Length 95th (ft)	548	#798	m67	m1	60	#590
Internal Link Dist (ft)	220	1083	121			464
Turn Bay Length (ft)					100	
Base Capacity (vph)	3197	2212	474	424	209	454
Starvation Cap Reductn	0	0	95	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.97	0.68	0.08	0.27	1.22

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2585	0	0	1840	100	0	230	30	50	360	140
Future Volume (veh/h)	0	2585	0	0	1840	100	0	230	30	50	360	140
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	2872	0	0	2044	0	0	256	33	56	400	156
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	0	0	2	2	0	2	2	2	2	2
Cap, veh/h	0	3211	0	0	2235		0	476	403	256	326	127
Arrive On Green	0.00	1.00	0.00	0.00	0.63	0.00	0.00	0.51	0.51	0.25	0.25	0.25
Sat Flow, veh/h	0	5443	0	0	3741	0	0	1870	1585	1090	1281	500
Grp Volume(v), veh/h	0	2872	0	0	2044	0	0	256	33	56	0	556
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1777	0	0	1870	1585	1090	0	1780
Q Serve(g_s), s	0.0	0.0	0.0	0.0	45.2	0.0	0.0	8.3	1.0	4.1	0.0	22.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	45.2	0.0	0.0	8.3	1.0	12.4	0.0	22.9
Prop In Lane	0.00		0.00	0.00		0.00	0.00		1.00	1.00		0.28
Lane Grp Cap(c), veh/h	0	3211	0	0	2235		0	476	403	256	0	453
V/C Ratio(X)	0.00	0.89	0.00	0.00	0.91		0.00	0.54	0.08	0.22	0.00	1.23
Avail Cap(c_a), veh/h	0	3211	0	0	2235		0	476	403	256	0	453
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.60	0.00	0.00	1.00	0.00	0.00	0.89	0.89	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	14.6	0.0	0.0	18.5	16.7	33.3	0.0	33.6
Incr Delay (d2), s/veh	0.0	2.7	0.0	0.0	7.3	0.0	0.0	0.6	0.0	0.2	0.0	120.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.8	0.0	0.0	17.1	0.0	0.0	3.0	0.3	1.1	0.0	24.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	2.7	0.0	0.0	21.8	0.0	0.0	19.1	16.7	33.5	0.0	154.1
LnGrp LOS	A	A	A	A	C		A	B	B	C	A	F
Approach Vol, veh/h		2872			2044	A		289			612	
Approach Delay, s/veh		2.7			21.8			18.8			143.0	
Approach LOS		A			C			B			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	62.0	28.0	62.0	28.0
Change Period (Y+Rc), s	* 5.4	* 5.1	* 5.4	* 5.1
Max Green Setting (Gmax), s	* 57	* 23	* 57	* 23
Max Q Clear Time (g_c+I1), s	0.0	24.9	0.0	10.3
Green Ext Time (p_c), s	0.0	0.0	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	25.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

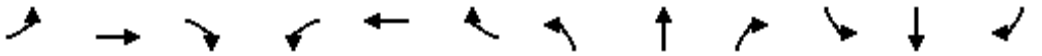
Lane Group	EBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1000	206	265	29	400
v/c Ratio	0.74	1.23	0.45	0.11	0.68
Control Delay	14.5	174.1	27.1	1.5	3.9
Queue Delay	15.5	0.2	0.0	0.0	8.2
Total Delay	29.9	174.3	27.1	1.5	12.1
Queue Length 50th (ft)	300	~145	117	1	11
Queue Length 95th (ft)	310	#260	175	m1	m9
Internal Link Dist (ft)	97		531		121
Turn Bay Length (ft)					
Base Capacity (vph)	1353	168	588	276	592
Starvation Cap Reductn	357	0	0	0	153
Spillback Cap Reductn	0	2	1	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.00	1.24	0.45	0.11	0.91

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	750	50	0	0	0	175	210	15	25	340	0
Future Volume (vph)	50	750	50	0	0	0	175	210	15	25	340	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0					4.4	4.4		4.4	4.4	
Lane Util. Factor		*0.66					1.00	1.00		1.00	1.00	
Frt		0.99					1.00	0.99		1.00	1.00	
Flt Protected		1.00					0.95	1.00		0.95	1.00	
Satd. Flow (prot)		2430					1770	1844		1770	1863	
Flt Permitted		1.00					0.28	1.00		0.47	1.00	
Satd. Flow (perm)		2430					530	1844		869	1863	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	59	882	59	0	0	0	206	247	18	29	400	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	996	0	0	0	0	206	262	0	29	400	0
Turn Type	Perm	NA					Perm	NA		Perm	NA	
Protected Phases		2						8			4	
Permitted Phases	2						8			4		
Actuated Green, G (s)		50.0					28.6	28.6		28.6	28.6	
Effective Green, g (s)		50.0					28.6	28.6		28.6	28.6	
Actuated g/C Ratio		0.56					0.32	0.32		0.32	0.32	
Clearance Time (s)		7.0					4.4	4.4		4.4	4.4	
Vehicle Extension (s)		1.6					1.6	1.6		1.6	1.6	
Lane Grp Cap (vph)		1350					168	585		276	592	
v/s Ratio Prot								0.14			0.21	
v/s Ratio Perm		0.41					c0.39			0.03		
v/c Ratio		0.74					1.23	0.45		0.11	0.68	
Uniform Delay, d1		15.1					30.7	24.4		21.7	26.7	
Progression Factor		0.76					1.00	1.00		0.07	0.12	
Incremental Delay, d2		2.6					143.1	0.2		0.0	0.2	
Delay (s)		14.1					173.8	24.6		1.4	3.4	
Level of Service		B					F	C		A	A	
Approach Delay (s)		14.1			0.0			89.9			3.3	
Approach LOS		B			A			F			A	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	756	311	178	11	983	306	1239
v/c Ratio	0.10	0.50	1.30	0.21	0.13	1.08	1.27	0.83
Control Delay	15.1	18.8	186.7	0.5	30.1	87.8	174.6	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	18.8	186.7	0.5	30.1	87.8	174.6	29.1
Queue Length 50th (ft)	19	152	~228	0	5	~332	~172	320
Queue Length 95th (ft)	43	204	#388	0	20	#455	#335	411
Internal Link Dist (ft)		368				880		1134
Turn Bay Length (ft)	125		100	60	100		125	
Base Capacity (vph)	626	1504	240	865	82	908	240	1493
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.50	1.30	0.21	0.13	1.08	1.27	0.83

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
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95th percentile volume exceeds capacity, queue may be longer.
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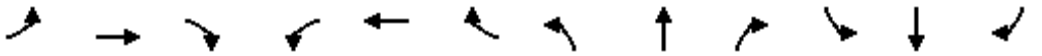


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	450	230	280	0	160	10	665	220	275	1105	10
Future Volume (veh/h)	55	450	230	280	0	160	10	665	220	275	1105	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	500	256	311	0	178	11	739	244	306	1228	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	616	1012	516	283	1579	704	136	700	231	238	1524	14
Arrive On Green	0.44	0.44	0.44	0.44	0.00	0.44	0.27	0.27	0.27	0.09	0.42	0.42
Sat Flow, veh/h	1206	2277	1161	708	3554	1585	449	2625	867	1781	3609	32
Grp Volume(v), veh/h	61	390	366	311	0	178	11	500	483	306	605	634
Grp Sat Flow(s),veh/h/ln	1206	1777	1661	708	1777	1585	449	1777	1714	1781	1777	1865
Q Serve(g_s), s	2.7	14.0	14.1	25.9	0.0	6.3	2.0	24.0	24.0	8.0	26.8	26.8
Cycle Q Clear(g_c), s	2.7	14.0	14.1	40.0	0.0	6.3	14.8	24.0	24.0	8.0	26.8	26.8
Prop In Lane	1.00		0.70	1.00		1.00	1.00		0.51	1.00		0.02
Lane Grp Cap(c), veh/h	616	790	738	283	1579	704	136	474	457	238	750	787
V/C Ratio(X)	0.10	0.49	0.50	1.10	0.00	0.25	0.08	1.06	1.06	1.28	0.81	0.81
Avail Cap(c_a), veh/h	616	790	738	283	1579	704	136	474	457	238	750	787
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.6	17.8	17.8	35.7	0.0	15.6	35.4	33.0	33.0	25.1	22.8	22.8
Incr Delay (d2), s/veh	0.3	2.2	2.4	81.7	0.0	0.9	1.2	56.9	57.6	155.8	9.0	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	6.0	5.7	12.7	0.0	2.3	0.3	17.3	16.8	13.7	12.3	12.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.9	20.0	20.2	117.4	0.0	16.5	36.5	89.9	90.6	180.8	31.8	31.4
LnGrp LOS	B	B	C	F	A	B	D	F	F	F	C	C
Approach Vol, veh/h		817			489			994			1545	
Approach Delay, s/veh		19.7			80.7			89.6			61.2	
Approach LOS		B			F			F			E	

Timer - Assigned Phs		2		4		6	7	8				
Phs Duration (G+Y+Rc), s		46.0		44.0		46.0	14.0	30.0				
Change Period (Y+Rc), s		* 6		* 6		* 6	6.0	* 6				
Max Green Setting (Gmax), s		* 40		* 38		* 40	8.0	* 24				
Max Q Clear Time (g_c+I1), s		4.7		0.0		42.0	10.0	16.8				
Green Ext Time (p_c), s		0.2		0.0		0.0	0.0	0.2				

Intersection Summary		
HCM 6th Ctrl Delay	62.2	
HCM 6th LOS	E	

Notes

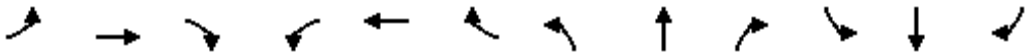
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	104	619	88	47	266
v/c Ratio	0.12	0.35	0.21	0.15	0.62
Control Delay	3.0	8.2	17.0	17.4	26.4
Queue Delay	0.0	0.0	0.2	0.0	0.3
Total Delay	3.0	8.2	17.1	17.4	26.7
Queue Length 50th (ft)	1	54	25	14	86
Queue Length 95th (ft)	38	104	m56	32	135
Internal Link Dist (ft)	585	1102	121		598
Turn Bay Length (ft)				90	
Base Capacity (vph)	837	1765	624	478	649
Starvation Cap Reductn	0	0	189	0	0
Spillback Cap Reductn	0	0	0	0	90
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.35	0.20	0.10	0.48

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	75	5	35	455	105	10	55	20	45	170	85
Future Volume (veh/h)	20	75	5	35	455	105	10	55	20	45	170	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	78	5	36	474	109	10	57	21	47	177	89
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	779	47	141	1680	375	76	207	68	305	226	114
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	237	1248	75	120	2692	602	48	1073	352	1321	1174	590
Grp Volume(v), veh/h	104	0	0	330	0	289	88	0	0	47	0	266
Grp Sat Flow(s),veh/h/ln	1561	0	0	1820	0	1594	1473	0	0	1321	0	1764
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	5.0	0.1	0.0	0.0	0.0	0.0	8.6
Cycle Q Clear(g_c), s	1.3	0.0	0.0	4.8	0.0	5.0	8.7	0.0	0.0	2.9	0.0	8.6
Prop In Lane	0.20		0.05	0.11		0.38	0.11		0.24	1.00		0.33
Lane Grp Cap(c), veh/h	1046	0	0	1202	0	995	351	0	0	305	0	340
V/C Ratio(X)	0.10	0.00	0.00	0.27	0.00	0.29	0.25	0.00	0.00	0.15	0.00	0.78
Avail Cap(c_a), veh/h	1046	0	0	1202	0	995	641	0	0	535	0	647
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.99	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.5	0.0	0.0	5.1	0.0	5.2	20.6	0.0	0.0	20.7	0.0	23.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.6	0.0	0.7	0.4	0.0	0.0	0.2	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	1.5	0.0	1.4	1.0	0.0	0.0	0.5	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.7	0.0	0.0	5.7	0.0	5.9	21.0	0.0	0.0	20.9	0.0	27.0
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	C
Approach Vol, veh/h		104			619			88			313	
Approach Delay, s/veh		4.7			5.8			21.0			26.1	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		42.4		17.6		42.4		17.6				
Change Period (Y+Rc), s		* 5		* 6		* 5		* 6				
Max Green Setting (Gmax), s		* 27		* 22		* 27		* 22				
Max Q Clear Time (g_c+I1), s		0.0		10.6		0.0		10.7				
Green Ext Time (p_c), s		0.0		1.0		0.0		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B

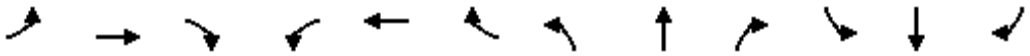
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	693	45	79	239
v/c Ratio	0.49	0.06	0.17	0.41
Control Delay	6.8	0.1	13.7	13.0
Queue Delay	0.0	0.0	0.0	0.8
Total Delay	6.8	0.1	13.7	13.8
Queue Length 50th (ft)	33	0	14	81
Queue Length 95th (ft)	42	m0	41	127
Internal Link Dist (ft)	257		187	121
Turn Bay Length (ft)				
Base Capacity (vph)	1411	698	464	579
Starvation Cap Reductn	0	0	0	138
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.06	0.17	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



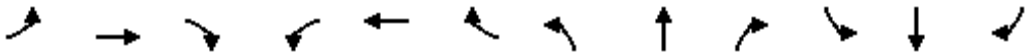
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	575	40	0	0	0	0	45	25	85	125	0
Future Volume (vph)	35	575	40	0	0	0	0	45	25	85	125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0					5.0			5.0	
Lane Util. Factor		0.95	1.00					1.00			1.00	
Frt		1.00	0.85					0.95			1.00	
Flt Protected		1.00	1.00					1.00			0.98	
Satd. Flow (prot)		3529	1583					1774			1826	
Flt Permitted		1.00	1.00					1.00			0.85	
Satd. Flow (perm)		3529	1583					1774			1589	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	40	653	45	0	0	0	0	51	28	97	142	0
RTOR Reduction (vph)	0	0	27	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	693	18	0	0	0	0	58	0	0	239	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	2 1	
Permitted Phases	4		4							2 1		
Actuated Green, G (s)		24.0	24.0					15.0			22.0	
Effective Green, g (s)		24.0	24.0					15.0			22.0	
Actuated g/C Ratio		0.40	0.40					0.25			0.37	
Clearance Time (s)		5.0	5.0					5.0				
Lane Grp Cap (vph)		1411	633					443			610	
v/s Ratio Prot								0.03			c0.05	
v/s Ratio Perm		0.20	0.01								c0.10	
v/c Ratio		0.49	0.03					0.13			0.39	
Uniform Delay, d1		13.4	10.9					17.4			14.1	
Progression Factor		0.42	0.00					1.00			0.89	
Incremental Delay, d2		1.1	0.1					0.6			1.8	
Delay (s)		6.7	0.1					18.1			14.3	
Level of Service		A	A					B			B	
Approach Delay (s)		6.3			0.0			18.1			14.3	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	544	126	368	33	406
v/c Ratio	0.45	0.35	0.45	0.08	0.49
Control Delay	10.3	5.9	4.3	10.2	13.4
Queue Delay	0.0	0.5	0.9	0.0	0.0
Total Delay	10.4	6.4	5.1	10.2	13.4
Queue Length 50th (ft)	41	8	16	6	91
Queue Length 95th (ft)	57	m13	26	20	159
Internal Link Dist (ft)	585		118		603
Turn Bay Length (ft)		75		150	
Base Capacity (vph)	1213	363	826	395	828
Starvation Cap Reductn	0	60	222	0	0
Spillback Cap Reductn	49	0	0	0	1
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.47	0.42	0.61	0.08	0.49

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



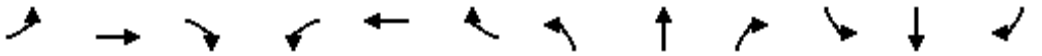
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	135	320	40	115	255	80	30	305	65
Future Volume (veh/h)	0	0	0	135	320	40	115	255	80	30	305	65
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h				148	352	44	126	280	88	33	335	71
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				2	2	2	2	2	2	2	2	2
Cap, veh/h				329	831	107	405	614	193	408	673	143
Arrive On Green				0.73	0.73	0.73	0.30	0.30	0.30	0.45	0.45	0.45
Sat Flow, veh/h				896	2268	293	979	1364	429	1014	1496	317
Grp Volume(v), veh/h				271	0	273	126	0	368	33	0	406
Grp Sat Flow(s),veh/h/ln				1639	0	1818	979	0	1793	1014	0	1813
Q Serve(g_s), s				3.9	0.0	3.4	6.8	0.0	10.0	1.4	0.0	9.5
Cycle Q Clear(g_c), s				3.9	0.0	3.4	16.3	0.0	10.0	11.4	0.0	9.5
Prop In Lane				0.55		0.16	1.00		0.24	1.00		0.17
Lane Grp Cap(c), veh/h				601	0	666	405	0	807	408	0	816
V/C Ratio(X)				0.45	0.00	0.41	0.31	0.00	0.46	0.08	0.00	0.50
Avail Cap(c_a), veh/h				601	0	666	405	0	807	408	0	816
HCM Platoon Ratio				2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)				0.95	0.00	0.95	0.77	0.00	0.77	1.00	0.00	1.00
Uniform Delay (d), s/veh				5.6	0.0	5.5	21.4	0.0	15.0	15.9	0.0	11.7
Incr Delay (d2), s/veh				2.3	0.0	1.8	1.5	0.0	1.4	0.4	0.0	2.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	0.0	1.3	1.8	0.0	4.3	0.4	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				7.9	0.0	7.3	23.0	0.0	16.4	16.3	0.0	13.9
LnGrp LOS				A	A	A	C	A	B	B	A	B
Approach Vol, veh/h					544			494			439	
Approach Delay, s/veh					7.6			18.1			14.0	
Approach LOS					A			B			B	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				32.0		28.0		32.0				
Change Period (Y+Rc), s				5.0		6.0		5.0				
Max Green Setting (Gmax), s				27.0		22.0		27.0				
Max Q Clear Time (g_c+I1), s				13.4		0.0		18.3				
Green Ext Time (p_c), s				1.6		0.0		1.6				

Intersection Summary		
HCM 6th Ctrl Delay		13.0
HCM 6th LOS		B

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	876	573	494
v/c Ratio	0.54	0.60	0.51
Control Delay	15.4	12.9	8.4
Queue Delay	0.0	0.0	0.7
Total Delay	15.4	12.9	9.1
Queue Length 50th (ft)	89	125	76
Queue Length 95th (ft)	124	208	109
Internal Link Dist (ft)	188	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	1609	951	962
Starvation Cap Reductn	0	0	195
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.60	0.64

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	640	105	0	0	0	0	410	100	0	440	0
Future Volume (veh/h)	35	640	105	0	0	0	0	410	100	0	440	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	0
Adj Flow Rate, veh/h	39	719	118				0	461	112	0	494	0
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	71	1375	232				0	751	182	0	966	0
Arrive On Green	0.32	0.32	0.32				0.00	0.52	0.52	0.00	1.00	0.00
Sat Flow, veh/h	223	4344	733				0	1454	353	0	1870	0
Grp Volume(v), veh/h	325	271	280				0	0	573	0	494	0
Grp Sat Flow(s),veh/h/ln	1859	1702	1738				0	0	1807	0	1870	0
Q Serve(g_s), s	8.7	7.8	7.9				0.0	0.0	13.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.7	7.8	7.9				0.0	0.0	13.5	0.0	0.0	0.0
Prop In Lane	0.12		0.42				0.00		0.20	0.00		0.00
Lane Grp Cap(c), veh/h	589	539	550				0	0	934	0	966	0
V/C Ratio(X)	0.55	0.50	0.51				0.00	0.00	0.61	0.00	0.51	0.00
Avail Cap(c_a), veh/h	589	539	550				0	0	934	0	966	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	0.00	0.87	0.00
Uniform Delay (d), s/veh	17.0	16.7	16.7				0.0	0.0	10.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	3.7	3.3	3.3				0.0	0.0	3.0	0.0	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	3.2	3.3				0.0	0.0	5.1	0.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.7	20.0	20.0				0.0	0.0	13.3	0.0	1.7	0.0
LnGrp LOS	C	B	C				A	A	B	A	A	A
Approach Vol, veh/h		876						573			494	
Approach Delay, s/veh		20.3						13.3			1.7	
Approach LOS		C						B			A	

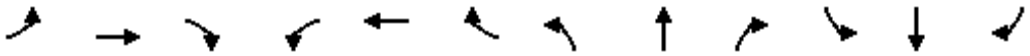
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		24.0		36.0				36.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		19.0		31.0				31.0				
Max Q Clear Time (g_c+I1), s		10.7		2.0				15.5				
Green Ext Time (p_c), s		2.5		2.2				2.4				

Intersection Summary												
HCM 6th Ctrl Delay			13.5									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	57	1017	85	483	34	23	57	28	40
v/c Ratio	0.08	0.36	0.20	0.17	0.17	0.09	0.21	0.14	0.16
Control Delay	3.2	3.2	4.1	1.8	24.9	23.3	9.8	24.4	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.2	3.2	4.1	1.8	24.9	23.3	9.8	24.4	21.7
Queue Length 50th (ft)	5	58	2	5	11	7	0	9	11
Queue Length 95th (ft)	15	88	m22	22	32	24	26	28	33
Internal Link Dist (ft)		409		587		292			593
Turn Bay Length (ft)	150		125				115		
Base Capacity (vph)	723	2839	415	2869	267	341	336	267	338
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.36	0.20	0.17	0.13	0.07	0.17	0.10	0.12

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	775	120	75	405	20	30	20	50	25	30	5
Future Volume (veh/h)	50	775	120	75	405	20	30	20	50	25	30	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	881	136	85	460	23	34	23	57	28	34	6
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	666	2179	336	447	2433	121	267	237	201	273	196	35
Arrive On Green	0.71	0.71	0.71	0.23	0.23	0.23	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	912	3085	476	554	3444	172	1367	1870	1585	1319	1548	273
Grp Volume(v), veh/h	57	507	510	85	237	246	34	23	57	28	0	40
Grp Sat Flow(s),veh/h/ln	912	1777	1785	554	1777	1839	1367	1870	1585	1319	0	1821
Q Serve(g_s), s	1.6	7.0	7.0	7.8	6.4	6.4	1.4	0.7	2.0	1.2	0.0	1.2
Cycle Q Clear(g_c), s	8.0	7.0	7.0	14.8	6.4	6.4	2.5	0.7	2.0	1.8	0.0	1.2
Prop In Lane	1.00		0.27	1.00		0.09	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	666	1255	1261	447	1255	1299	267	237	201	273	0	231
V/C Ratio(X)	0.09	0.40	0.40	0.19	0.19	0.19	0.13	0.10	0.28	0.10	0.00	0.17
Avail Cap(c_a), veh/h	666	1255	1261	447	1255	1299	344	343	291	347	0	334
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	5.1	3.6	3.6	15.4	9.2	9.2	24.5	23.2	23.7	23.9	0.0	23.4
Incr Delay (d2), s/veh	0.2	0.6	0.6	0.9	0.3	0.3	0.2	0.2	0.8	0.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.6	1.7	1.2	2.0	2.1	0.4	0.3	0.7	0.4	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.3	4.2	4.2	16.4	9.5	9.5	24.7	23.3	24.5	24.1	0.0	23.7
LnGrp LOS	A	A	A	B	A	A	C	C	C	C	A	C
Approach Vol, veh/h		1074			568			114			68	
Approach Delay, s/veh		4.3			10.6			24.3			23.9	
Approach LOS		A			B			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		47.4		12.6		47.4		12.6				
Change Period (Y+Rc), s		* 5		5.0		* 5		5.0				
Max Green Setting (Gmax), s		* 39		11.0		* 39		11.0				
Max Q Clear Time (g_c+I1), s		10.0		3.8		16.8		4.5				
Green Ext Time (p_c), s		0.2		0.1		0.1		0.2				

Intersection Summary		
HCM 6th Ctrl Delay	8.2	
HCM 6th LOS	A	

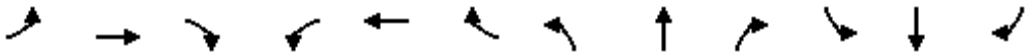
Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	NBT	NBR	SBT
Lane Group Flow (vph)	824	77	253	66	291
v/c Ratio	0.62	0.09	0.50	0.14	0.64
Control Delay	12.5	3.9	21.6	5.5	26.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.5	3.9	21.6	5.5	26.1
Queue Length 50th (ft)	134	4	78	0	95
Queue Length 95th (ft)	240	21	128	22	153
Internal Link Dist (ft)	586		1892		587
Turn Bay Length (ft)		65		50	
Base Capacity (vph)	1328	882	589	546	523
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.09	0.43	0.12	0.56

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	710	70	0	0	0	0	230	60	50	215	0
Future Volume (veh/h)	40	710	70	0	0	0	0	230	60	50	215	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	44	780	77				0	253	66	55	236	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	90	1665	898				0	468	396	112	321	0
Arrive On Green	0.57	0.57	0.57				0.00	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	159	2937	1585				0	1870	1585	164	1283	0
Grp Volume(v), veh/h	514	310	77				0	253	66	291	0	0
Grp Sat Flow(s),veh/h/ln	1862	1234	1585				0	1870	1585	1447	0	0
Q Serve(g_s), s	9.9	8.7	1.3				0.0	7.0	2.0	4.8	0.0	0.0
Cycle Q Clear(g_c), s	9.9	8.7	1.3				0.0	7.0	2.0	11.8	0.0	0.0
Prop In Lane	0.09		1.00				0.00		1.00	0.19		0.00
Lane Grp Cap(c), veh/h	1055	700	898				0	468	396	433	0	0
V/C Ratio(X)	0.49	0.44	0.09				0.00	0.54	0.17	0.67	0.00	0.00
Avail Cap(c_a), veh/h	1055	700	898				0	592	502	542	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.8	7.5	5.9				0.0	19.5	17.6	21.1	0.0	0.0
Incr Delay (d2), s/veh	1.5	1.9	0.2				0.0	1.0	0.2	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	2.2	0.4				0.0	3.0	0.7	3.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.3	9.4	6.1				0.0	20.5	17.8	23.4	0.0	0.0
LnGrp LOS	A	A	A				A	C	B	C	A	A
Approach Vol, veh/h		901						319			291	
Approach Delay, s/veh		9.1						19.9			23.4	
Approach LOS		A						B			C	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		40.0		20.0				20.0				
Change Period (Y+Rc), s		* 6		* 5				* 5				
Max Green Setting (Gmax), s		* 30		* 19				* 19				
Max Q Clear Time (g_c+I1), s		0.0		13.8				9.0				
Green Ext Time (p_c), s		0.0		0.6				0.9				

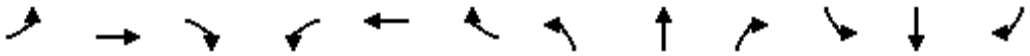
Intersection Summary	
HCM 6th Ctrl Delay	14.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	NBT	NBR	SBT
Lane Group Flow (vph)	835	27	209	44	220
v/c Ratio	0.59	0.03	0.44	0.10	0.51
Control Delay	10.5	2.1	21.9	6.8	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	2.1	21.9	6.8	23.9
Queue Length 50th (ft)	126	0	64	0	69
Queue Length 95th (ft)	213	7	112	19	121
Internal Link Dist (ft)	1750		1279		589
Turn Bay Length (ft)		65		65	
Base Capacity (vph)	1416	928	527	480	472
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.59	0.03	0.40	0.09	0.47

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	740	25	0	0	0	0	190	40	40	160	0
Future Volume (veh/h)	20	740	25	0	0	0	0	190	40	40	160	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	22	813	27				0	209	44	44	176	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	46	1763	925				0	467	396	123	374	0
Arrive On Green	0.58	0.58	0.58				0.00	0.25	0.25	0.25	0.25	0.00
Sat Flow, veh/h	79	3022	1585				0	1870	1585	206	1495	0
Grp Volume(v), veh/h	521	314	27				0	209	44	220	0	0
Grp Sat Flow(s),veh/h/ln	1866	1234	1585				0	1870	1585	1701	0	0
Q Serve(g_s), s	9.7	8.5	0.4				0.0	5.7	1.3	0.7	0.0	0.0
Cycle Q Clear(g_c), s	9.7	8.5	0.4				0.0	5.7	1.3	6.4	0.0	0.0
Prop In Lane	0.04		1.00				0.00		1.00	0.20		0.00
Lane Grp Cap(c), veh/h	1089	720	925				0	467	396	497	0	0
V/C Ratio(X)	0.48	0.44	0.03				0.00	0.45	0.11	0.44	0.00	0.00
Avail Cap(c_a), veh/h	1089	720	925				0	530	449	552	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62				0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.2	7.0	5.3				0.0	19.0	17.4	19.2	0.0	0.0
Incr Delay (d2), s/veh	0.9	1.2	0.0				0.0	0.7	0.1	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.9	0.1				0.0	2.4	0.4	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.2	8.2	5.3				0.0	19.7	17.5	19.8	0.0	0.0
LnGrp LOS	A	A	A				A	B	B	B	A	A
Approach Vol, veh/h		862						253			220	
Approach Delay, s/veh		8.1						19.3			19.8	
Approach LOS		A						B			B	

Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		40.0		20.0				20.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		33.0		17.0				17.0				
Max Q Clear Time (g_c+I1), s		0.0		8.4				7.7				
Green Ext Time (p_c), s		0.0		0.5				0.6				

Intersection Summary		
HCM 6th Ctrl Delay		12.1
HCM 6th LOS		B

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	NBL
Lane Group Flow (vph)	2872	939	2200	194
v/c Ratio	0.73	0.73	0.81	0.50
Control Delay	7.0	7.6	3.5	54.6
Queue Delay	0.6	7.2	0.6	0.1
Total Delay	7.6	14.8	4.1	54.7
Queue Length 50th (ft)	244	131	73	49
Queue Length 95th (ft)	316	282	m97	m38
Internal Link Dist (ft)	880		220	97
Turn Bay Length (ft)		50		
Base Capacity (vph)	3911	1284	2722	858
Starvation Cap Reductn	0	0	196	134
Spillback Cap Reductn	572	301	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.96	0.87	0.27

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2585	845	0	1980	175	0
Future Volume (veh/h)	2585	845	0	1980	175	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	2872	939	0	2200	194	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	4822	1497	0	3356	0	0
Arrive On Green	0.94	0.94	0.00	1.00	0.00	0.00
Sat Flow, veh/h	5274	1585	0	3741	0	0
Grp Volume(v), veh/h	2872	939	0	2200	0	0
Grp Sat Flow(s),veh/h/ln	1702	1585	0	1777	0	0
Q Serve(g_s), s	6.4	7.3	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.4	7.3	0.0	0.0	0.0	0.0
Prop In Lane		1.00	0.00		0.00	0.00
Lane Grp Cap(c), veh/h	4822	1497	0	3356	0	0
V/C Ratio(X)	0.60	0.63	0.00	0.66	0.00	0.00
Avail Cap(c_a), veh/h	4822	1497	0	3356	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.15	0.00	0.00
Uniform Delay (d), s/veh	0.3	0.3	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	2.0	0.0	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.8	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.9	2.3	0.0	0.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h	3811			2200	0	
Approach Delay, s/veh	1.2			0.2	0.0	
Approach LOS	A			A		

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	90.0				90.0	0.0
Change Period (Y+Rc), s	5.0				* 5	5.5
Max Green Setting (Gmax), s	57.0				* 57	22.5
Max Q Clear Time (g_c+I1), s	0.0				0.0	0.0
Green Ext Time (p_c), s	0.0				0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	0.8
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	780	0	0	0	0	0	0	0	65	0	0
Future Vol, veh/h	35	780	0	0	0	0	0	0	0	65	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	1084279808		-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	867	0	0	0	0	0	0	0	72	0	0

Major/Minor	Major1					Minor1			Minor2		
Conflicting Flow All	0	0	0			-	945	434	512	945	-
Stage 1	-	-	-			-	945	-	0	0	-
Stage 2	-	-	-			-	0	-	512	945	-
Critical Hdwy	4.14	-	-			-	6.54	6.94	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-			-	5.54	-	-	-	-
Critical Hdwy Stg 2	-	-	-			-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-			-	4.02	3.32	3.52	4.02	-
Pot Cap-1 Maneuver	-	-	-			0	260	570	445	260	0
Stage 1	-	-	-			0	339	-	-	-	0
Stage 2	-	-	-			0	-	-	513	339	0
Platoon blocked, %		-	-								
Mov Cap-1 Maneuver	-	-	-			-	260	570	445	260	-
Mov Cap-2 Maneuver	-	-	-			-	260	-	445	260	-
Stage 1	-	-	-			-	339	-	-	-	-
Stage 2	-	-	-			-	-	-	513	339	-

Approach	EB	NB	SB
HCM Control Delay, s		0	14.7
HCM LOS		A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	-	-	-	-	445
HCM Lane V/C Ratio	-	-	-	-	0.162
HCM Control Delay (s)	0	-	-	-	14.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	-	0.6

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	25	790	5	0	0	0	0	10	5	5	20	15	0
Future Vol, veh/h	25	790	5	0	0	0	0	10	5	5	20	15	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	1082423296		-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	878	6	0	0	0	0	11	6	6	22	17	0

Major/Minor	Major1					Minor1			Minor2			
Conflicting Flow All	0	0	0			-	937	442	0	501	940	-
Stage 1	-	-	-			-	937	-	0	0	0	-
Stage 2	-	-	-			-	0	-	0	501	940	-
Critical Hdwy	4.14	-	-			-	6.54	6.94	-	7.54	6.54	-
Critical Hdwy Stg 1	-	-	-			-	5.54	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-			-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-			-	4.02	3.32	-	3.52	4.02	-
Pot Cap-1 Maneuver	-	-	-			0	263	563	0	453	262	0
Stage 1	-	-	-			0	342	-	0	-	-	0
Stage 2	-	-	-			0	-	-	0	521	340	0
Platoon blocked, %		-	-						-			
Mov Cap-1 Maneuver	-	-	-			-	263	563	0	434	262	-
Mov Cap-2 Maneuver	-	-	-			-	263	-	0	434	262	-
Stage 1	-	-	-			-	342	-	0	-	-	-
Stage 2	-	-	-			-	-	-	0	499	340	-

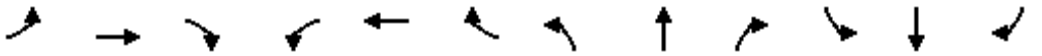
Approach	EB	NB	SB
HCM Control Delay, s		16.9	17
HCM LOS		C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	SBLn1
Capacity (veh/h)	320	-	-	-	339
HCM Lane V/C Ratio	0.052	-	-	-	0.115
HCM Control Delay (s)	16.9	-	-	-	17
HCM Lane LOS	C	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.4

Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1948	2567	474	52	26	355
v/c Ratio	1.00	0.92	0.77	0.10	0.19	0.59
Control Delay	19.9	25.5	32.5	9.2	25.8	30.0
Queue Delay	0.0	0.2	54.1	0.0	0.0	0.8
Total Delay	19.9	25.7	86.6	9.2	25.8	30.7
Queue Length 50th (ft)	134	454	261	7	10	166
Queue Length 95th (ft)	m#144	#545	#376	m16	32	257
Internal Link Dist (ft)	220	1083	121			464
Turn Bay Length (ft)					100	
Base Capacity (vph)	1950	2780	618	545	137	597
Starvation Cap Reductn	0	0	223	0	0	0
Spillback Cap Reductn	0	20	0	0	0	69
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.93	1.20	0.10	0.19	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1890	0	0	2290	200	0	460	50	25	265	80
Future Volume (veh/h)	0	1890	0	0	2290	200	0	460	50	25	265	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	1948	0	0	2361	0	0	474	52	26	273	82
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	2	2	0	2	2	2	2	2
Cap, veh/h	0	1958	0	0	2814		0	621	527	184	459	138
Arrive On Green	0.00	1.00	0.00	0.00	0.55	0.00	0.00	0.44	0.44	0.33	0.33	0.33
Sat Flow, veh/h	0	3741	0	0	5443	0	0	1870	1585	877	1381	415
Grp Volume(v), veh/h	0	1948	0	0	2361	0	0	474	52	26	0	355
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1702	0	0	1870	1585	877	0	1796
Q Serve(g_s), s	0.0	0.0	0.0	0.0	34.7	0.0	0.0	19.2	1.7	2.4	0.0	14.8
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	34.7	0.0	0.0	19.2	1.7	21.6	0.0	14.8
Prop In Lane	0.00		0.00	0.00		0.00	0.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	0	1958	0	0	2814		0	621	527	184	0	597
V/C Ratio(X)	0.00	0.99	0.00	0.00	0.84		0.00	0.76	0.10	0.14	0.00	0.60
Avail Cap(c_a), veh/h	0	1958	0	0	2814		0	621	527	184	0	597
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	16.9	0.0	0.0	22.1	17.3	36.0	0.0	25.0
Incr Delay (d2), s/veh	0.0	19.1	0.0	0.0	3.2	0.0	0.0	8.6	0.4	1.6	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.2	0.0	0.0	12.7	0.0	0.0	8.7	0.7	0.6	0.0	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	19.1	0.0	0.0	20.1	0.0	0.0	30.8	17.6	37.6	0.0	29.3
LnGrp LOS	A	B	A	A	C		A	C	B	D	A	C
Approach Vol, veh/h		1948			2361	A		526			381	
Approach Delay, s/veh		19.1			20.1			29.5			29.9	
Approach LOS		B			C			C			C	

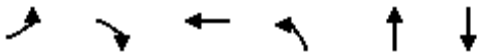
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		55.0		35.0		55.0		35.0				
Change Period (Y+Rc), s		* 5.4		* 5.1		* 5.4		* 5.1				
Max Green Setting (Gmax), s		* 50		* 30		* 50		* 30				
Max Q Clear Time (g_c+I1), s		0.0		23.6		0.0		21.2				
Green Ext Time (p_c), s		0.0		0.4		0.0		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			21.4									
HCM 6th LOS			C									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

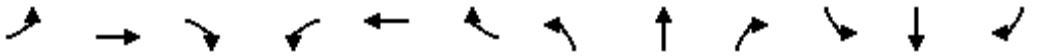
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	172	220	807	43	317	285
v/c Ratio	0.72	0.23	0.51	0.15	0.50	0.45
Control Delay	34.5	1.6	14.7	22.4	27.0	29.0
Queue Delay	1.4	1.5	3.0	11.8	2.5	12.9
Total Delay	35.9	3.0	17.7	34.2	29.5	41.9
Queue Length 50th (ft)	40	0	170	17	142	83
Queue Length 95th (ft)	#189	19	231	42	221	162
Internal Link Dist (ft)			1750		531	121
Turn Bay Length (ft)						
Base Capacity (vph)	239	946	1571	288	633	633
Starvation Cap Reductn	4	547	0	0	0	321
Spillback Cap Reductn	12	0	634	219	200	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.55	0.86	0.62	0.73	0.91

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



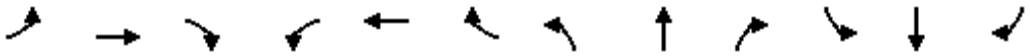
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	0	205	40	650	60	40	295	0	0	265	0
Future Volume (vph)	160	0	205	40	650	60	40	295	0	0	265	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0		7.0		7.0		4.4	4.4			4.4	
Lane Util. Factor	1.00		1.00		*0.80		1.00	1.00			1.00	
Frt	1.00		0.85		0.99		1.00	1.00			1.00	
Flt Protected	0.95		1.00		1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583		2937		1770	1863			1863	
Flt Permitted	0.24		1.00		1.00		0.46	1.00			1.00	
Satd. Flow (perm)	448		1583		2937		848	1863			1863	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	172	0	220	43	699	65	43	317	0	0	285	0
RTOR Reduction (vph)	0	0	103	0	6	0	0	0	0	0	0	0
Lane Group Flow (vph)	172	0	117	0	801	0	43	317	0	0	285	0
Turn Type	Perm		Perm	Perm	NA		Perm	NA			NA	
Protected Phases					6			8			4	
Permitted Phases	2		2	6			8					
Actuated Green, G (s)	48.0		48.0		48.0		30.6	30.6			30.6	
Effective Green, g (s)	48.0		48.0		48.0		30.6	30.6			30.6	
Actuated g/C Ratio	0.53		0.53		0.53		0.34	0.34			0.34	
Clearance Time (s)	7.0		7.0		7.0		4.4	4.4			4.4	
Lane Grp Cap (vph)	238		844		1566		288	633			633	
v/s Ratio Prot								c0.17			0.15	
v/s Ratio Perm	c0.38		0.07		0.27		0.05					
v/c Ratio	0.72		0.14		0.51		0.15	0.50			0.45	
Uniform Delay, d1	15.9		10.6		13.5		20.7	23.6			23.1	
Progression Factor	0.94		0.63		1.00		1.00	1.00			1.15	
Incremental Delay, d2	16.3		0.3		1.2		1.1	2.8			1.9	
Delay (s)	31.4		7.0		14.7		21.7	26.4			28.5	
Level of Service	C		A		B		C	C			C	
Approach Delay (s)		17.7			14.7			25.9			28.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.4
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	167	328	661	339	172	1521	188	1043
v/c Ratio	0.38	0.17	0.98	0.67	0.59	0.59	0.97	0.85	0.69
Control Delay	36.6	15.5	75.1	29.6	14.3	17.9	42.9	52.7	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.6	15.5	75.1	29.6	14.3	17.9	42.9	52.7	24.1
Queue Length 50th (ft)	22	22	187	180	79	41	428	53	243
Queue Length 95th (ft)	58	47	#360	242	172	74	#600	#181	334
Internal Link Dist (ft)		368		409			880		1134
Turn Bay Length (ft)	125		100		60	100		125	
Base Capacity (vph)	127	973	334	983	571	340	1560	220	1502
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.17	0.98	0.67	0.59	0.51	0.97	0.85	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	95	60	305	615	315	160	1295	120	175	900	70
Future Volume (veh/h)	45	95	60	305	615	315	160	1295	120	175	900	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	48	102	65	328	661	339	172	1392	129	188	968	75
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	596	353	371	987	440	333	1462	135	230	1497	116
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.07	0.44	0.44	0.08	0.45	0.45
Sat Flow, veh/h	563	2146	1272	1218	3554	1585	1781	3289	303	1781	3342	259
Grp Volume(v), veh/h	48	83	84	328	661	339	172	749	772	188	515	528
Grp Sat Flow(s),veh/h/ln	563	1777	1641	1218	1777	1585	1781	1777	1816	1781	1777	1824
Q Serve(g_s), s	7.4	3.2	3.5	21.5	14.9	17.7	4.6	36.4	37.0	5.1	20.3	20.3
Cycle Q Clear(g_c), s	22.3	3.2	3.5	25.0	14.9	17.7	4.6	36.4	37.0	5.1	20.3	20.3
Prop In Lane	1.00		0.78	1.00		1.00	1.00		0.17	1.00		0.14
Lane Grp Cap(c), veh/h	144	494	456	371	987	440	333	790	807	230	796	817
V/C Ratio(X)	0.33	0.17	0.18	0.88	0.67	0.77	0.52	0.95	0.96	0.82	0.65	0.65
Avail Cap(c_a), veh/h	144	494	456	371	987	440	418	790	807	230	796	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.87	0.87	0.87	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	24.6	24.7	35.5	28.8	29.9	14.8	24.0	24.2	20.3	19.3	19.3
Incr Delay (d2), s/veh	6.2	0.7	0.9	22.5	3.1	10.8	0.5	21.6	22.8	18.9	4.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	1.4	1.5	9.6	6.6	7.8	1.7	18.7	19.6	3.1	8.6	8.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.9	25.4	25.6	57.9	32.0	40.6	15.2	45.6	47.0	39.2	23.3	23.2
LnGrp LOS	D	C	C	E	C	D	B	D	D	D	C	C
Approach Vol, veh/h		215			1328			1693			1231	
Approach Delay, s/veh		29.8			40.6			43.1			25.7	
Approach LOS		C			D			D			C	

Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		31.0	12.7	46.3		31.0	13.0	46.0				
Change Period (Y+Rc), s		* 6	6.0	* 6		* 6	6.0	* 6				
Max Green Setting (Gmax), s		* 25	11.0	* 36		* 25	7.0	* 40				
Max Q Clear Time (g_c+I1), s		24.3	6.6	0.0		27.0	7.1	0.0				
Green Ext Time (p_c), s		0.0	0.1	0.0		0.0	0.0	0.0				

Intersection Summary	
HCM 6th Ctrl Delay	36.9
HCM 6th LOS	D

Notes

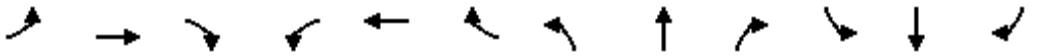
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	111	1106	227	63	210
v/c Ratio	0.15	0.59	0.64	0.28	0.55
Control Delay	1.6	9.4	28.3	22.3	26.6
Queue Delay	0.0	0.0	3.5	0.0	0.4
Total Delay	1.6	9.4	31.8	22.3	27.0
Queue Length 50th (ft)	3	113	84	19	68
Queue Length 95th (ft)	m6	180	152	47	121
Internal Link Dist (ft)	585	1102	121		598
Turn Bay Length (ft)				90	
Base Capacity (vph)	760	1880	415	266	442
Starvation Cap Reductn	0	0	112	0	0
Spillback Cap Reductn	9	11	0	0	44
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.15	0.59	0.75	0.24	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	70	10	30	895	125	35	165	15	60	135	65
Future Volume (veh/h)	25	70	10	30	895	125	35	165	15	60	135	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	74	11	32	942	132	37	174	16	63	142	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	193	518	70	93	1860	257	95	242	20	294	238	114
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.07	0.07	0.07	0.20	0.20	0.20
Sat Flow, veh/h	193	839	113	48	3014	416	126	1215	102	1193	1195	572
Grp Volume(v), veh/h	111	0	0	589	0	517	227	0	0	63	0	210
Grp Sat Flow(s),veh/h/ln	1145	0	0	1850	0	1627	1443	0	0	1193	0	1767
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	10.7	3.2	0.0	0.0	0.0	0.0	6.5
Cycle Q Clear(g_c), s	11.1	0.0	0.0	10.6	0.0	10.7	9.7	0.0	0.0	4.1	0.0	6.5
Prop In Lane	0.23		0.10	0.05		0.26	0.16		0.07	1.00		0.32
Lane Grp Cap(c), veh/h	781	0	0	1205	0	1004	357	0	0	294	0	352
V/C Ratio(X)	0.14	0.00	0.00	0.49	0.00	0.51	0.64	0.00	0.00	0.21	0.00	0.60
Avail Cap(c_a), veh/h	781	0	0	1205	0	1004	443	0	0	355	0	442
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	0.90	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	0.0	0.0	6.4	0.0	6.4	26.7	0.0	0.0	20.9	0.0	21.8
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.4	0.0	1.9	1.8	0.0	0.0	0.4	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	3.5	0.0	3.2	3.6	0.0	0.0	0.7	0.0	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.2	0.0	0.0	7.8	0.0	8.3	28.5	0.0	0.0	21.2	0.0	23.4
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	C
Approach Vol, veh/h		111			1106			227			273	
Approach Delay, s/veh		5.2			8.1			28.5			22.9	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		42.0		18.0		42.0		18.0				
Change Period (Y+Rc), s		* 5		* 6		* 5		* 6				
Max Green Setting (Gmax), s		* 34		* 15		* 34		* 15				
Max Q Clear Time (g_c+I1), s		0.0		8.5		0.0		11.7				
Green Ext Time (p_c), s		0.0		0.6		0.0		0.3				

Intersection Summary		
HCM 6th Ctrl Delay	12.9	
HCM 6th LOS	B	

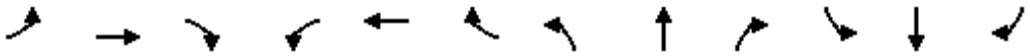
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	415	219	197
v/c Ratio	0.31	0.44	0.35
Control Delay	8.5	19.8	13.9
Queue Delay	0.0	0.4	0.5
Total Delay	8.5	20.2	14.4
Queue Length 50th (ft)	32	59	66
Queue Length 95th (ft)	m43	112	113
Internal Link Dist (ft)	257	187	121
Turn Bay Length (ft)			
Base Capacity (vph)	1343	498	559
Starvation Cap Reductn	0	0	123
Spillback Cap Reductn	126	61	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	0.50	0.45

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



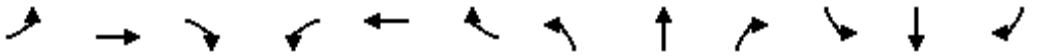
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	295	20	0	0	0	0	155	40	90	85	0
Future Volume (vph)	55	295	20	0	0	0	0	155	40	90	85	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		0.99						0.97			1.00	
Flt Protected		0.99						1.00			0.98	
Satd. Flow (prot)		3485						1811			1816	
Flt Permitted		0.99						1.00			0.76	
Satd. Flow (perm)		3485						1811			1417	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	62	331	22	0	0	0	0	174	45	101	96	0
RTOR Reduction (vph)	0	7	0	0	0	0	0	15	0	0	0	0
Lane Group Flow (vph)	0	408	0	0	0	0	0	204	0	0	197	0
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	2 1	
Permitted Phases	4									2 1		
Actuated Green, G (s)		23.0						16.0			23.0	
Effective Green, g (s)		23.0						16.0			23.0	
Actuated g/C Ratio		0.38						0.27			0.38	
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		1335						482			589	
v/s Ratio Prot								c0.11			c0.04	
v/s Ratio Perm		0.12									0.09	
v/c Ratio		0.31						0.42			0.33	
Uniform Delay, d1		12.9						18.2			13.1	
Progression Factor		0.62						1.00			1.12	
Incremental Delay, d2		0.6						2.7			1.4	
Delay (s)		8.6						20.9			16.1	
Level of Service		A						C			B	
Approach Delay (s)		8.6			0.0			20.9			16.1	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1156	177	495	26	286
v/c Ratio	0.77	0.49	0.73	0.14	0.42
Control Delay	12.3	11.7	14.5	15.1	15.9
Queue Delay	0.0	1.2	8.5	0.0	0.0
Total Delay	12.3	12.9	23.0	15.1	15.9
Queue Length 50th (ft)	98	14	43	6	71
Queue Length 95th (ft)	76	m36	#182	22	128
Internal Link Dist (ft)	585		118		603
Turn Bay Length (ft)		75		150	
Base Capacity (vph)	1502	360	678	188	678
Starvation Cap Reductn	0	63	148	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	0.60	0.93	0.14	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	140	945	25	170	415	60	25	240	35
Future Volume (veh/h)	0	0	0	140	945	25	170	415	60	25	240	35
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				0.90	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h				146	984	26	177	432	62	26	250	36
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				2	2	2	2	2	2	2	2	2
Cap, veh/h				190	1355	37	392	586	84	310	586	84
Arrive On Green				0.90	0.90	0.90	0.73	0.73	0.73	0.37	0.37	0.37
Sat Flow, veh/h				423	3012	83	1093	1599	230	903	1599	230
Grp Volume(v), veh/h				574	0	582	177	0	494	26	0	286
Grp Sat Flow(s),veh/h/ln				1662	0	1855	1093	0	1829	903	0	1829
Q Serve(g_s), s				6.7	0.0	5.1	7.2	0.0	9.4	1.4	0.0	7.0
Cycle Q Clear(g_c), s				6.7	0.0	5.1	14.2	0.0	9.4	10.8	0.0	7.0
Prop In Lane				0.25		0.04	1.00		0.13	1.00		0.13
Lane Grp Cap(c), veh/h				748	0	835	392	0	671	310	0	671
V/C Ratio(X)				0.77	0.00	0.70	0.45	0.00	0.74	0.08	0.00	0.43
Avail Cap(c_a), veh/h				748	0	835	392	0	671	310	0	671
HCM Platoon Ratio				2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh				2.0	0.0	1.9	9.6	0.0	6.3	19.3	0.0	14.3
Incr Delay (d2), s/veh				7.4	0.0	4.8	3.7	0.0	7.1	0.5	0.0	2.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.2	0.0	1.8	1.2	0.0	3.1	0.3	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				9.4	0.0	6.7	13.3	0.0	13.4	19.8	0.0	16.2
LnGrp LOS				A	A	A	B	A	B	B	A	B
Approach Vol, veh/h					1156			671			312	
Approach Delay, s/veh					8.0			13.4			16.5	
Approach LOS					A			B			B	

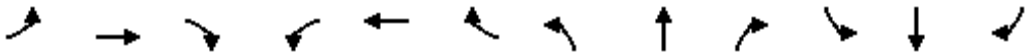
Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				27.0		33.0		27.0				
Change Period (Y+Rc), s				5.0		6.0		5.0				
Max Green Setting (Gmax), s				22.0		27.0		22.0				
Max Q Clear Time (g_c+I1), s				12.8		0.0		16.2				
Green Ext Time (p_c), s				0.9		0.0		1.7				

Intersection Summary		
HCM 6th Ctrl Delay		10.9
HCM 6th LOS		B

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	452	739	404
v/c Ratio	0.33	0.71	0.38
Control Delay	13.7	13.8	5.7
Queue Delay	0.0	1.6	0.6
Total Delay	13.7	15.4	6.3
Queue Length 50th (ft)	34	167	58
Queue Length 95th (ft)	57	284	m69
Internal Link Dist (ft)	188	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	1383	1046	1055
Starvation Cap Reductn	0	0	337
Spillback Cap Reductn	3	154	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.33	0.83	0.56

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	285	110	0	0	0	0	615	80	0	380	0
Future Volume (veh/h)	30	285	110	0	0	0	0	615	80	0	380	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	0
Adj Flow Rate, veh/h	32	303	117				0	654	85	0	404	0
Peak Hour Factor	0.94	0.94	0.94				0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	94	934	355				0	919	119	0	1060	0
Arrive On Green	0.27	0.27	0.27				0.00	0.57	0.57	0.00	1.00	0.00
Sat Flow, veh/h	352	3501	1333				0	1622	211	0	1870	0
Grp Volume(v), veh/h	169	140	143				0	0	739	0	404	0
Grp Sat Flow(s),veh/h/ln	1853	1702	1630				0	0	1832	0	1870	0
Q Serve(g_s), s	4.4	4.0	4.2				0.0	0.0	17.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.4	4.0	4.2				0.0	0.0	17.6	0.0	0.0	0.0
Prop In Lane	0.19		0.82				0.00		0.12	0.00		0.00
Lane Grp Cap(c), veh/h	494	454	435				0	0	1038	0	1060	0
V/C Ratio(X)	0.34	0.31	0.33				0.00	0.00	0.71	0.00	0.38	0.00
Avail Cap(c_a), veh/h	494	454	435				0	0	1038	0	1060	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	17.7	17.6	17.7				0.0	0.0	9.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.9	1.8	2.0				0.0	0.0	4.1	0.0	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.6	1.7				0.0	0.0	6.6	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.6	19.3	19.7				0.0	0.0	13.6	0.0	1.0	0.0
LnGrp LOS	B	B	B				A	A	B	A	A	A
Approach Vol, veh/h		452						739			404	
Approach Delay, s/veh		19.6						13.6			1.0	
Approach LOS		B						B			A	

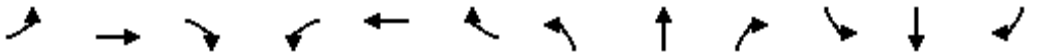
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		21.0		39.0				39.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		16.0		34.0				34.0				
Max Q Clear Time (g_c+I1), s		6.4		2.0				19.6				
Green Ext Time (p_c), s		1.3		1.7				3.2				

Intersection Summary			
HCM 6th Ctrl Delay		12.1	
HCM 6th LOS		B	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	22	398	38	1210	118	43	54	27	107
v/c Ratio	0.08	0.15	0.05	0.47	0.61	0.15	0.19	0.13	0.33
Control Delay	6.0	4.6	4.4	5.9	48.1	32.2	10.4	32.1	12.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.0	4.6	4.4	5.9	48.1	32.2	10.4	32.1	12.2
Queue Length 50th (ft)	4	34	5	117	64	22	0	13	8
Queue Length 95th (ft)	m8	m54	17	203	111	47	29	35	49
Internal Link Dist (ft)		409		587		292			593
Turn Bay Length (ft)	150		125				115		
Base Capacity (vph)	280	2582	709	2602	327	476	444	347	482
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.15	0.05	0.47	0.36	0.09	0.12	0.08	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	340	30	35	1100	25	110	40	50	25	15	85
Future Volume (veh/h)	20	340	30	35	1100	25	110	40	50	25	15	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	366	32	38	1183	27	118	43	54	27	16	91
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	2361	205	784	2535	58	230	328	278	282	42	242
Arrive On Green	1.00	1.00	1.00	0.71	0.71	0.71	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	462	3308	288	987	3552	81	1287	1870	1585	1298	243	1380
Grp Volume(v), veh/h	22	196	202	38	592	618	118	43	54	27	0	107
Grp Sat Flow(s),veh/h/ln	462	1777	1819	987	1777	1856	1287	1870	1585	1298	0	1622
Q Serve(g_s), s	0.9	0.0	0.0	1.0	12.9	12.9	8.0	1.7	2.6	1.6	0.0	5.2
Cycle Q Clear(g_c), s	13.8	0.0	0.0	1.0	12.9	12.9	13.3	1.7	2.6	3.4	0.0	5.2
Prop In Lane	1.00		0.16	1.00		0.04	1.00		1.00	1.00		0.85
Lane Grp Cap(c), veh/h	344	1268	1298	784	1268	1325	230	328	278	282	0	284
V/C Ratio(X)	0.06	0.15	0.16	0.05	0.47	0.47	0.51	0.13	0.19	0.10	0.00	0.38
Avail Cap(c_a), veh/h	344	1268	1298	784	1268	1325	334	478	405	387	0	415
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	1.4	0.0	0.0	3.8	5.5	5.5	38.6	31.3	31.7	32.8	0.0	32.8
Incr Delay (d2), s/veh	0.3	0.2	0.2	0.1	1.2	1.2	1.8	0.2	0.3	0.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.1	0.2	4.2	4.4	2.6	0.8	1.0	0.5	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	1.7	0.2	0.2	4.0	6.8	6.7	40.4	31.5	32.0	32.9	0.0	33.6
LnGrp LOS	A	A	A	A	A	A	D	C	C	C	A	C
Approach Vol, veh/h		420			1248			215			134	
Approach Delay, s/veh		0.3			6.7			36.5			33.5	
Approach LOS		A			A			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		69.2		20.8		69.2		20.8				
Change Period (Y+Rc), s		* 5		5.0		* 5		5.0				
Max Green Setting (Gmax), s		* 57		23.0		* 57		23.0				
Max Q Clear Time (g_c+I1), s		15.8		7.2		3.0		15.3				
Green Ext Time (p_c), s		0.1		0.4		0.3		0.5				

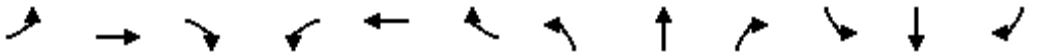
Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	1033	167	395	328	50
v/c Ratio	0.68	0.19	0.75	0.58	0.10
Control Delay	14.5	4.6	27.9	21.7	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	14.5	4.6	27.9	21.7	4.7
Queue Length 50th (ft)	161	11	126	98	0
Queue Length 95th (ft)	261	40	201	158	17
Internal Link Dist (ft)	575		1892	587	
Turn Bay Length (ft)		65			65
Base Capacity (vph)	1520	862	610	652	589
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.19	0.65	0.50	0.08

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	80	850	150	35	320	0	0	295	45
Future Volume (veh/h)	0	0	0	80	850	150	35	320	0	0	295	45
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				89	944	167	39	356	0	0	328	50
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				129	1435	740	89	432	0	0	540	458
Arrive On Green				0.47	0.47	0.47	0.29	0.29	0.00	0.00	0.29	0.29
Sat Flow, veh/h				277	3076	1585	81	1495	0	0	1870	1585
Grp Volume(v), veh/h				596	437	167	395	0	0	0	328	50
Grp Sat Flow(s),veh/h/ln				1856	1496	1585	1576	0	0	0	1870	1585
Q Serve(g_s), s				15.1	13.2	3.8	5.5	0.0	0.0	0.0	9.1	1.4
Cycle Q Clear(g_c), s				15.1	13.2	3.8	14.6	0.0	0.0	0.0	9.1	1.4
Prop In Lane				0.15		1.00	0.10		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				866	698	740	521	0	0	0	540	458
V/C Ratio(X)				0.69	0.63	0.23	0.76	0.00	0.00	0.00	0.61	0.11
Avail Cap(c_a), veh/h				866	698	740	627	0	0	0	655	555
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				12.6	12.1	9.5	20.1	0.0	0.0	0.0	18.4	15.7
Incr Delay (d2), s/veh				4.4	4.2	0.7	4.4	0.0	0.0	0.0	1.1	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.3	4.5	1.3	5.5	0.0	0.0	0.0	3.8	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				17.0	16.3	10.2	24.4	0.0	0.0	0.0	19.5	15.8
LnGrp LOS				B	B	B	C	A	A	A	B	B
Approach Vol, veh/h					1200			395			378	
Approach Delay, s/veh					15.8			24.4			19.0	
Approach LOS					B			C			B	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				22.3		34.0		22.3				
Change Period (Y+Rc), s				* 5		6.0		* 5				
Max Green Setting (Gmax), s				* 21		28.0		* 21				
Max Q Clear Time (g_c+I1), s				11.1		0.0		16.6				
Green Ext Time (p_c), s				1.1		0.0		0.7				

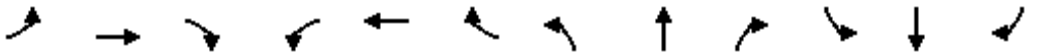
Intersection Summary		
HCM 6th Ctrl Delay	18.1	
HCM 6th LOS	B	

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	922	96	298	275	17
v/c Ratio	0.56	0.10	0.61	0.54	0.04
Control Delay	10.6	3.4	24.7	22.4	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	3.4	24.7	22.4	2.9
Queue Length 50th (ft)	110	3	97	87	0
Queue Length 95th (ft)	200	23	147	133	6
Internal Link Dist (ft)	556		1279	589	
Turn Bay Length (ft)		65			65
Base Capacity (vph)	1652	915	588	621	551
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.10	0.51	0.44	0.03

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	120	700	85	25	240	0	0	245	15
Future Volume (veh/h)	0	0	0	120	700	85	25	240	0	0	245	15
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				135	787	96	28	270	0	0	275	17
Peak Hour Factor				0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				235	1437	793	86	404	0	0	468	396
Arrive On Green				0.50	0.50	0.50	0.25	0.25	0.00	0.00	0.25	0.25
Sat Flow, veh/h				470	2873	1585	79	1615	0	0	1870	1585
Grp Volume(v), veh/h				531	391	96	298	0	0	0	275	17
Grp Sat Flow(s),veh/h/ln				1847	1496	1585	1695	0	0	0	1870	1585
Q Serve(g_s), s				12.1	10.6	1.9	2.1	0.0	0.0	0.0	7.8	0.5
Cycle Q Clear(g_c), s				12.1	10.6	1.9	9.8	0.0	0.0	0.0	7.8	0.5
Prop In Lane				0.25		1.00	0.09		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				923	748	793	489	0	0	0	468	396
V/C Ratio(X)				0.57	0.52	0.12	0.61	0.00	0.00	0.00	0.59	0.04
Avail Cap(c_a), veh/h				923	748	793	635	0	0	0	623	528
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.95	0.95	0.95	1.00	0.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				10.5	10.2	8.0	20.3	0.0	0.0	0.0	19.8	17.1
Incr Delay (d2), s/veh				2.5	2.5	0.3	1.2	0.0	0.0	0.0	1.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.7	3.4	0.6	3.6	0.0	0.0	0.0	3.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.0	12.6	8.3	21.5	0.0	0.0	0.0	21.0	17.1
LnGrp LOS				B	B	A	C	A	A	A	C	B
Approach Vol, veh/h					1018			298			292	
Approach Delay, s/veh					12.4			21.5			20.7	
Approach LOS					B			C			C	

Timer - Assigned Phs				4		6		8				
Phs Duration (G+Y+Rc), s				20.0		35.0		20.0				
Change Period (Y+Rc), s				5.0		5.0		5.0				
Max Green Setting (Gmax), s				20.0		30.0		20.0				
Max Q Clear Time (g_c+I1), s				9.8		0.0		11.8				
Green Ext Time (p_c), s				0.8		0.0		0.7				

Intersection Summary		
HCM 6th Ctrl Delay		15.6
HCM 6th LOS		B

Lane Group	EBT	EBR	WBT	NBL
Lane Group Flow (vph)	1948	376	2438	711
v/c Ratio	0.99	0.41	0.86	0.63
Control Delay	39.1	9.7	3.1	29.7
Queue Delay	4.4	0.0	1.0	52.9
Total Delay	43.5	9.8	4.1	82.5
Queue Length 50th (ft)	538	80	25	126
Queue Length 95th (ft)	#744	142	m31	187
Internal Link Dist (ft)	880		220	97
Turn Bay Length (ft)		50		
Base Capacity (vph)	1966	923	2825	1125
Starvation Cap Reductn	0	0	172	553
Spillback Cap Reductn	36	34	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.01	0.42	0.92	1.24

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1890	365	0	2365	690	0
Future Volume (veh/h)	1890	365	0	2365	690	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	1948	376	0	2438	711	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	1974	881	0	2837	0	0
Arrive On Green	0.56	0.56	0.00	1.00	0.11	0.00
Sat Flow, veh/h	3647	1585	0	5443	0	0
Grp Volume(v), veh/h	1948	376	0	2438	0	0
Grp Sat Flow(s),veh/h/ln	1777	1585	0	1702	0	0
Q Serve(g_s), s	48.5	12.4	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	48.5	12.4	0.0	0.0	0.0	0.0
Prop In Lane		1.00	0.00		0.00	0.00
Lane Grp Cap(c), veh/h	1974	881	0	2837	0	0
V/C Ratio(X)	0.99	0.43	0.00	0.86	0.00	0.00
Avail Cap(c_a), veh/h	1974	881	0	2837	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	0.33	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	19.7	11.7	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	17.3	1.5	0.0	3.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.0	4.3	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.0	13.2	0.0	3.7	0.0	0.0
LnGrp LOS	D	B	A	A	A	A
Approach Vol, veh/h	2324			2438	0	
Approach Delay, s/veh	33.2			3.7	0.0	
Approach LOS	C			A		

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	55.0				55.0	35.0
Change Period (Y+Rc), s	5.0				* 5	5.5
Max Green Setting (Gmax), s	50.0				* 50	29.5
Max Q Clear Time (g_c+I1), s	0.0				0.0	0.0
Green Ext Time (p_c), s	0.0				0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	0	0	0	0	935	60	0	0	0	5	0	0	45
Future Vol, veh/h	0	0	0	0	935	60	0	0	0	5	0	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1100	71	0	0	0	6	0	0	53

Major/Minor	Major2			Minor1			Minor2				
Conflicting Flow All	0	0	0	550	1171	-	0	-	1136	586	
Stage 1	-	-	-	0	0	-	0	-	1136	-	
Stage 2	-	-	-	550	1171	-	0	-	0	-	
Critical Hdwy	4.14	-	-	7.54	6.54	-	-	-	6.54	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	5.54	-	
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-	-	-	-	
Follow-up Hdwy	2.22	-	-	3.52	4.02	-	-	-	4.02	3.32	
Pot Cap-1 Maneuver	-	-	-	418	191	0	0	0	201	454	
Stage 1	-	-	-	-	-	0	0	0	275	-	
Stage 2	-	-	-	487	265	0	0	0	-	-	
Platoon blocked, %		-	-				-				
Mov Cap-1 Maneuver	-	-	-	369	191	-	0	-	201	454	
Mov Cap-2 Maneuver	-	-	-	369	191	-	0	-	201	-	
Stage 1	-	-	-	-	-	-	0	-	275	-	
Stage 2	-	-	-	430	265	-	0	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	0	0	14
HCM LOS		A	B

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	-	454
HCM Lane V/C Ratio	-	-	-	-	0.117
HCM Control Delay (s)	0	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	-	-	-	-	0.4

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	10	980	50	5	10	0	0	25	45
Future Vol, veh/h	0	0	0	10	980	50	5	10	0	0	25	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	11	1065	54	5	11	0	0	27	49

Major/Minor	Major2			Minor1			Minor2			
Conflicting Flow All	0	0	0	568	1141	-	-	1114	560	
Stage 1	-	-	-	0	0	-	-	1114	-	
Stage 2	-	-	-	568	1141	-	-	0	-	
Critical Hdwy	4.14	-	-	7.54	6.54	-	-	6.54	6.94	
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-	
Critical Hdwy Stg 2	-	-	-	6.54	5.54	-	-	-	-	
Follow-up Hdwy	2.22	-	-	3.52	4.02	-	-	4.02	3.32	
Pot Cap-1 Maneuver	-	-	-	406	199	0	0	207	472	
Stage 1	-	-	-	-	-	0	0	282	-	
Stage 2	-	-	-	475	274	0	0	-	-	
Platoon blocked, %		-	-							
Mov Cap-1 Maneuver	-	-	-	327	199	-	-	207	472	
Mov Cap-2 Maneuver	-	-	-	327	199	-	-	207	-	
Stage 1	-	-	-	-	-	-	-	282	-	
Stage 2	-	-	-	385	274	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s		21.9	19.5
HCM LOS		C	C

Minor Lane/Major Mvmt	NBLn1	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	229	-	-	-	324
HCM Lane V/C Ratio	0.071	-	-	-	0.235
HCM Control Delay (s)	21.9	-	-	-	19.5
HCM Lane LOS	C	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

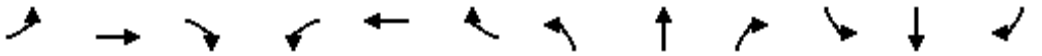
Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	2911	2155	289	28	56	550
v/c Ratio	0.93	1.00	0.52	0.06	0.25	1.03
Control Delay	13.2	42.8	23.5	3.6	35.6	88.5
Queue Delay	0.0	0.0	2.7	0.0	0.0	0.0
Total Delay	13.2	42.8	26.2	3.6	35.6	88.5
Queue Length 50th (ft)	87	820	82	1	33	~456
Queue Length 95th (ft)	91	#1051	m124	m6	71	#673
Internal Link Dist (ft)	220	1083	121			464
Turn Bay Length (ft)					100	
Base Capacity (vph)	3118	2156	557	488	225	534
Starvation Cap Reductn	0	0	165	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	1.00	0.74	0.06	0.25	1.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2620	0	0	1840	100	0	260	25	50	360	135
Future Volume (veh/h)	0	2620	0	0	1840	100	0	260	25	50	360	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	2911	0	0	2044	0	0	289	28	56	400	150
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	0	0	2	2	0	2	2	2	2	2
Cap, veh/h	0	3132	0	0	2180		0	560	474	282	388	145
Arrive On Green	0.00	1.00	0.00	0.00	0.61	0.00	0.00	0.60	0.60	0.30	0.30	0.30
Sat Flow, veh/h	0	5443	0	0	3741	0	0	1870	1585	1063	1297	486
Grp Volume(v), veh/h	0	2911	0	0	2044	0	0	289	28	56	0	550
Grp Sat Flow(s),veh/h/ln	0	1702	0	0	1777	0	0	1870	1585	1063	0	1783
Q Serve(g_s), s	0.0	0.0	0.0	0.0	62.8	0.0	0.0	10.8	0.9	5.3	0.0	35.9
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	62.8	0.0	0.0	10.8	0.9	16.1	0.0	35.9
Prop In Lane	0.00		0.00	0.00		0.00	0.00		1.00	1.00		0.27
Lane Grp Cap(c), veh/h	0	3132	0	0	2180		0	560	474	282	0	533
V/C Ratio(X)	0.00	0.93	0.00	0.00	0.94		0.00	0.52	0.06	0.20	0.00	1.03
Avail Cap(c_a), veh/h	0	3132	0	0	2180		0	560	474	282	0	533
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.49	0.00	0.00	1.00	0.00	0.00	0.95	0.95	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	21.1	0.0	0.0	19.1	17.1	39.6	0.0	42.1
Incr Delay (d2), s/veh	0.0	3.4	0.0	0.0	9.3	0.0	0.0	0.4	0.0	0.1	0.0	47.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.0	0.0	0.0	26.3	0.0	0.0	3.8	0.3	1.4	0.0	22.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.4	0.0	0.0	30.5	0.0	0.0	19.4	17.1	39.7	0.0	89.3
LnGrp LOS	A	A	A	A	C		A	B	B	D	A	F
Approach Vol, veh/h		2911			2044	A		317			606	
Approach Delay, s/veh		3.4			30.5			19.2			84.7	
Approach LOS		A			C			B			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		79.0		41.0		79.0		41.0				
Change Period (Y+Rc), s		* 5.4		* 5.1		* 5.4		* 5.1				
Max Green Setting (Gmax), s		* 74		* 36		* 74		* 36				
Max Q Clear Time (g_c+I1), s		0.0		37.9		0.0		12.8				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

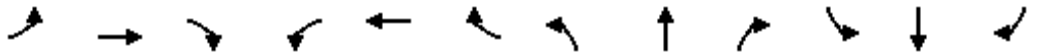
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	59	883	541	200	253	24	400
v/c Ratio	0.14	0.87	0.95	0.99	0.38	0.07	0.61
Control Delay	8.6	23.9	50.8	99.4	30.8	1.9	3.0
Queue Delay	2.5	19.3	59.6	38.7	0.1	0.0	3.5
Total Delay	11.1	43.2	110.4	138.0	30.9	1.9	6.5
Queue Length 50th (ft)	10	562	411	152	144	1	14
Queue Length 95th (ft)	m14	530	#585	#284	203	m1	m13
Internal Link Dist (ft)		97	1750		531		121
Turn Bay Length (ft)							
Base Capacity (vph)	422	1016	568	203	658	321	661
Starvation Cap Reductn	280	152	0	0	0	0	173
Spillback Cap Reductn	13	0	429	49	33	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.02	3.89	1.30	0.40	0.07	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	700	50	30	400	30	170	205	10	20	340	0
Future Volume (veh/h)	50	700	50	30	400	30	170	205	10	20	340	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	824	59	35	471	0	200	241	12	24	400	0
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	193	949	68	48	579		237	627	31	345	664	0
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.00	0.35	0.35	0.35	0.35	0.35	0.00
Sat Flow, veh/h	922	1725	123	29	1054	0	985	1767	88	1127	1870	0
Grp Volume(v), veh/h	59	0	883	506	0	0	200	0	253	24	400	0
Grp Sat Flow(s),veh/h/ln	922	0	1848	1082	0	0	985	0	1855	1127	1870	0
Q Serve(g_s), s	0.0	0.0	49.4	11.5	0.0	0.0	21.5	0.0	12.2	2.0	21.1	0.0
Cycle Q Clear(g_c), s	25.4	0.0	49.4	60.9	0.0	0.0	42.6	0.0	12.2	14.2	21.1	0.0
Prop In Lane	1.00		0.07	0.07		0.00	1.00		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	193	0	1016	627	0		237	0	658	345	664	0
V/C Ratio(X)	0.31	0.00	0.87	0.81	0.00		0.84	0.00	0.38	0.07	0.60	0.00
Avail Cap(c_a), veh/h	193	0	1016	627	0		237	0	658	345	664	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.59	0.00	0.59	0.90	0.00	0.00	1.00	0.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	17.9	0.0	23.3	20.7	0.0	0.0	50.5	0.0	28.9	34.2	31.8	0.0
Incr Delay (d2), s/veh	2.4	0.0	6.3	9.7	0.0	0.0	22.4	0.0	0.1	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	22.2	10.1	0.0	0.0	7.6	0.0	5.5	0.5	9.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	29.5	30.4	0.0	0.0	72.8	0.0	29.0	34.2	31.9	0.0
LnGrp LOS	C	A	C	C	A		E	A	C	C	C	A
Approach Vol, veh/h		942			506	A		453			424	
Approach Delay, s/veh		28.9			30.4			48.4			32.0	
Approach LOS		C			C			D			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		73.0		47.0		73.0		47.0				
Change Period (Y+Rc), s		* 7		4.4		* 7		4.4				
Max Green Setting (Gmax), s		* 66		42.6		* 66		42.6				
Max Q Clear Time (g_c+I1), s		0.0		23.1		0.0		44.6				
Green Ext Time (p_c), s		0.0		0.7		0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		33.6
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

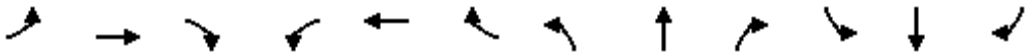
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	72	745	317	500	167	56	995	289	1339
v/c Ratio	0.41	1.05	1.06	0.36	0.24	0.68	0.98	1.04	0.80
Control Delay	33.6	72.3	94.1	17.5	3.8	70.8	55.3	87.8	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	72.3	94.1	17.5	3.8	70.8	55.3	87.8	24.1
Queue Length 50th (ft)	30	~234	~105	80	3	28	293	~127	321
Queue Length 95th (ft)	m49	#270	#303	106	30	#95	#428	#286	412
Internal Link Dist (ft)		368		409			880		1134
Turn Bay Length (ft)	125		100		60	100		125	
Base Capacity (vph)	174	711	299	1376	701	82	1020	279	1678
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	1.05	1.06	0.36	0.24	0.68	0.98	1.04	0.80

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	455	215	285	450	150	50	665	230	260	1105	100
Future Volume (veh/h)	65	455	215	285	450	150	50	665	230	260	1105	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	506	239	317	500	167	56	739	256	289	1228	111
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	469	221	298	1382	616	148	777	269	289	1575	142
Arrive On Green	0.07	0.07	0.07	0.24	0.78	0.78	0.30	0.30	0.30	0.11	0.48	0.48
Sat Flow, veh/h	769	2346	1103	1781	3554	1585	408	2589	897	1781	3296	297
Grp Volume(v), veh/h	72	383	362	317	500	167	56	507	488	289	661	678
Grp Sat Flow(s),veh/h/ln	769	1777	1672	1781	1777	1585	408	1777	1709	1781	1777	1817
Q Serve(g_s), s	8.1	18.0	18.0	11.0	3.9	2.7	11.9	25.2	25.2	10.0	27.8	28.0
Cycle Q Clear(g_c), s	8.1	18.0	18.0	11.0	3.9	2.7	23.9	25.2	25.2	10.0	27.8	28.0
Prop In Lane	1.00		0.66	1.00		1.00	1.00		0.52	1.00		0.16
Lane Grp Cap(c), veh/h	234	355	334	298	1382	616	148	533	513	289	849	868
V/C Ratio(X)	0.31	1.08	1.08	1.06	0.36	0.27	0.38	0.95	0.95	1.00	0.78	0.78
Avail Cap(c_a), veh/h	234	355	334	298	1382	616	148	533	513	289	849	868
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	42.0	42.0	24.8	6.5	6.4	36.2	30.9	30.9	23.0	19.5	19.6
Incr Delay (d2), s/veh	3.4	69.8	73.3	69.0	0.7	1.0	7.2	28.6	29.4	52.4	7.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	15.4	14.8	9.9	1.3	0.9	1.4	14.4	14.0	8.2	12.1	12.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.8	111.9	115.3	93.8	7.2	7.4	43.4	59.5	60.2	75.5	26.5	26.5
LnGrp LOS	D	F	F	F	A	A	D	E	E	E	C	C
Approach Vol, veh/h		817			984			1051			1628	
Approach Delay, s/veh		107.1			35.2			59.0			35.2	
Approach LOS		F			D			E			D	

Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	17.0	24.0		49.0		41.0	16.0	33.0				
Change Period (Y+Rc), s	6.0	* 6		* 6		* 6	6.0	* 6				
Max Green Setting (Gmax), s	11.0	* 18		* 43		* 35	10.0	* 27				
Max Q Clear Time (g_c+I1), s	13.0	10.1		0.0		0.0	12.0	25.9				
Green Ext Time (p_c), s	0.0	0.2		0.0		0.0	0.0	0.1				

Intersection Summary												
HCM 6th Ctrl Delay			53.9									
HCM 6th LOS			D									

Notes

User approved pedestrian interval to be less than phase max green.

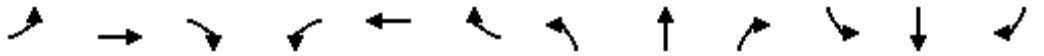
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	245	958	78	47	281
v/c Ratio	0.27	0.52	0.20	0.16	0.72
Control Delay	4.2	8.8	21.0	19.4	32.4
Queue Delay	0.0	0.0	0.0	0.0	0.2
Total Delay	4.2	8.8	21.0	19.4	32.6
Queue Length 50th (ft)	23	99	21	13	92
Queue Length 95th (ft)	38	146	m50	36	#165
Internal Link Dist (ft)	585	1102	121		598
Turn Bay Length (ft)				90	
Base Capacity (vph)	922	1838	438	328	439
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	12
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.27	0.52	0.18	0.14	0.66

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	215	5	35	785	100	5	55	15	45	170	100
Future Volume (veh/h)	15	215	5	35	785	100	5	55	15	45	170	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	224	5	36	818	104	5	57	16	47	177	104
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	94	1044	22	105	1879	234	68	238	63	291	215	126
Arrive On Green	0.83	0.83	0.83	0.62	0.62	0.62	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	48	1679	36	65	3022	377	23	1220	321	1327	1105	649
Grp Volume(v), veh/h	245	0	0	507	0	451	78	0	0	47	0	281
Grp Sat Flow(s),veh/h/ln	1763	0	0	1830	0	1634	1564	0	0	1327	0	1754
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	8.7	0.1	0.0	0.0	0.0	0.0	9.2
Cycle Q Clear(g_c), s	1.7	0.0	0.0	8.4	0.0	8.7	9.3	0.0	0.0	3.2	0.0	9.2
Prop In Lane	0.07		0.02	0.07		0.23	0.06		0.21	1.00		0.37
Lane Grp Cap(c), veh/h	1160	0	0	1202	0	1016	369	0	0	291	0	342
V/C Ratio(X)	0.21	0.00	0.00	0.42	0.00	0.44	0.21	0.00	0.00	0.16	0.00	0.82
Avail Cap(c_a), veh/h	1160	0	0	1202	0	1016	464	0	0	364	0	438
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.00	0.00	1.00	0.00	1.00	0.99	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.1	0.0	0.0	5.9	0.0	5.9	20.3	0.0	0.0	20.7	0.0	23.2
Incr Delay (d2), s/veh	0.4	0.0	0.0	1.1	0.0	1.4	0.3	0.0	0.0	0.3	0.0	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	2.7	0.0	2.5	0.9	0.0	0.0	0.5	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.5	0.0	0.0	7.0	0.0	7.3	20.6	0.0	0.0	21.0	0.0	32.7
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	C
Approach Vol, veh/h		245			958			78			328	
Approach Delay, s/veh		2.5			7.1			20.6			31.0	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		42.3		17.7		42.3		17.7				
Change Period (Y+Rc), s		* 5		* 6		* 5		* 6				
Max Green Setting (Gmax), s		* 34		* 15		* 34		* 15				
Max Q Clear Time (g_c+I1), s		0.0		11.2		0.0		11.3				
Green Ext Time (p_c), s		0.0		0.5		0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	12.0
HCM 6th LOS	B

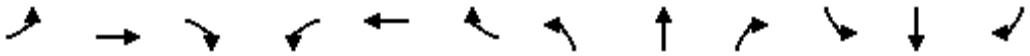
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	NBT	SBT
Lane Group Flow (vph)	722	45	73	233
v/c Ratio	0.51	0.06	0.16	0.40
Control Delay	8.4	0.1	13.3	7.4
Queue Delay	0.0	0.0	0.0	0.8
Total Delay	8.4	0.1	13.3	8.2
Queue Length 50th (ft)	47	0	13	13
Queue Length 95th (ft)	60	m0	39	m24
Internal Link Dist (ft)	257		187	121
Turn Bay Length (ft)				
Base Capacity (vph)	1411	698	462	584
Starvation Cap Reductn	0	0	0	146
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.51	0.06	0.16	0.53

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	600	40	0	0	0	0	40	25	80	125	0
Future Volume (vph)	35	600	40	0	0	0	0	40	25	80	125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0					5.0			5.0	
Lane Util. Factor		0.95	1.00					1.00			1.00	
Frt		1.00	0.85					0.95			1.00	
Flt Protected		1.00	1.00					1.00			0.98	
Satd. Flow (prot)		3529	1583					1766			1827	
Flt Permitted		1.00	1.00					1.00			0.86	
Satd. Flow (perm)		3529	1583					1766			1609	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	40	682	45	0	0	0	0	45	28	91	142	0
RTOR Reduction (vph)	0	0	27	0	0	0	0	21	0	0	0	0
Lane Group Flow (vph)	0	722	18	0	0	0	0	52	0	0	233	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	2 1	
Permitted Phases	4		4							2 1		
Actuated Green, G (s)		24.0	24.0					15.0			22.0	
Effective Green, g (s)		24.0	24.0					15.0			22.0	
Actuated g/C Ratio		0.40	0.40					0.25			0.37	
Clearance Time (s)		5.0	5.0					5.0				
Lane Grp Cap (vph)		1411	633					441			615	
v/s Ratio Prot								0.03			c0.04	
v/s Ratio Perm		0.20	0.01								c0.09	
v/c Ratio		0.51	0.03					0.12			0.38	
Uniform Delay, d1		13.6	10.9					17.4			14.0	
Progression Factor		0.52	0.00					1.00			0.47	
Incremental Delay, d2		1.2	0.1					0.5			1.5	
Delay (s)		8.3	0.1					17.9			8.0	
Level of Service		A	A					B			A	
Approach Delay (s)		7.8			0.0			17.9			8.0	
Approach LOS		A			A			B			A	

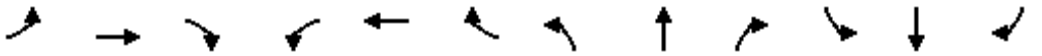
Intersection Summary			
HCM 2000 Control Delay	8.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	165	978	165	357	33	396
v/c Ratio	0.18	0.68	0.81	0.61	0.14	0.67
Control Delay	8.9	8.4	41.3	12.2	16.6	23.9
Queue Delay	0.0	0.0	0.0	3.0	0.0	0.0
Total Delay	8.9	8.4	41.3	15.2	16.6	23.9
Queue Length 50th (ft)	30	52	33	29	8	117
Queue Length 95th (ft)	59	66	m#130	70	26	202
Internal Link Dist (ft)	48	585		118		603
Turn Bay Length (ft)			75		150	
Base Capacity (vph)	931	1446	204	587	235	587
Starvation Cap Reductn	0	0	0	137	0	0
Spillback Cap Reductn	0	5	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.68	0.81	0.79	0.14	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	150	0	135	715	40	150	250	75	30	300	60
Future Volume (veh/h)	0	150	0	135	715	40	150	250	75	30	300	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	165	0	148	786	44	165	275	82	33	330	66
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	2	0	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	935	0	292	1369	76	245	438	131	320	479	96
Arrive On Green	0.00	0.50	0.00	1.00	1.00	1.00	0.63	0.63	0.63	0.32	0.32	0.32
Sat Flow, veh/h	0	1870	0	428	2738	151	988	1384	413	1024	1513	303
Grp Volume(v), veh/h	0	165	0	491	0	487	165	0	357	33	0	396
Grp Sat Flow(s),veh/h/ln	0	1870	0	1643	0	1675	988	0	1796	1024	0	1816
Q Serve(g_s), s	0.0	2.9	0.0	0.0	0.0	0.0	7.6	0.0	7.3	1.6	0.0	11.4
Cycle Q Clear(g_c), s	0.0	2.9	0.0	0.0	0.0	0.0	19.0	0.0	7.3	8.9	0.0	11.4
Prop In Lane	0.00		0.00	0.30		0.09	1.00		0.23	1.00		0.17
Lane Grp Cap(c), veh/h	0	935	0	899	0	837	245	0	569	320	0	575
V/C Ratio(X)	0.00	0.18	0.00	0.55	0.00	0.58	0.67	0.00	0.63	0.10	0.00	0.69
Avail Cap(c_a), veh/h	0	935	0	899	0	837	245	0	569	320	0	575
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.84	0.00	0.84	0.77	0.00	0.77	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.2	0.0	0.0	0.0	0.0	17.6	0.0	8.8	20.1	0.0	17.9
Incr Delay (d2), s/veh	0.0	0.4	0.0	2.0	0.0	2.5	10.9	0.0	4.0	0.6	0.0	6.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.1	0.0	0.5	0.0	0.6	2.4	0.0	2.5	0.4	0.0	5.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.6	0.0	2.0	0.0	2.5	28.6	0.0	12.9	20.7	0.0	24.5
LnGrp LOS	A	A	A	A	A	A	C	A	B	C	A	C
Approach Vol, veh/h		165			978			522			429	
Approach Delay, s/veh		8.6			2.2			17.8			24.2	
Approach LOS		A			A			B			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		36.0		24.0		36.0		24.0				
Change Period (Y+Rc), s		* 6		5.0		* 6		5.0				
Max Green Setting (Gmax), s		* 30		19.0		* 30		19.0				
Max Q Clear Time (g_c+I1), s		0.0		13.4		0.0		21.0				
Green Ext Time (p_c), s		0.0		0.9		0.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

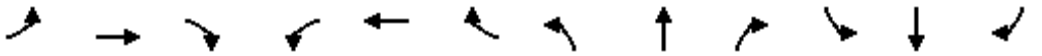
Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	758	573	489
v/c Ratio	0.47	0.60	0.51
Control Delay	16.3	12.9	6.6
Queue Delay	0.0	0.3	1.1
Total Delay	16.3	13.2	7.7
Queue Length 50th (ft)	72	125	60
Queue Length 95th (ft)	101	208	89
Internal Link Dist (ft)	188	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	1611	951	962
Starvation Cap Reductn	0	0	255
Spillback Cap Reductn	0	76	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.65	0.69

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	545	100	0	0	0	0	410	100	0	435	0
Future Volume (veh/h)	30	545	100	0	0	0	0	410	100	0	435	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	0
Adj Flow Rate, veh/h	34	612	112				0	461	112	0	489	0
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	71	1350	253				0	751	182	0	966	0
Arrive On Green	0.32	0.32	0.32				0.00	0.52	0.52	0.00	1.00	0.00
Sat Flow, veh/h	224	4264	799				0	1454	353	0	1870	0
Grp Volume(v), veh/h	282	234	242				0	0	573	0	489	0
Grp Sat Flow(s),veh/h/ln	1859	1702	1727				0	0	1807	0	1870	0
Q Serve(g_s), s	7.3	6.5	6.7				0.0	0.0	13.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.3	6.5	6.7				0.0	0.0	13.5	0.0	0.0	0.0
Prop In Lane	0.12		0.46				0.00		0.20	0.00		0.00
Lane Grp Cap(c), veh/h	589	539	547				0	0	934	0	966	0
V/C Ratio(X)	0.48	0.43	0.44				0.00	0.00	0.61	0.00	0.51	0.00
Avail Cap(c_a), veh/h	589	539	547				0	0	934	0	966	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	16.5	16.2	16.3				0.0	0.0	10.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.8	2.5	2.6				0.0	0.0	3.0	0.0	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.7	2.8				0.0	0.0	5.1	0.0	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.3	18.8	18.9				0.0	0.0	13.3	0.0	1.9	0.0
LnGrp LOS	B	B	B				A	A	B	A	A	A
Approach Vol, veh/h		758						573			489	
Approach Delay, s/veh		19.0						13.3			1.9	
Approach LOS		B						B			A	

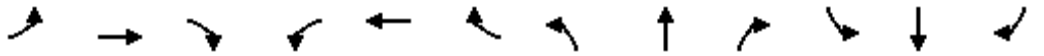
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		24.0		36.0				36.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		19.0		31.0				31.0				
Max Q Clear Time (g_c+I1), s		9.3		2.0				15.5				
Green Ext Time (p_c), s		2.3		2.2				2.4				

Intersection Summary												
HCM 6th Ctrl Delay			12.6									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	51	1017	108	944	74	23	51	23	79
v/c Ratio	0.12	0.36	0.27	0.33	0.47	0.10	0.22	0.14	0.32
Control Delay	2.3	2.1	5.5	3.5	46.0	34.6	12.4	35.8	19.5
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.3	2.2	5.5	3.5	46.0	34.6	12.4	35.8	19.5
Queue Length 50th (ft)	4	50	14	65	40	12	0	12	15
Queue Length 95th (ft)	m6	m72	40	110	77	32	29	32	50
Internal Link Dist (ft)		409		587		292			593
Turn Bay Length (ft)	150		125				115		
Base Capacity (vph)	441	2816	405	2837	219	310	306	230	322
Starvation Cap Reductn	0	741	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.49	0.27	0.33	0.34	0.07	0.17	0.10	0.25

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	780	115	95	775	55	65	20	45	20	25	45
Future Volume (veh/h)	45	780	115	95	775	55	65	20	45	20	25	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	51	886	131	108	881	62	74	23	51	23	28	51
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	487	2381	352	505	2582	182	184	228	194	227	73	132
Arrive On Green	1.00	1.00	1.00	0.77	0.77	0.77	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	594	3105	459	554	3368	237	1320	1870	1585	1326	594	1082
Grp Volume(v), veh/h	51	507	510	108	465	478	74	23	51	23	0	79
Grp Sat Flow(s),veh/h/ln	594	1777	1788	554	1777	1828	1320	1870	1585	1326	0	1676
Q Serve(g_s), s	0.9	0.0	0.0	5.1	7.4	7.4	4.9	1.0	2.6	1.4	0.0	3.9
Cycle Q Clear(g_c), s	8.4	0.0	0.0	5.1	7.4	7.4	8.8	1.0	2.6	2.4	0.0	3.9
Prop In Lane	1.00		0.26	1.00		0.13	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	487	1362	1371	505	1362	1401	184	228	194	227	0	205
V/C Ratio(X)	0.10	0.37	0.37	0.21	0.34	0.34	0.40	0.10	0.26	0.10	0.00	0.39
Avail Cap(c_a), veh/h	487	1362	1371	505	1362	1401	243	312	264	286	0	279
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.5	0.0	0.0	3.0	3.3	3.3	40.5	35.1	35.8	36.2	0.0	36.4
Incr Delay (d2), s/veh	0.0	0.1	0.1	1.0	0.7	0.7	1.4	0.2	0.7	0.2	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.5	2.1	2.2	1.7	0.5	1.1	0.5	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.5	0.1	0.1	4.0	4.0	4.0	41.9	35.3	36.5	36.4	0.0	37.6
LnGrp LOS	A	A	A	A	A	A	D	D	D	D	A	D
Approach Vol, veh/h		1068			1051			148			102	
Approach Delay, s/veh		0.1			4.0			39.0			37.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	74.0	16.0	74.0	16.0
Change Period (Y+Rc), s	* 5	5.0	* 5	5.0
Max Green Setting (Gmax), s	* 65	15.0	* 65	15.0
Max Q Clear Time (g_c+I1), s	10.4	5.9	7.1	10.8
Green Ext Time (p_c), s	0.2	0.2	0.2	0.2

Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

Notes

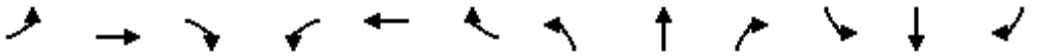
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	763	71	473	27	252	66	280	27
v/c Ratio	0.75	0.08	0.54	0.03	0.61	0.15	0.69	0.06
Control Delay	7.7	0.2	10.9	2.0	27.4	7.0	31.0	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	0.2	10.9	2.0	27.4	7.0	31.0	2.8
Queue Length 50th (ft)	30	0	94	0	81	1	92	0
Queue Length 95th (ft)	41	1	166	7	147	26	#187	8
Internal Link Dist (ft)	586		575		1892		587	
Turn Bay Length (ft)		65		65		50		65
Base Capacity (vph)	1015	916	881	912	411	443	408	437
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.08	0.54	0.03	0.61	0.15	0.69	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	660	65	40	390	25	35	195	60	45	210	25
Future Volume (veh/h)	35	660	65	40	390	25	35	195	60	45	210	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	725	71	44	429	27	38	214	66	49	231	27
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	499	898	66	461	898	69	185	396	71	156	396
Arrive On Green	0.19	0.19	0.19	0.57	0.57	0.57	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	0	880	1585	0	813	1585	0	741	1585	0	623	1585
Grp Volume(v), veh/h	763	0	71	473	0	27	252	0	66	280	0	27
Grp Sat Flow(s),veh/h/ln	880	0	1585	813	0	1585	741	0	1585	623	0	1585
Q Serve(g_s), s	0.0	0.0	2.2	0.0	0.0	0.5	0.0	0.0	2.0	0.0	0.0	0.8
Cycle Q Clear(g_c), s	34.0	0.0	2.2	34.0	0.0	0.5	15.0	0.0	2.0	15.0	0.0	0.8
Prop In Lane	0.05		1.00	0.09		1.00	0.15		1.00	0.17		1.00
Lane Grp Cap(c), veh/h	562	0	898	526	0	898	254	0	396	226	0	396
V/C Ratio(X)	1.36	0.00	0.08	0.90	0.00	0.03	0.99	0.00	0.17	1.24	0.00	0.07
Avail Cap(c_a), veh/h	562	0	898	526	0	898	254	0	396	226	0	396
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.00	0.88	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.3	0.0	11.5	17.3	0.0	5.7	21.2	0.0	17.6	21.4	0.0	17.2
Incr Delay (d2), s/veh	171.1	0.0	0.2	20.8	0.0	0.1	53.8	0.0	0.2	138.9	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	34.6	0.0	0.7	7.7	0.0	0.1	6.7	0.0	0.7	11.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	189.4	0.0	11.6	38.1	0.0	5.8	74.9	0.0	17.8	160.3	0.0	17.2
LnGrp LOS	F	A	B	D	A	A	E	A	B	F	A	B
Approach Vol, veh/h		834			500			318			307	
Approach Delay, s/veh		174.3			36.4			63.1			147.7	
Approach LOS		F			D			E			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		* 6		* 5		* 6		* 5				
Max Green Setting (Gmax), s		* 34		* 15		* 34		* 15				
Max Q Clear Time (g_c+I1), s		0.0		17.0		0.0		17.0				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	116.9	
HCM 6th LOS	F	

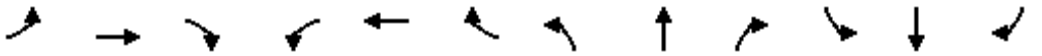
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	775	27	478	16	203	38	214	22
v/c Ratio	0.73	0.03	0.45	0.02	0.46	0.09	0.51	0.05
Control Delay	11.8	2.4	3.6	0.1	23.1	7.5	24.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	2.4	3.6	0.1	23.1	7.5	24.3	5.0
Queue Length 50th (ft)	184	1	21	0	62	0	66	0
Queue Length 95th (ft)	m283	m3	33	m0	117	19	124	11
Internal Link Dist (ft)	1750		556		1279		589	
Turn Bay Length (ft)		65		65		65		65
Base Capacity (vph)	1068	938	1055	938	442	424	423	422
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.03	0.45	0.02	0.46	0.09	0.51	0.05

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	685	25	15	420	15	20	165	35	35	160	20
Future Volume (veh/h)	20	685	25	15	420	15	20	165	35	35	160	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	753	27	16	462	16	22	181	38	38	176	22
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	1066	925	74	1059	925	90	431	396	116	395	396
Arrive On Green	0.78	0.78	0.78	0.19	0.19	0.19	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	21	1828	1585	21	1815	1585	92	1725	1585	181	1579	1585
Grp Volume(v), veh/h	775	0	27	478	0	16	203	0	38	214	0	22
Grp Sat Flow(s),veh/h/ln	1849	0	1585	1835	0	1585	1817	0	1585	1760	0	1585
Q Serve(g_s), s	0.0	0.0	0.2	0.0	0.0	0.5	0.0	0.0	1.1	0.0	0.0	0.6
Cycle Q Clear(g_c), s	12.4	0.0	0.2	13.5	0.0	0.5	5.5	0.0	1.1	5.8	0.0	0.6
Prop In Lane	0.03		1.00	0.03		1.00	0.11		1.00	0.18		1.00
Lane Grp Cap(c), veh/h	1140	0	925	1133	0	925	521	0	396	511	0	396
V/C Ratio(X)	0.68	0.00	0.03	0.42	0.00	0.02	0.39	0.00	0.10	0.42	0.00	0.06
Avail Cap(c_a), veh/h	1140	0	925	1133	0	925	521	0	396	511	0	396
HCM Platoon Ratio	1.33	1.33	1.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.00	0.41	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.2	0.0	2.8	15.6	0.0	10.3	18.9	0.0	17.3	19.1	0.0	17.1
Incr Delay (d2), s/veh	1.4	0.0	0.0	1.1	0.0	0.0	0.5	0.0	0.1	0.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.1	6.9	0.0	0.1	2.3	0.0	0.4	2.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.6	0.0	2.9	16.7	0.0	10.3	19.4	0.0	17.4	19.6	0.0	17.2
LnGrp LOS	A	A	A	B	A	B	B	A	B	B	A	B
Approach Vol, veh/h		802			494			241			236	
Approach Delay, s/veh		5.5			16.5			19.1			19.4	
Approach LOS		A			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		15.0		35.0		15.0				
Max Q Clear Time (g_c+I1), s		0.0		7.8		0.0		7.5				
Green Ext Time (p_c), s		0.0		0.5		0.0		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			12.2									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

Lane Group	EBT	EBR	WBT	NBL
Lane Group Flow (vph)	2911	889	2194	633
v/c Ratio	0.81	0.74	0.87	0.91
Control Delay	14.5	12.4	2.7	55.1
Queue Delay	0.3	1.0	0.9	57.2
Total Delay	14.9	13.4	3.7	112.4
Queue Length 50th (ft)	523	286	54	250
Queue Length 95th (ft)	605	475	m56	m261
Internal Link Dist (ft)	880		220	97
Turn Bay Length (ft)		50		
Base Capacity (vph)	3610	1194	2512	758
Starvation Cap Reductn	0	0	123	477
Spillback Cap Reductn	220	114	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.86	0.82	0.92	2.25

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2620	800	0	1975	570	0
Future Volume (veh/h)	2620	800	0	1975	570	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	2911	889	0	2194	633	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	4893	1519	0	3406	0	0
Arrive On Green	0.96	0.96	0.00	1.00	0.00	0.00
Sat Flow, veh/h	5274	1585	0	3741	0	0
Grp Volume(v), veh/h	2911	889	0	2194	0	0
Grp Sat Flow(s),veh/h/ln	1702	1585	0	1777	0	0
Q Serve(g_s), s	6.6	6.4	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.6	6.4	0.0	0.0	0.0	0.0
Prop In Lane		1.00	0.00		0.00	0.00
Lane Grp Cap(c), veh/h	4893	1519	0	3406	0	0
V/C Ratio(X)	0.59	0.59	0.00	0.64	0.00	0.00
Avail Cap(c_a), veh/h	4893	1519	0	3406	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	0.33	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.09	0.00	0.00
Uniform Delay (d), s/veh	0.2	0.2	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	1.7	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.7	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.8	1.9	0.0	0.1	0.0	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h	3800			2194	0	
Approach Delay, s/veh	1.0			0.1	0.0	
Approach LOS	A			A		

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	120.0				120.0	0.0
Change Period (Y+Rc), s	5.0				* 5	5.5
Max Green Setting (Gmax), s	83.0				* 83	26.5
Max Q Clear Time (g_c+I1), s	0.0				0.0	0.0
Green Ext Time (p_c), s	0.0				0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	0.7
HCM 6th LOS	A

Notes

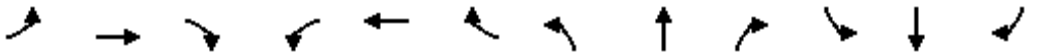
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	849	622	33	105	234
v/c Ratio	0.70	0.72	0.21	0.30	0.81
Control Delay	12.3	15.0	34.0	23.4	56.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	15.0	34.0	23.4	56.4
Queue Length 50th (ft)	260	187	16	33	122
Queue Length 95th (ft)	404	m294	43	78	#232
Internal Link Dist (ft)	1335	113		464	604
Turn Bay Length (ft)			200		
Base Capacity (vph)	1215	865	173	377	316
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.70	0.72	0.19	0.28	0.74

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	650	75	135	400	25	30	55	40	70	115	25
Future Volume (veh/h)	40	650	75	135	400	25	30	55	40	70	115	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	722	83	150	444	28	33	61	44	78	128	28
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	82	1075	121	232	664	40	235	189	136	125	163	32
Arrive On Green	0.69	0.69	0.69	0.69	0.69	0.69	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	57	1555	175	264	960	58	1231	1010	729	383	872	171
Grp Volume(v), veh/h	849	0	0	622	0	0	33	0	105	234	0	0
Grp Sat Flow(s),veh/h/ln	1788	0	0	1282	0	0	1231	0	1739	1426	0	0
Q Serve(g_s), s	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	4.7	10.0	0.0	0.0
Cycle Q Clear(g_c), s	23.9	0.0	0.0	27.4	0.0	0.0	3.3	0.0	4.7	14.7	0.0	0.0
Prop In Lane	0.05		0.10	0.24		0.05	1.00		0.42	0.33		0.12
Lane Grp Cap(c), veh/h	1278	0	0	935	0	0	235	0	325	319	0	0
V/C Ratio(X)	0.66	0.00	0.00	0.66	0.00	0.00	0.14	0.00	0.32	0.73	0.00	0.00
Avail Cap(c_a), veh/h	1278	0	0	935	0	0	251	0	348	341	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.0	0.0	0.0	7.8	0.0	0.0	31.1	0.0	31.7	36.2	0.0	0.0
Incr Delay (d2), s/veh	2.7	0.0	0.0	3.7	0.0	0.0	0.3	0.0	0.6	7.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	0.0	6.4	0.0	0.0	0.6	0.0	2.0	5.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.7	0.0	0.0	11.5	0.0	0.0	31.4	0.0	32.3	43.6	0.0	0.0
LnGrp LOS	B	A	A	B	A	A	C	A	C	D	A	A
Approach Vol, veh/h		849			622			138			234	
Approach Delay, s/veh		10.7			11.5			32.0			43.6	
Approach LOS		B			B			C			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		68.2		21.8		68.2		21.8				
Change Period (Y+Rc), s		* 6		* 5		* 6		* 5				
Max Green Setting (Gmax), s		* 61		* 18		* 61		* 18				
Max Q Clear Time (g_c+I1), s		25.9		16.7		29.4		6.7				
Green Ext Time (p_c), s		8.2		0.1		6.2		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		16.7
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	740	5	5	440	15	5	5	5	20	10	10
Future Vol, veh/h	25	740	5	5	440	15	5	5	5	20	10	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	822	6	6	489	17	6	6	6	22	11	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	506	0	0	828	0	0	1402	1399	825	1397	1394	498
Stage 1	-	-	-	-	-	-	881	881	-	510	510	-
Stage 2	-	-	-	-	-	-	521	518	-	887	884	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1059	-	-	803	-	-	117	141	372	118	141	572
Stage 1	-	-	-	-	-	-	341	365	-	546	538	-
Stage 2	-	-	-	-	-	-	539	533	-	339	363	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1059	-	-	803	-	-	103	133	372	107	133	572
Mov Cap-2 Maneuver	-	-	-	-	-	-	103	133	-	107	133	-
Stage 1	-	-	-	-	-	-	324	347	-	519	533	-
Stage 2	-	-	-	-	-	-	512	528	-	312	345	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	31.8	41.1
HCM LOS			D	E

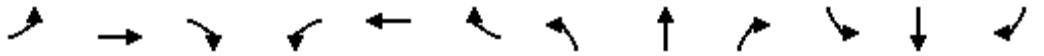
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	151	1059	-	-	803	-	-	143
HCM Lane V/C Ratio	0.11	0.026	-	-	0.007	-	-	0.311
HCM Control Delay (s)	31.8	8.5	0	-	9.5	0	-	41.1
HCM Lane LOS	D	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	1.2

Lane Group	EBT	WBT	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	1351	2680	469	10	15	360
v/c Ratio	0.65	0.91	0.84	0.02	0.15	0.67
Control Delay	4.7	22.4	32.1	0.2	27.9	34.9
Queue Delay	0.0	0.0	15.9	0.0	0.0	0.2
Total Delay	4.7	22.4	47.9	0.2	27.9	35.1
Queue Length 50th (ft)	43	453	136	0	6	178
Queue Length 95th (ft)	50	541	m#382	m0	23	275
Internal Link Dist (ft)	220	1083	121			464
Turn Bay Length (ft)					100	
Base Capacity (vph)	2068	2947	556	493	99	537
Starvation Cap Reductn	0	0	83	0	0	0
Spillback Cap Reductn	0	0	0	0	0	15
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.91	0.99	0.02	0.15	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1310	0	0	2395	205	0	455	10	15	270	80
Future Volume (veh/h)	0	1310	0	0	2395	205	0	455	10	15	270	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	0	1870	1870	0	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	1351	0	0	2469	0	0	469	10	15	278	82
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	0	0	2	2	0	2	2	2	2	2
Cap, veh/h	0	2077	0	0	2984		0	559	474	168	415	122
Arrive On Green	0.00	1.00	0.00	0.00	0.58	0.00	0.00	0.60	0.60	0.30	0.30	0.30
Sat Flow, veh/h	0	3741	0	0	5443	0	0	1870	1585	916	1387	409
Grp Volume(v), veh/h	0	1351	0	0	2469	0	0	469	10	15	0	360
Grp Sat Flow(s),veh/h/ln	0	1777	0	0	1702	0	0	1870	1585	916	0	1797
Q Serve(g_s), s	0.0	0.0	0.0	0.0	35.0	0.0	0.0	18.2	0.2	1.4	0.0	15.8
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	35.0	0.0	0.0	18.2	0.2	19.6	0.0	15.8
Prop In Lane	0.00		0.00	0.00		0.00	0.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	0	2077	0	0	2984		0	559	474	168	0	537
V/C Ratio(X)	0.00	0.65	0.00	0.00	0.83		0.00	0.84	0.02	0.09	0.00	0.67
Avail Cap(c_a), veh/h	0	2077	0	0	2984		0	559	474	168	0	537
HCM Platoon Ratio	1.00	2.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	15.0	0.0	0.0	16.4	12.7	37.3	0.0	27.7
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.0	2.8	0.0	0.0	14.0	0.1	1.0	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.5	0.0	0.0	12.4	0.0	0.0	6.8	0.1	0.3	0.0	7.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	1.6	0.0	0.0	17.8	0.0	0.0	30.4	12.8	38.4	0.0	34.2
LnGrp LOS	A	A	A	A	B		A	C	B	D	A	C
Approach Vol, veh/h		1351			2469	A		479			375	
Approach Delay, s/veh		1.6			17.8			30.0			34.4	
Approach LOS		A			B			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.0		32.0		58.0		32.0				
Change Period (Y+Rc), s		* 5.4		* 5.1		* 5.4		* 5.1				
Max Green Setting (Gmax), s		* 53		* 27		* 53		* 27				
Max Q Clear Time (g_c+I1), s		0.0		21.6		0.0		20.2				
Green Ext Time (p_c), s		0.0		0.4		0.0		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

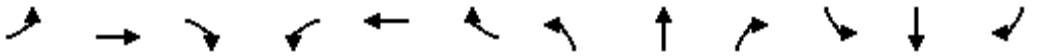
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	172	930	683	43	312	11	280
v/c Ratio	0.36	0.78	0.70	0.32	0.77	0.10	0.69
Control Delay	5.4	7.9	3.0	37.3	47.1	18.0	21.2
Queue Delay	3.5	18.9	57.6	0.7	0.4	0.0	3.9
Total Delay	8.9	26.8	60.6	38.0	47.4	18.0	25.1
Queue Length 50th (ft)	20	118	18	21	164	1	23
Queue Length 95th (ft)	m24	m144	m19	53	#289	m4	#88
Internal Link Dist (ft)		97	1750		531		121
Turn Bay Length (ft)							
Base Capacity (vph)	481	1190	975	134	403	109	405
Starvation Cap Reductn	223	275	0	0	0	0	65
Spillback Cap Reductn	93	0	648	15	6	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	1.02	2.09	0.36	0.79	0.10	0.82

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	665	200	35	550	50	40	255	35	10	260	0
Future Volume (veh/h)	160	665	200	35	550	50	40	255	35	10	260	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	172	715	215	38	591	0	43	274	38	11	280	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	362	905	272	71	937		168	350	49	141	407	0
Arrive On Green	0.66	0.66	0.66	0.66	0.66	0.00	0.22	0.22	0.22	0.22	0.22	0.00
Sat Flow, veh/h	826	1381	415	44	1429	0	1099	1607	223	1067	1870	0
Grp Volume(v), veh/h	172	0	930	629	0	0	43	0	312	11	280	0
Grp Sat Flow(s),veh/h/ln	826	0	1796	1472	0	0	1099	0	1830	1067	1870	0
Q Serve(g_s), s	4.7	0.0	33.3	5.9	0.0	0.0	3.4	0.0	14.5	0.9	12.4	0.0
Cycle Q Clear(g_c), s	43.9	0.0	33.3	39.2	0.0	0.0	15.8	0.0	14.5	15.4	12.4	0.0
Prop In Lane	1.00		0.23	0.06		0.00	1.00		0.12	1.00		0.00
Lane Grp Cap(c), veh/h	362	0	1177	1008	0		168	0	399	141	407	0
V/C Ratio(X)	0.48	0.00	0.79	0.62	0.00		0.26	0.00	0.78	0.08	0.69	0.00
Avail Cap(c_a), veh/h	362	0	1177	1008	0		168	0	399	141	407	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.5	0.0	11.1	8.9	0.0	0.0	39.6	0.0	33.2	40.4	32.4	0.0
Incr Delay (d2), s/veh	4.4	0.0	5.4	2.9	0.0	0.0	3.6	0.0	14.2	1.1	9.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	12.8	6.2	0.0	0.0	1.1	0.0	7.8	0.3	6.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	0.0	16.5	11.8	0.0	0.0	43.3	0.0	47.4	41.5	41.5	0.0
LnGrp LOS	C	A	B	B	A		D	A	D	D	D	A
Approach Vol, veh/h		1102			629	A		355			291	
Approach Delay, s/veh		17.2			11.8			46.9			41.5	
Approach LOS		B			B			D			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		66.0		24.0		66.0		24.0				
Change Period (Y+Rc), s		* 7		4.4		* 7		4.4				
Max Green Setting (Gmax), s		* 59		19.6		* 59		19.6				
Max Q Clear Time (g_c+I1), s		0.0		17.4		0.0		17.8				
Green Ext Time (p_c), s		0.0		0.1		0.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

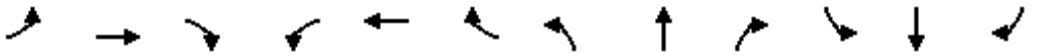
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	113	484	392	672	323	161	1602	177	1086
v/c Ratio	0.65	1.09	1.06	0.76	0.65	0.68	1.06	0.99	0.74
Control Delay	53.5	104.9	102.8	39.6	22.6	30.8	73.7	93.3	32.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.2
Total Delay	53.5	104.9	102.8	39.6	22.6	31.2	73.7	93.3	33.0
Queue Length 50th (ft)	70	~217	~289	235	87	59	~714	88	363
Queue Length 95th (ft)	m98	m#301	#541	274	141	113	#856	#236	455
Internal Link Dist (ft)		368		409			880		1134
Turn Bay Length (ft)	125		100		60	100		125	
Base Capacity (vph)	174	445	371	884	497	261	1513	179	1474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	8	0	0	61
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	1.09	1.06	0.76	0.65	0.64	1.06	0.99	0.77

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	370	80	365	625	300	150	1295	195	165	900	110
Future Volume (veh/h)	105	370	80	365	625	300	150	1295	195	165	900	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	113	398	86	392	672	323	161	1392	210	177	968	118
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	364	78	372	888	396	276	1344	201	179	1381	168
Arrive On Green	0.02	0.04	0.04	0.29	0.42	0.42	0.07	0.43	0.43	0.07	0.43	0.43
Sat Flow, veh/h	1781	2912	623	1781	3554	1585	1781	3101	463	1781	3189	389
Grp Volume(v), veh/h	113	241	243	392	672	323	161	791	811	177	539	547
Grp Sat Flow(s),veh/h/ln	1781	1777	1758	1781	1777	1585	1781	1777	1787	1781	1777	1800
Q Serve(g_s), s	0.1	15.0	15.0	21.0	19.3	16.8	6.0	52.0	52.0	7.9	29.6	29.7
Cycle Q Clear(g_c), s	0.1	15.0	15.0	21.0	19.3	16.8	6.0	52.0	52.0	7.9	29.6	29.7
Prop In Lane	1.00		0.35	1.00		1.00	1.00		0.26	1.00		0.22
Lane Grp Cap(c), veh/h	199	222	220	372	888	396	276	770	774	179	770	780
V/C Ratio(X)	0.57	1.09	1.10	1.05	0.76	0.82	0.58	1.03	1.05	0.99	0.70	0.70
Avail Cap(c_a), veh/h	199	222	220	372	888	396	320	770	774	179	770	780
HCM Platoon Ratio	0.33	0.33	0.33	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	57.5	57.5	40.8	31.8	19.7	21.8	34.0	34.0	34.3	27.7	27.7
Incr Delay (d2), s/veh	3.7	85.5	91.3	58.1	5.1	14.5	0.8	39.7	45.3	64.2	5.3	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	12.5	12.7	14.7	7.8	6.5	2.5	29.9	31.3	5.8	13.3	13.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.4	143.0	148.8	98.9	36.9	34.2	22.6	73.7	79.3	98.5	32.9	32.9
LnGrp LOS	E	F	F	F	D	C	C	F	F	F	C	C
Approach Vol, veh/h		597			1387			1763			1263	
Approach Delay, s/veh		129.2			53.8			71.6			42.1	
Approach LOS		F			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	21.0	14.0	58.0	12.0	36.0	14.0	58.0
Change Period (Y+Rc), s	* 6	6.0	6.0	* 6	* 6	6.0	6.0	* 6
Max Green Setting (Gmax), s	* 21	15.0	11.0	* 49	* 6	30.0	8.0	* 52
Max Q Clear Time (g_c+I1), s	23.0	0.0	8.0	0.0	2.1	0.0	9.9	0.0
Green Ext Time (p_c), s	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	66.1
HCM 6th LOS	E

Notes

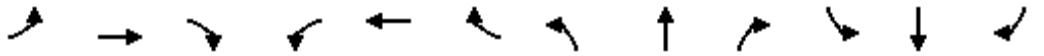
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	284	1301	222	58	210
v/c Ratio	0.32	0.69	0.62	0.25	0.56
Control Delay	6.0	11.0	29.9	21.8	26.7
Queue Delay	0.0	0.0	3.3	0.0	0.5
Total Delay	6.0	11.0	33.2	21.8	27.3
Queue Length 50th (ft)	30	147	91	17	68
Queue Length 95th (ft)	m70	235	133	44	121
Internal Link Dist (ft)	585	1102	121		598
Turn Bay Length (ft)				90	
Base Capacity (vph)	888	1885	421	269	442
Starvation Cap Reductn	0	0	118	0	0
Spillback Cap Reductn	0	0	0	0	53
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.32	0.69	0.73	0.22	0.54

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	245	5	30	1080	125	30	165	15	55	135	65
Future Volume (veh/h)	20	245	5	30	1080	125	30	165	15	55	135	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	258	5	32	1137	132	32	174	16	58	142	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	98	998	18	88	1923	220	90	242	20	292	232	111
Arrive On Green	1.00	1.00	1.00	0.62	0.62	0.62	0.06	0.06	0.06	0.19	0.19	0.19
Sat Flow, veh/h	54	1603	30	41	3087	353	108	1251	106	1193	1195	572
Grp Volume(v), veh/h	284	0	0	689	0	612	222	0	0	58	0	210
Grp Sat Flow(s),veh/h/ln	1687	0	0	1843	0	1638	1464	0	0	1193	0	1767
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	13.5	2.8	0.0	0.0	0.0	0.0	6.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	13.2	0.0	13.5	9.4	0.0	0.0	3.7	0.0	6.5
Prop In Lane	0.07		0.02	0.05		0.22	0.14		0.07	1.00		0.32
Lane Grp Cap(c), veh/h	1115	0	0	1211	0	1021	352	0	0	292	0	342
V/C Ratio(X)	0.25	0.00	0.00	0.57	0.00	0.60	0.63	0.00	0.00	0.20	0.00	0.61
Avail Cap(c_a), veh/h	1115	0	0	1211	0	1021	448	0	0	359	0	442
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.00	0.00	1.00	0.00	1.00	0.88	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	6.8	0.0	6.8	26.7	0.0	0.0	21.0	0.0	22.1
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.9	0.0	2.6	1.6	0.0	0.0	0.3	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	4.4	0.0	4.1	3.5	0.0	0.0	0.7	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.5	0.0	0.0	8.7	0.0	9.4	28.3	0.0	0.0	21.3	0.0	23.9
LnGrp LOS	A	A	A	A	A	A	C	A	A	C	A	C
Approach Vol, veh/h		284			1301			222			268	
Approach Delay, s/veh		0.5			9.0			28.3			23.4	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		42.4		17.6		42.4		17.6				
Change Period (Y+Rc), s		* 5		* 6		* 5		* 6				
Max Green Setting (Gmax), s		* 34		* 15		* 34		* 15				
Max Q Clear Time (g_c+I1), s		0.0		8.5		0.0		11.4				
Green Ext Time (p_c), s		0.0		0.6		0.0		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

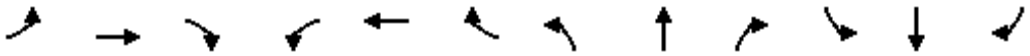
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	585	219	192
v/c Ratio	0.42	0.47	0.36
Control Delay	6.0	21.1	12.0
Queue Delay	0.1	0.4	0.4
Total Delay	6.2	21.5	12.5
Queue Length 50th (ft)	29	60	64
Queue Length 95th (ft)	33	115	m99
Internal Link Dist (ft)	257	187	121
Turn Bay Length (ft)			
Base Capacity (vph)	1406	468	538
Starvation Cap Reductn	0	0	107
Spillback Cap Reductn	174	48	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.52	0.45

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	450	15	0	0	0	0	155	40	85	85	0
Future Volume (vph)	55	450	15	0	0	0	0	155	40	85	85	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0						5.0			5.0	
Lane Util. Factor		0.95						1.00			1.00	
Frt		1.00						0.97			1.00	
Flt Protected		0.99						1.00			0.98	
Satd. Flow (prot)		3505						1811			1817	
Flt Permitted		0.99						1.00			0.77	
Satd. Flow (perm)		3505						1811			1428	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	62	506	17	0	0	0	0	174	45	96	96	0
RTOR Reduction (vph)	0	4	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	0	581	0	0	0	0	0	203	0	0	192	0
Turn Type	Perm	NA						NA		pm+pt	NA	
Protected Phases		4						2		1	2 1	
Permitted Phases	4									2 1		
Actuated Green, G (s)		24.0						15.0			22.0	
Effective Green, g (s)		24.0						15.0			22.0	
Actuated g/C Ratio		0.40						0.25			0.37	
Clearance Time (s)		5.0						5.0				
Lane Grp Cap (vph)		1402						452			568	
v/s Ratio Prot								c0.11			c0.04	
v/s Ratio Perm		0.17									0.08	
v/c Ratio		0.41						0.45			0.34	
Uniform Delay, d1		12.9						19.0			13.7	
Progression Factor		0.40						1.00			0.92	
Incremental Delay, d2		0.8						3.2			1.4	
Delay (s)		6.1						22.2			14.1	
Level of Service		A						C			B	
Approach Delay (s)		6.1			0.0			22.2			14.1	
Approach LOS		A			A			C			B	

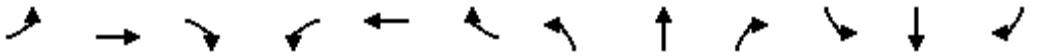
Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	182	1224	177	495	26	281
v/c Ratio	0.20	0.86	0.55	0.80	0.18	0.46
Control Delay	7.6	14.0	13.9	18.7	18.0	17.9
Queue Delay	0.0	0.0	1.2	20.3	0.0	0.0
Total Delay	7.6	14.0	15.1	39.0	18.0	17.9
Queue Length 50th (ft)	35	58	28	118	7	74
Queue Length 95th (ft)	60	#110	m51	#176	24	135
Internal Link Dist (ft)	48	585		118		603
Turn Bay Length (ft)			75		150	
Base Capacity (vph)	900	1423	321	617	147	617
Starvation Cap Reductn	0	0	42	125	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.86	0.63	1.01	0.18	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	175	0	140	1010	25	170	415	60	25	235	35
Future Volume (veh/h)	0	175	0	140	1010	25	170	415	60	25	235	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	0	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	182	0	146	1052	26	177	432	62	26	245	36
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	2	0	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	904	0	230	1393	35	353	533	77	209	531	78
Arrive On Green	0.00	0.16	0.00	0.97	0.97	0.97	0.44	0.44	0.44	0.33	0.33	0.33
Sat Flow, veh/h	0	1870	0	323	2882	72	1098	1599	230	903	1594	234
Grp Volume(v), veh/h	0	182	0	617	0	607	177	0	494	26	0	281
Grp Sat Flow(s),veh/h/ln	0	1870	0	1588	0	1689	1098	0	1829	903	0	1828
Q Serve(g_s), s	0.0	5.1	0.0	4.7	0.0	2.5	8.8	0.0	14.1	1.6	0.0	7.3
Cycle Q Clear(g_c), s	0.0	5.1	0.0	9.8	0.0	2.5	16.1	0.0	14.1	15.7	0.0	7.3
Prop In Lane	0.00		0.00	0.24		0.04	1.00		0.13	1.00		0.13
Lane Grp Cap(c), veh/h	0	904	0	842	0	816	353	0	610	209	0	609
V/C Ratio(X)	0.00	0.20	0.00	0.73	0.00	0.74	0.50	0.00	0.81	0.12	0.00	0.46
Avail Cap(c_a), veh/h	0	904	0	842	0	816	353	0	610	209	0	609
HCM Platoon Ratio	1.00	0.33	1.00	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.2	0.0	0.7	0.0	0.6	18.9	0.0	15.1	25.1	0.0	15.8
Incr Delay (d2), s/veh	0.0	0.5	0.0	5.6	0.0	6.1	5.0	0.0	11.2	1.2	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.1	0.0	1.5	0.0	1.6	2.3	0.0	6.3	0.4	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.7	0.0	6.3	0.0	6.6	23.9	0.0	26.2	26.3	0.0	18.3
LnGrp LOS	A	B	A	A	A	A	C	A	C	C	A	B
Approach Vol, veh/h		182			1224			671			307	
Approach Delay, s/veh		15.7			6.5			25.6			18.9	
Approach LOS		B			A			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		35.0		25.0		35.0		25.0				
Change Period (Y+Rc), s		* 6		5.0		* 6		5.0				
Max Green Setting (Gmax), s		* 29		20.0		* 29		20.0				
Max Q Clear Time (g_c+I1), s		0.0		17.7		0.0		18.1				
Green Ext Time (p_c), s		0.0		0.3		0.0		0.7				

Intersection Summary		
HCM 6th Ctrl Delay		14.2
HCM 6th LOS		B

Notes

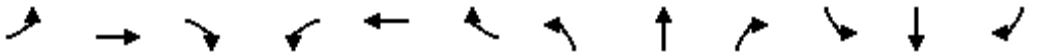
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	606	729	399
v/c Ratio	0.44	0.70	0.38
Control Delay	8.6	13.5	5.0
Queue Delay	0.0	3.1	0.7
Total Delay	8.6	16.6	5.8
Queue Length 50th (ft)	35	163	47
Queue Length 95th (ft)	49	277	m59
Internal Link Dist (ft)	188	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	1379	1047	1055
Starvation Cap Reductn	0	0	360
Spillback Cap Reductn	3	214	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.44	0.88	0.57

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	430	110	0	0	0	0	610	75	0	375	0
Future Volume (veh/h)	30	430	110	0	0	0	0	610	75	0	375	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	0	1870	0
Adj Flow Rate, veh/h	32	457	117				0	649	80	0	399	0
Peak Hour Factor	0.94	0.94	0.94				0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2				0	2	2	0	2	0
Cap, veh/h	70	1055	273				0	925	114	0	1060	0
Arrive On Green	0.27	0.27	0.27				0.00	0.57	0.57	0.00	1.00	0.00
Sat Flow, veh/h	263	3957	1025				0	1633	201	0	1870	0
Grp Volume(v), veh/h	226	188	192				0	0	729	0	399	0
Grp Sat Flow(s),veh/h/ln	1857	1702	1686				0	0	1834	0	1870	0
Q Serve(g_s), s	6.1	5.5	5.7				0.0	0.0	17.2	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.1	5.5	5.7				0.0	0.0	17.2	0.0	0.0	0.0
Prop In Lane	0.14		0.61				0.00		0.11	0.00		0.00
Lane Grp Cap(c), veh/h	495	454	450				0	0	1039	0	1060	0
V/C Ratio(X)	0.46	0.41	0.43				0.00	0.00	0.70	0.00	0.38	0.00
Avail Cap(c_a), veh/h	495	454	450				0	0	1039	0	1060	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	2.00	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	18.4	18.1	18.2				0.0	0.0	9.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	3.0	2.8	3.0				0.0	0.0	4.0	0.0	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	2.3	2.4				0.0	0.0	6.4	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.4	20.9	21.2				0.0	0.0	13.3	0.0	1.0	0.0
LnGrp LOS	C	C	C				A	A	B	A	A	A
Approach Vol, veh/h		606						729			399	
Approach Delay, s/veh		21.2						13.3			1.0	
Approach LOS		C						B			A	

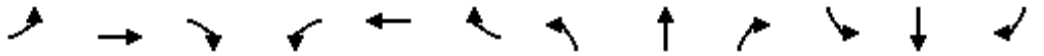
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		21.0		39.0				39.0				
Change Period (Y+Rc), s		5.0		5.0				5.0				
Max Green Setting (Gmax), s		16.0		34.0				34.0				
Max Q Clear Time (g_c+I1), s		8.1		2.0				19.2				
Green Ext Time (p_c), s		1.6		1.7				3.2				

Intersection Summary												
HCM 6th Ctrl Delay			13.2									
HCM 6th LOS			B									

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	16	769	38	1280	113	38	54	27	97
v/c Ratio	0.07	0.31	0.08	0.51	0.49	0.11	0.17	0.11	0.28
Control Delay	2.1	1.8	2.3	3.0	29.1	20.2	7.8	20.4	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	1.8	2.3	3.0	29.1	20.2	7.8	20.4	11.3
Queue Length 50th (ft)	1	39	2	27	37	12	0	8	9
Queue Length 95th (ft)	m2	m45	m3	77	75	31	23	25	40
Internal Link Dist (ft)		409		587		292			593
Turn Bay Length (ft)	150		125				115		
Base Capacity (vph)	243	2519	472	2524	301	434	410	318	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.31	0.08	0.51	0.38	0.09	0.13	0.08	0.23

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	685	30	35	1165	25	105	35	50	25	10	80
Future Volume (veh/h)	15	685	30	35	1165	25	105	35	50	25	10	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	16	737	32	38	1253	27	113	38	54	27	11	86
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	405	2289	99	581	2346	51	277	325	275	324	32	248
Arrive On Green	1.00	1.00	1.00	1.00	1.00	1.00	0.17	0.17	0.17	0.17	0.17	0.17
Sat Flow, veh/h	432	3470	151	700	3557	77	1298	1870	1585	1304	183	1430
Grp Volume(v), veh/h	16	377	392	38	626	654	113	38	54	27	0	97
Grp Sat Flow(s),veh/h/ln	432	1777	1843	700	1777	1857	1298	1870	1585	1304	0	1613
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	5.0	1.0	1.7	1.1	0.0	3.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	8.2	1.0	1.7	2.1	0.0	3.2
Prop In Lane	1.00		0.08	1.00		0.04	1.00		1.00	1.00		0.89
Lane Grp Cap(c), veh/h	405	1172	1216	581	1172	1225	277	325	275	324	0	280
V/C Ratio(X)	0.04	0.32	0.32	0.07	0.53	0.53	0.41	0.12	0.20	0.08	0.00	0.35
Avail Cap(c_a), veh/h	405	1172	1216	581	1172	1225	354	436	370	402	0	376
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	25.4	20.9	21.2	21.8	0.0	21.8
Incr Delay (d2), s/veh	0.0	0.1	0.1	0.2	1.7	1.7	1.0	0.2	0.3	0.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.6	0.6	1.6	0.4	0.6	0.3	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.1	0.1	0.2	1.7	1.7	26.4	21.1	21.5	21.9	0.0	22.5
LnGrp LOS	A	A	A	A	A	A	C	C	C	C	A	C
Approach Vol, veh/h		785			1318			205			124	
Approach Delay, s/veh		0.1			1.7			24.1			22.4	
Approach LOS		A			A			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		44.6		15.4		44.6		15.4				
Change Period (Y+Rc), s		* 5		5.0		* 5		5.0				
Max Green Setting (Gmax), s		* 36		14.0		* 36		14.0				
Max Q Clear Time (g_c+I1), s		2.0		5.2		2.0		10.2				
Green Ext Time (p_c), s		0.2		0.3		0.3		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			4.1									
HCM 6th LOS			A									

Notes

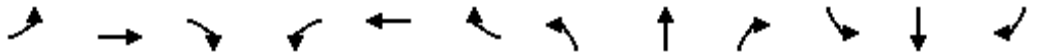
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	594	44	922	111	389	17	344	44
v/c Ratio	0.98	0.05	0.99	0.11	0.99	0.04	0.82	0.09
Control Delay	65.7	9.4	46.7	5.2	76.9	3.4	48.8	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.7	9.4	46.7	5.2	76.9	3.4	48.8	10.9
Queue Length 50th (ft)	346	12	473	15	220	0	183	3
Queue Length 95th (ft)	#548	28	#774	36	#404	7	#328	28
Internal Link Dist (ft)	586		575		1892		587	
Turn Bay Length (ft)		65		65		50		65
Base Capacity (vph)	606	960	932	967	394	465	417	465
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.05	0.99	0.11	0.99	0.04	0.82	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	480	40	75	755	100	35	315	15	20	290	40
Future Volume (veh/h)	55	480	40	75	755	100	35	315	15	20	290	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	533	44	83	839	111	39	350	17	22	322	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	44	299	951	44	212	951	44	177	440	43	251	440
Arrive On Green	0.20	0.20	0.20	0.60	0.60	0.60	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	0	498	1585	0	353	1585	0	637	1585	0	903	1585
Grp Volume(v), veh/h	594	0	44	922	0	111	389	0	17	344	0	44
Grp Sat Flow(s),veh/h/ln	498	0	1585	353	0	1585	637	0	1585	903	0	1585
Q Serve(g_s), s	0.0	0.0	2.0	0.0	0.0	2.7	0.0	0.0	0.7	0.0	0.0	1.9
Cycle Q Clear(g_c), s	54.0	0.0	2.0	54.0	0.0	2.7	25.0	0.0	0.7	25.0	0.0	1.9
Prop In Lane	0.10		1.00	0.09		1.00	0.10		1.00	0.06		1.00
Lane Grp Cap(c), veh/h	343	0	951	255	0	951	221	0	440	293	0	440
V/C Ratio(X)	1.73	0.00	0.05	3.61	0.00	0.12	1.76	0.00	0.04	1.17	0.00	0.10
Avail Cap(c_a), veh/h	343	0	951	255	0	951	221	0	440	293	0	440
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.8	0.0	15.2	32.9	0.0	7.7	28.4	0.0	23.7	28.8	0.0	24.1
Incr Delay (d2), s/veh	341.4	0.0	0.1	1184.7	0.0	0.2	360.2	0.0	0.0	107.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	39.6	0.0	0.7	88.5	0.0	0.9	26.0	0.0	0.3	14.1	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	365.2	0.0	15.3	1217.6	0.0	8.0	388.6	0.0	23.8	136.3	0.0	24.2
LnGrp LOS	F	A	B	F	A	A	F	A	C	F	A	C
Approach Vol, veh/h		638			1033			406			388	
Approach Delay, s/veh		341.0			1087.6			373.3			123.6	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	60.0	30.0	60.0	30.0
Change Period (Y+Rc), s	* 6	* 5	* 6	* 5
Max Green Setting (Gmax), s	* 54	* 25	* 54	* 25
Max Q Clear Time (g_c+I1), s	0.0	27.0	0.0	27.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	625.0
HCM 6th LOS	F

Notes

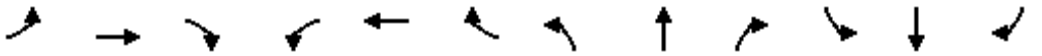
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	697	107	820	96	281	17	286	17
v/c Ratio	0.73	0.10	0.96	0.09	0.95	0.05	0.75	0.05
Control Delay	8.6	0.3	26.6	0.4	78.2	9.5	47.1	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	0.3	26.6	0.4	78.2	9.5	47.1	9.5
Queue Length 50th (ft)	178	0	44	0	159	0	153	0
Queue Length 95th (ft)	220	m0	#667	0	#307	13	#263	13
Internal Link Dist (ft)	1750		556		1279		589	
Turn Bay Length (ft)		65		65		65		65
Base Capacity (vph)	961	1095	857	1089	296	353	382	353
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.10	0.96	0.09	0.95	0.05	0.75	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	555	95	120	610	85	25	225	15	10	245	15
Future Volume (veh/h)	65	555	95	120	610	85	25	225	15	10	245	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	624	107	135	685	96	28	253	17	11	275	17
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	44	285	1074	47	112	1074	44	158	335	42	237	335
Arrive On Green	0.68	0.68	0.68	0.22	0.22	0.22	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	0	420	1585	0	165	1585	0	748	1585	0	1122	1585
Grp Volume(v), veh/h	697	0	107	820	0	96	281	0	17	286	0	17
Grp Sat Flow(s),veh/h/ln	420	0	1585	165	0	1585	748	0	1585	1122	0	1585
Q Serve(g_s), s	0.0	0.0	2.1	0.0	0.0	4.3	0.0	0.0	0.8	0.0	0.0	0.8
Cycle Q Clear(g_c), s	61.0	0.0	2.1	61.0	0.0	4.3	19.0	0.0	0.8	19.0	0.0	0.8
Prop In Lane	0.10		1.00	0.16		1.00	0.10		1.00	0.04		1.00
Lane Grp Cap(c), veh/h	329	0	1074	159	0	1074	202	0	335	278	0	335
V/C Ratio(X)	2.12	0.00	0.10	5.17	0.00	0.09	1.39	0.00	0.05	1.03	0.00	0.05
Avail Cap(c_a), veh/h	329	0	1074	159	0	1074	202	0	335	278	0	335
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.00	0.54	0.88	0.00	0.88	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	5.0	24.2	0.0	12.9	33.1	0.0	28.3	33.7	0.0	28.3
Incr Delay (d2), s/veh	509.6	0.0	0.1	1886.8	0.0	0.1	203.8	0.0	0.1	61.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	52.5	0.0	0.6	85.7	0.0	1.4	15.2	0.0	0.3	10.2	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	542.9	0.0	5.1	1911.0	0.0	13.1	236.9	0.0	28.4	94.9	0.0	28.4
LnGrp LOS	F	A	A	F	A	B	F	A	C	F	A	C
Approach Vol, veh/h		804			916			298			303	
Approach Delay, s/veh		471.4			1712.1			225.0			91.2	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	66.0	24.0	66.0	24.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	61.0	19.0	61.0	19.0
Max Q Clear Time (g_c+I1), s	0.0	21.0	0.0	21.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	879.8
HCM 6th LOS	F

Lane Group	EBT	EBR	WBT	NBL
Lane Group Flow (vph)	1351	1057	2552	608
v/c Ratio	0.61	0.91	0.81	0.68
Control Delay	11.9	21.3	2.8	43.4
Queue Delay	0.0	2.9	0.4	58.5
Total Delay	11.9	24.2	3.2	101.8
Queue Length 50th (ft)	223	285	37	193
Queue Length 95th (ft)	285	#697	53	245
Internal Link Dist (ft)	880		220	97
Turn Bay Length (ft)		50		
Base Capacity (vph)	2202	1163	3164	896
Starvation Cap Reductn	0	0	195	592
Spillback Cap Reductn	0	51	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.95	0.86	2.00

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1310	1025	0	2475	590	0
Future Volume (veh/h)	1310	1025	0	2475	590	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	0
Adj Flow Rate, veh/h	1351	1057	0	2552	608	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	0	2	2	0
Cap, veh/h	2211	986	0	3177	0	0
Arrive On Green	0.62	0.62	0.00	1.00	0.09	0.00
Sat Flow, veh/h	3647	1585	0	5443	0	0
Grp Volume(v), veh/h	1351	1057	0	2552	0	0
Grp Sat Flow(s),veh/h/ln	1777	1585	0	1702	0	0
Q Serve(g_s), s	20.9	56.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	20.9	56.0	0.0	0.0	0.0	0.0
Prop In Lane		1.00	0.00		0.00	0.00
Lane Grp Cap(c), veh/h	2211	986	0	3177	0	0
V/C Ratio(X)	0.61	1.07	0.00	0.80	0.00	0.00
Avail Cap(c_a), veh/h	2211	986	0	3177	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	0.33	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.4	17.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.3	49.9	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	30.2	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.6	66.9	0.0	2.3	0.0	0.0
LnGrp LOS	B	F	A	A	A	A
Approach Vol, veh/h	2408			2552	0	
Approach Delay, s/veh	35.9			2.3	0.0	
Approach LOS	D			A		

Timer - Assigned Phs	2				6	8
Phs Duration (G+Y+Rc), s	61.0				61.0	29.0
Change Period (Y+Rc), s	5.0				* 5	5.5
Max Green Setting (Gmax), s	56.0				* 56	23.5
Max Q Clear Time (g_c+I1), s	0.0				0.0	0.0
Green Ext Time (p_c), s	0.0				0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	18.6
HCM 6th LOS	B

Notes

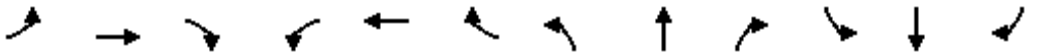
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	600	1053	147	359	170
v/c Ratio	0.52	0.97	0.79	0.97	1.07
Control Delay	9.9	45.9	74.4	82.8	132.1
Queue Delay	0.0	7.6	0.0	0.0	0.0
Total Delay	9.9	53.5	74.4	82.8	132.1
Queue Length 50th (ft)	188	507	109	258	~133
Queue Length 95th (ft)	243	#526	#200	#409	#254
Internal Link Dist (ft)	1335	113		464	604
Turn Bay Length (ft)			200		
Base Capacity (vph)	1147	1085	187	372	159
Starvation Cap Reductn	0	40	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	1.01	0.79	0.97	1.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	420	55	125	710	60	125	170	135	25	70	50
Future Volume (veh/h)	35	420	55	125	710	60	125	170	135	25	70	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	41	494	65	147	835	71	147	200	159	29	82	59
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	1008	129	178	908	76	150	193	153	35	80	42
Arrive On Green	0.71	0.71	0.71	1.00	1.00	1.00	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	77	1422	182	204	1282	107	1248	965	767	0	400	212
Grp Volume(v), veh/h	600	0	0	1053	0	0	147	0	359	170	0	0
Grp Sat Flow(s),veh/h/ln	1681	0	0	1593	0	0	1248	0	1732	612	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	17.0	0.0	0.0	0.0	0.0	0.0	24.0	0.0	24.0	24.0	0.0	0.0
Prop In Lane	0.07		0.11	0.14		0.07	1.00		0.44	0.17		0.35
Lane Grp Cap(c), veh/h	1223	0	0	1163	0	0	150	0	346	157	0	0
V/C Ratio(X)	0.49	0.00	0.00	0.91	0.00	0.00	0.98	0.00	1.04	1.08	0.00	0.00
Avail Cap(c_a), veh/h	1223	0	0	1163	0	0	150	0	346	157	0	0
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	7.6	0.0	0.0	0.0	0.0	0.0	52.7	0.0	48.0	44.6	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.0	11.7	0.0	0.0	68.3	0.0	58.0	94.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	0.0	3.8	0.0	0.0	7.3	0.0	16.0	9.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	0.0	0.0	11.7	0.0	0.0	120.9	0.0	106.0	139.1	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	F	A	F	F	A	A
Approach Vol, veh/h		600			1053			506			170	
Approach Delay, s/veh		9.0			11.7			110.4			139.1	
Approach LOS		A			B			F			F	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	91.0	29.0	91.0	29.0
Change Period (Y+Rc), s	* 6	* 5	* 6	* 5
Max Green Setting (Gmax), s	* 85	* 24	* 85	* 24
Max Q Clear Time (g_c+I1), s	19.0	26.0	2.0	26.0
Green Ext Time (p_c), s	5.4	0.0	15.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	41.7
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	490	0	5	890	50	5	5	0	20	25	40
Future Vol, veh/h	20	490	0	5	890	50	5	5	0	20	25	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	533	0	5	967	54	5	5	0	22	27	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1021	0	0	533	0	0	1616	1608	533	1584	1581	994
Stage 1	-	-	-	-	-	-	577	577	-	1004	1004	-
Stage 2	-	-	-	-	-	-	1039	1031	-	580	577	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	680	-	-	1035	-	-	83	105	547	88	109	297
Stage 1	-	-	-	-	-	-	502	502	-	291	320	-
Stage 2	-	-	-	-	-	-	279	310	-	500	502	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	680	-	-	1035	-	-	54	99	547	81	103	297
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	99	-	81	103	-
Stage 1	-	-	-	-	-	-	479	479	-	278	316	-
Stage 2	-	-	-	-	-	-	215	307	-	472	479	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	65.7	74.6
HCM LOS			F	F

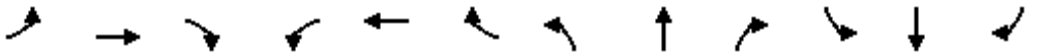
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	70	680	-	-	1035	-	-	136
HCM Lane V/C Ratio	0.155	0.032	-	-	0.005	-	-	0.679
HCM Control Delay (s)	65.7	10.5	0	-	8.5	0	-	74.6
HCM Lane LOS	F	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	3.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	506	239	317	500	167	56	739	256	289	1339
v/c Ratio	0.48	0.86	0.57	0.89	0.69	0.18	0.68	0.72	0.32	0.89	0.80
Control Delay	37.7	44.1	12.9	48.8	27.8	7.4	71.3	33.6	14.2	47.6	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	44.1	12.9	48.8	28.1	7.4	71.3	33.6	14.2	47.6	24.1
Queue Length 50th (ft)	39	151	48	139	243	40	28	197	81	98	321
Queue Length 95th (ft)	m56	#235	m85	#280	358	76	#95	263	132	#239	412
Internal Link Dist (ft)		368			409			880			1134
Turn Bay Length (ft)	125		60	100		60	100		300	125	
Base Capacity (vph)	149	591	416	357	724	929	82	1022	809	326	1678
Starvation Cap Reductn	0	0	0	0	29	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.86	0.57	0.89	0.72	0.18	0.68	0.72	0.32	0.89	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	455	215	285	450	150	50	665	230	260	1105	100
Future Volume (veh/h)	65	455	215	285	450	150	50	665	230	260	1105	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	506	128	317	500	84	56	739	145	289	1228	111
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	592	264	377	727	810	148	1027	704	362	1575	142
Arrive On Green	0.06	0.06	0.06	0.05	0.13	0.13	0.29	0.29	0.29	0.12	0.48	0.48
Sat Flow, veh/h	831	3554	1585	1781	1870	1585	408	3554	1585	1781	3296	297
Grp Volume(v), veh/h	72	506	128	317	500	84	56	739	145	289	661	678
Grp Sat Flow(s),veh/h/ln	831	1777	1585	1781	1870	1585	408	1777	1585	1781	1777	1817
Q Serve(g_s), s	7.7	12.7	7.1	13.0	23.0	3.4	11.9	16.8	5.0	10.3	27.8	28.0
Cycle Q Clear(g_c), s	10.7	12.7	7.1	13.0	23.0	3.4	22.9	16.8	5.0	10.3	27.8	28.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	191	592	264	377	727	810	148	1027	704	362	849	868
V/C Ratio(X)	0.38	0.85	0.48	0.84	0.69	0.10	0.38	0.72	0.21	0.80	0.78	0.78
Avail Cap(c_a), veh/h	191	592	264	377	727	810	148	1027	704	362	849	868
HCM Platoon Ratio	0.33	0.33	0.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	41.4	38.8	29.5	34.0	16.5	36.2	28.7	15.3	21.4	19.5	19.6
Incr Delay (d2), s/veh	5.6	14.6	6.2	14.8	5.0	0.2	7.2	4.4	0.7	11.1	7.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	7.2	3.3	7.6	12.4	1.2	1.4	7.5	1.8	5.1	12.1	12.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.6	56.0	45.0	44.3	39.0	16.8	43.4	33.1	15.9	32.4	26.5	26.5
LnGrp LOS	D	E	D	D	D	B	D	C	B	C	C	C
Approach Vol, veh/h		706			901			940			1628	
Approach Delay, s/veh		53.2			38.8			31.1			27.6	
Approach LOS		D			D			C			C	

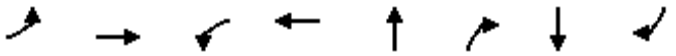
Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	20.0	21.0		49.0		41.0	17.0	32.0				
Change Period (Y+Rc), s	6.0	* 6		* 6		* 6	6.0	* 6				
Max Green Setting (Gmax), s	14.0	* 15		* 43		* 35	11.0	* 26				
Max Q Clear Time (g_c+I1), s	15.0	12.7		0.0		0.0	12.3	24.9				
Green Ext Time (p_c), s	0.0	0.1		0.0		0.0	0.0	0.1				

Intersection Summary		
HCM 6th Ctrl Delay		35.1
HCM 6th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

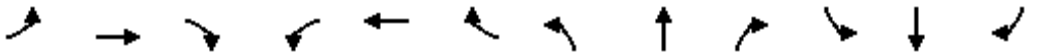


Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	38	796	44	456	252	66	280	27
v/c Ratio	0.08	0.76	0.20	0.43	0.61	0.15	0.69	0.06
Control Delay	2.0	7.8	9.2	8.9	27.4	7.0	31.0	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	7.8	9.2	8.9	27.4	7.0	31.0	2.8
Queue Length 50th (ft)	1	30	7	82	81	1	92	0
Queue Length 95th (ft)	m4	41	23	139	147	26	#187	8
Internal Link Dist (ft)		586		575	1892		587	
Turn Bay Length (ft)	65		65			50		65
Base Capacity (vph)	484	1048	219	1049	411	443	408	437
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.76	0.20	0.43	0.61	0.15	0.69	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



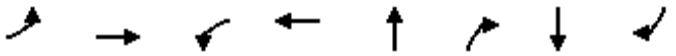
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	660	65	40	390	25	35	195	60	45	210	25
Future Volume (veh/h)	35	660	65	40	390	25	35	195	60	45	210	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	725	71	44	429	27	38	214	66	49	231	27
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	517	950	93	227	987	62	69	185	396	71	156	396
Arrive On Green	0.19	0.19	0.19	0.57	0.57	0.57	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	935	1677	164	682	1741	110	0	741	1585	0	623	1585
Grp Volume(v), veh/h	38	0	796	44	0	456	252	0	66	280	0	27
Grp Sat Flow(s),veh/h/ln	935	0	1841	682	0	1851	741	0	1585	623	0	1585
Q Serve(g_s), s	2.1	0.0	24.6	3.5	0.0	8.5	0.0	0.0	2.0	0.0	0.0	0.8
Cycle Q Clear(g_c), s	10.6	0.0	24.6	28.1	0.0	8.5	15.0	0.0	2.0	15.0	0.0	0.8
Prop In Lane	1.00		0.09	1.00		0.06	0.15		1.00	0.17		1.00
Lane Grp Cap(c), veh/h	517	0	1043	227	0	1049	254	0	396	226	0	396
V/C Ratio(X)	0.07	0.00	0.76	0.19	0.00	0.43	0.99	0.00	0.17	1.24	0.00	0.07
Avail Cap(c_a), veh/h	517	0	1043	227	0	1049	254	0	396	226	0	396
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.00	0.88	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.6	0.0	20.6	22.8	0.0	7.5	21.2	0.0	17.6	21.4	0.0	17.2
Incr Delay (d2), s/veh	0.2	0.0	4.7	1.9	0.0	1.3	53.8	0.0	0.2	138.9	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	13.0	0.6	0.0	3.0	6.7	0.0	0.7	11.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.8	0.0	25.3	24.7	0.0	8.8	74.9	0.0	17.8	160.3	0.0	17.2
LnGrp LOS	B	A	C	C	A	A	E	A	B	F	A	B
Approach Vol, veh/h		834			500			318			307	
Approach Delay, s/veh		25.0			10.2			63.1			147.7	
Approach LOS		C			B			E			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		* 6		* 5		* 6		* 5				
Max Green Setting (Gmax), s		* 34		* 15		* 34		* 15				
Max Q Clear Time (g_c+I1), s		12.6		17.0		30.1		17.0				
Green Ext Time (p_c), s		0.2		0.0		0.1		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			46.6									
HCM 6th LOS			D									

Notes

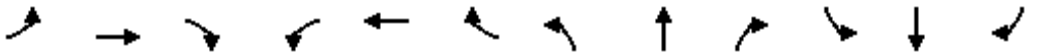
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	22	780	16	478	203	38	214	22
v/c Ratio	0.05	0.72	0.07	0.44	0.46	0.09	0.51	0.05
Control Delay	5.3	11.4	2.3	4.0	23.1	7.5	24.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	11.4	2.3	4.0	23.1	7.5	24.3	5.0
Queue Length 50th (ft)	4	184	1	21	62	0	66	0
Queue Length 95th (ft)	m7	m283	m3	33	117	19	124	11
Internal Link Dist (ft)		1750		556	1279		589	
Turn Bay Length (ft)	65		65			65		65
Base Capacity (vph)	470	1083	240	1083	442	424	423	422
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.72	0.07	0.44	0.46	0.09	0.51	0.05

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



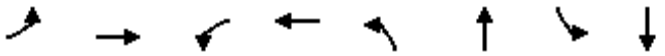
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	685	25	15	420	15	20	165	35	35	160	20
Future Volume (veh/h)	20	685	25	15	420	15	20	165	35	35	160	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	753	27	16	462	16	22	181	38	38	176	22
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	447	1047	38	377	1048	36	90	431	396	116	395	396
Arrive On Green	0.78	0.78	0.78	0.19	0.19	0.19	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	916	1794	64	693	1797	62	92	1725	1585	181	1579	1585
Grp Volume(v), veh/h	22	0	780	16	0	478	203	0	38	214	0	22
Grp Sat Flow(s),veh/h/ln	916	0	1859	693	0	1859	1817	0	1585	1760	0	1585
Q Serve(g_s), s	0.8	0.0	12.8	1.2	0.0	13.6	0.0	0.0	1.1	0.0	0.0	0.6
Cycle Q Clear(g_c), s	14.4	0.0	12.8	14.0	0.0	13.6	5.5	0.0	1.1	5.8	0.0	0.6
Prop In Lane	1.00		0.03	1.00		0.03	0.11		1.00	0.18		1.00
Lane Grp Cap(c), veh/h	447	0	1084	377	0	1085	521	0	396	511	0	396
V/C Ratio(X)	0.05	0.00	0.72	0.04	0.00	0.44	0.39	0.00	0.10	0.42	0.00	0.06
Avail Cap(c_a), veh/h	447	0	1084	377	0	1085	521	0	396	511	0	396
HCM Platoon Ratio	1.33	1.33	1.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.00	0.41	0.97	0.00	0.97	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.1	0.0	4.2	21.4	0.0	15.6	18.9	0.0	17.3	19.1	0.0	17.1
Incr Delay (d2), s/veh	0.1	0.0	1.7	0.2	0.0	1.3	0.5	0.0	0.1	0.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	2.7	0.2	0.0	6.9	2.3	0.0	0.4	2.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.2	0.0	6.0	21.6	0.0	16.8	19.4	0.0	17.4	19.6	0.0	17.2
LnGrp LOS	A	A	A	C	A	B	B	A	B	B	A	B
Approach Vol, veh/h		802			494			241			236	
Approach Delay, s/veh		6.0			17.0			19.1			19.4	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	40.0	20.0	40.0	20.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	35.0	15.0	35.0	15.0
Max Q Clear Time (g_c+I1), s	16.4	7.8	16.0	7.5
Green Ext Time (p_c), s	0.2	0.5	0.1	0.5

Intersection Summary	
HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

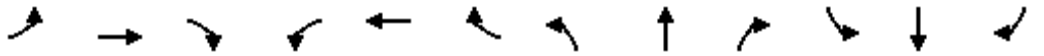


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	31	776	141	787	156	338	31	376
v/c Ratio	0.12	0.47	0.58	0.50	0.60	0.52	0.11	0.58
Control Delay	10.5	11.6	16.7	7.0	27.9	17.7	14.4	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	11.6	16.7	7.0	27.9	17.7	14.4	19.4
Queue Length 50th (ft)	6	89	15	43	45	86	7	102
Queue Length 95th (ft)	20	131	m#107	57	#119	155	24	179
Internal Link Dist (ft)		441		248		119		603
Turn Bay Length (ft)	125		100		75		150	
Base Capacity (vph)	268	1638	245	1563	262	647	294	647
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.47	0.58	0.50	0.60	0.52	0.11	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	645	100	135	715	40	150	250	75	30	300	60
Future Volume (veh/h)	30	645	100	135	715	40	150	250	75	30	300	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	672	104	141	745	42	156	260	78	31	312	62
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	1439	223	341	1596	90	303	483	145	328	530	105
Arrive On Green	0.47	0.47	0.47	0.93	0.93	0.93	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	688	3085	477	695	3420	193	1009	1381	414	1042	1515	301
Grp Volume(v), veh/h	31	387	389	141	387	400	156	0	338	31	0	374
Grp Sat Flow(s),veh/h/ln	688	1777	1785	695	1777	1836	1009	0	1796	1042	0	1816
Q Serve(g_s), s	1.6	8.9	8.9	7.5	1.5	1.5	9.0	0.0	9.0	1.5	0.0	10.1
Cycle Q Clear(g_c), s	3.1	8.9	8.9	16.4	1.5	1.5	19.1	0.0	9.0	10.5	0.0	10.1
Prop In Lane	1.00		0.27	1.00		0.10	1.00		0.23	1.00		0.17
Lane Grp Cap(c), veh/h	423	829	833	341	829	857	303	0	629	328	0	636
V/C Ratio(X)	0.07	0.47	0.47	0.41	0.47	0.47	0.51	0.00	0.54	0.09	0.00	0.59
Avail Cap(c_a), veh/h	423	829	833	341	829	857	303	0	629	328	0	636
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.8	10.9	10.9	4.3	1.1	1.1	23.8	0.0	15.6	19.8	0.0	16.0
Incr Delay (d2), s/veh	0.3	1.9	1.9	3.7	1.9	1.8	6.1	0.0	3.3	0.6	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.4	3.4	0.5	0.7	0.7	2.5	0.0	3.9	0.4	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	12.8	12.8	8.0	3.0	2.9	29.9	0.0	18.9	20.4	0.0	19.9
LnGrp LOS	B	B	B	A	A	A	C	A	B	C	A	B
Approach Vol, veh/h		807			928			494			405	
Approach Delay, s/veh		12.7			3.7			22.4			20.0	
Approach LOS		B			A			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.0		26.0		34.0		26.0				
Change Period (Y+Rc), s		* 6		5.0		* 6		5.0				
Max Green Setting (Gmax), s		* 28		21.0		* 28		21.0				
Max Q Clear Time (g_c+I1), s		5.1		12.5		0.0		21.1				
Green Ext Time (p_c), s		0.2		1.1		0.0		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			12.5									
HCM 6th LOS			B									

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

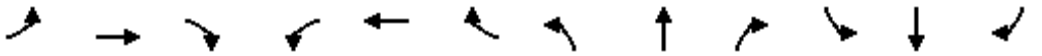
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	113	398	86	392	672	323	210	1392	210	177	1086
v/c Ratio	0.75	0.68	0.17	0.86	1.14	0.49	1.00	1.07	0.23	0.98	0.89
Control Delay	77.1	42.2	2.4	59.0	117.2	19.9	94.3	84.0	4.6	91.2	46.4
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	24.5	0.0	0.0	0.0	13.9
Total Delay	77.1	42.2	2.4	59.0	117.4	19.9	118.8	84.0	4.6	91.2	60.2
Queue Length 50th (ft)	75	160	1	256	~621	93	~114	~630	25	87	410
Queue Length 95th (ft)	m#126	m189	m10	#443	#861	153	#277	#768	47	#235	#517
Internal Link Dist (ft)		368			409			880			1134
Turn Bay Length (ft)	125			100		60	100		300	125	
Base Capacity (vph)	150	589	497	457	589	657	209	1297	932	180	1226
Starvation Cap Reductn	0	0	0	0	13	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	15	0	0	0	149
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.68	0.17	0.86	1.17	0.49	1.08	1.07	0.23	0.98	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	370	80	365	625	300	195	1295	195	165	900	110
Future Volume (veh/h)	105	370	80	365	625	300	195	1295	195	165	900	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	113	398	86	392	672	323	210	1392	210	177	968	118
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	592	396	466	592	608	244	1307	898	179	1120	136
Arrive On Green	0.02	0.06	0.06	0.33	0.53	0.53	0.08	0.37	0.37	0.07	0.35	0.35
Sat Flow, veh/h	1781	3554	1585	1781	1870	1585	1781	3554	1585	1781	3189	389
Grp Volume(v), veh/h	113	398	86	392	672	323	210	1392	210	177	539	547
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1870	1585	1781	1777	1585	1781	1777	1800
Q Serve(g_s), s	3.5	13.2	3.0	16.0	38.0	10.7	9.1	44.1	2.1	7.9	33.9	34.0
Cycle Q Clear(g_c), s	3.5	13.2	3.0	16.0	38.0	10.7	9.1	44.1	2.1	7.9	33.9	34.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	147	592	396	466	592	608	244	1307	898	179	624	632
V/C Ratio(X)	0.77	0.67	0.22	0.84	1.13	0.53	0.86	1.06	0.23	0.99	0.86	0.86
Avail Cap(c_a), veh/h	149	592	396	468	592	608	244	1307	898	179	624	632
HCM Platoon Ratio	0.33	0.33	0.33	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.9	53.5	16.1	34.7	28.3	9.2	28.5	37.9	4.2	31.6	36.3	36.3
Incr Delay (d2), s/veh	21.0	6.0	1.3	11.2	77.6	2.8	24.5	44.2	0.6	64.2	14.8	14.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	6.8	1.5	10.1	26.4	3.3	5.4	26.6	1.1	6.5	16.9	17.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	78.0	59.5	17.4	45.9	105.8	12.1	52.9	82.1	4.8	95.8	51.1	50.9
LnGrp LOS	E	E	B	D	F	B	D	F	A	F	D	D
Approach Vol, veh/h		597			1387			1812			1263	
Approach Delay, s/veh		56.9			67.1			69.8			57.3	
Approach LOS		E			E			E			E	

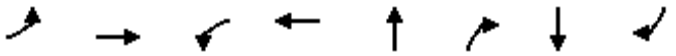
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.9	26.0	16.0	48.1	11.9	44.0	14.0	50.1
Change Period (Y+Rc), s	* 6	6.0	6.0	* 6	* 6	6.0	6.0	* 6
Max Green Setting (Gmax), s	* 24	20.0	10.0	* 42	* 6	38.0	8.0	* 44
Max Q Clear Time (g_c+I1), s	18.0	5.0	11.1	0.0	5.5	0.0	9.9	4.1
Green Ext Time (p_c), s	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	64.4
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

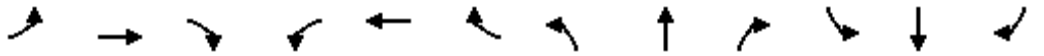


Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	61	577	83	950	389	17	344	44
v/c Ratio	0.50	0.57	0.23	0.94	0.97	0.04	0.82	0.10
Control Delay	26.9	11.4	8.5	25.7	63.7	0.6	40.2	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.9	11.4	8.5	25.7	63.7	0.6	40.2	5.3
Queue Length 50th (ft)	12	120	17	346	138	0	116	0
Queue Length 95th (ft)	#65	201	m18	m428	#292	2	#244	17
Internal Link Dist (ft)		586		575	1892		587	
Turn Bay Length (ft)						50		65
Base Capacity (vph)	123	1018	364	1014	402	462	417	462
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.57	0.23	0.94	0.97	0.04	0.82	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



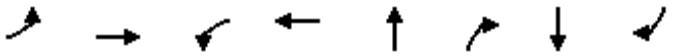
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	480	40	75	755	100	35	315	15	20	290	40
Future Volume (veh/h)	55	480	40	75	755	100	35	315	15	20	290	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	533	44	83	839	111	39	350	17	22	322	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	937	77	409	890	118	66	199	423	64	262	423
Arrive On Green	0.55	0.55	0.55	0.73	0.73	0.73	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	590	1704	141	836	1618	214	0	745	1585	0	983	1585
Grp Volume(v), veh/h	61	0	577	83	0	950	389	0	17	344	0	44
Grp Sat Flow(s),veh/h/ln	590	0	1845	836	0	1832	745	0	1585	983	0	1585
Q Serve(g_s), s	6.1	0.0	12.3	3.7	0.0	26.9	0.0	0.0	0.5	0.0	0.0	1.3
Cycle Q Clear(g_c), s	33.0	0.0	12.3	16.0	0.0	26.9	16.0	0.0	0.5	16.0	0.0	1.3
Prop In Lane	1.00		0.08	1.00		0.12	0.10		1.00	0.06		1.00
Lane Grp Cap(c), veh/h	180	0	1015	409	0	1008	265	0	423	326	0	423
V/C Ratio(X)	0.34	0.00	0.57	0.20	0.00	0.94	1.47	0.00	0.04	1.05	0.00	0.10
Avail Cap(c_a), veh/h	180	0	1015	409	0	1008	265	0	423	326	0	423
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	8.8	9.6	0.0	7.2	20.4	0.0	16.3	20.5	0.0	16.6
Incr Delay (d2), s/veh	4.8	0.0	2.2	1.1	0.0	17.5	230.9	0.0	0.0	65.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	4.5	0.6	0.0	8.7	19.9	0.0	0.2	9.7	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	0.0	11.0	10.7	0.0	24.8	251.3	0.0	16.3	85.5	0.0	16.7
LnGrp LOS	C	A	B	B	A	C	F	A	B	F	A	B
Approach Vol, veh/h		638			1033			406			388	
Approach Delay, s/veh		13.0			23.6			241.4			77.7	
Approach LOS		B			C			F			E	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		21.0		39.0		21.0				
Change Period (Y+Rc), s		* 6		* 5		* 6		* 5				
Max Green Setting (Gmax), s		* 33		* 16		* 33		* 16				
Max Q Clear Time (g_c+I1), s		35.0		18.0		18.0		18.0				
Green Ext Time (p_c), s		0.0		0.0		0.2		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			65.3									
HCM 6th LOS			E									

Notes

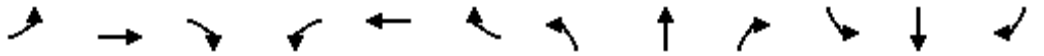
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	73	731	135	781	281	17	286	17
v/c Ratio	0.31	0.68	0.49	0.73	0.64	0.04	0.63	0.04
Control Delay	10.6	12.4	15.0	13.8	28.1	3.6	27.1	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	12.4	15.0	13.8	28.1	3.6	27.1	3.6
Queue Length 50th (ft)	12	154	25	174	91	0	92	0
Queue Length 95th (ft)	36	257	71	292	#161	7	160	7
Internal Link Dist (ft)		1750		556	1279		589	
Turn Bay Length (ft)						65		65
Base Capacity (vph)	239	1073	275	1075	438	422	456	422
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.68	0.49	0.73	0.64	0.04	0.63	0.04

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



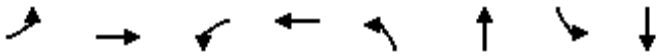
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	555	95	120	610	85	25	225	15	10	245	15
Future Volume (veh/h)	65	555	95	120	610	85	25	225	15	10	245	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	624	107	135	685	96	28	253	17	11	275	17
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	309	907	156	341	936	131	66	218	396	62	298	396
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	692	1556	267	725	1605	225	0	873	1585	0	1191	1585
Grp Volume(v), veh/h	73	0	731	135	0	781	281	0	17	286	0	17
Grp Sat Flow(s),veh/h/ln	692	0	1822	725	0	1830	873	0	1585	1191	0	1585
Q Serve(g_s), s	5.1	0.0	16.7	9.6	0.0	18.6	0.0	0.0	0.5	0.0	0.0	0.5
Cycle Q Clear(g_c), s	23.8	0.0	16.7	26.3	0.0	18.6	15.0	0.0	0.5	15.0	0.0	0.5
Prop In Lane	1.00		0.15	1.00		0.12	0.10		1.00	0.04		1.00
Lane Grp Cap(c), veh/h	309	0	1063	341	0	1067	284	0	396	360	0	396
V/C Ratio(X)	0.24	0.00	0.69	0.40	0.00	0.73	0.99	0.00	0.04	0.79	0.00	0.04
Avail Cap(c_a), veh/h	309	0	1063	341	0	1067	284	0	396	360	0	396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.00	0.54	0.88	0.00	0.88	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	8.7	17.8	0.0	9.1	21.1	0.0	17.1	20.2	0.0	17.1
Incr Delay (d2), s/veh	1.0	0.0	2.0	3.0	0.0	3.9	50.1	0.0	0.0	11.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	5.5	1.7	0.0	6.7	7.1	0.0	0.2	4.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	0.0	10.7	20.9	0.0	13.0	71.2	0.0	17.1	31.8	0.0	17.1
LnGrp LOS	B	A	B	C	A	B	E	A	B	C	A	B
Approach Vol, veh/h		804			916			298			303	
Approach Delay, s/veh		11.4			14.2			68.1			31.0	
Approach LOS		B			B			E			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		15.0		35.0		15.0				
Max Q Clear Time (g_c+I1), s		25.8		17.0		28.3		17.0				
Green Ext Time (p_c), s		0.2		0.0		0.2		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			22.3									
HCM 6th LOS			C									

Notes

User approved pedestrian interval to be less than phase max green.

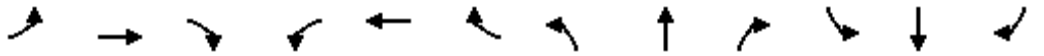


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	31	761	146	1078	177	495	26	281
v/c Ratio	0.19	0.46	0.58	0.69	0.52	0.77	0.16	0.43
Control Delay	10.3	9.9	16.0	9.3	22.1	26.8	16.4	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.3	9.9	16.0	9.3	22.1	26.8	16.4	16.7
Queue Length 50th (ft)	5	196	15	57	50	151	6	72
Queue Length 95th (ft)	15	148	m28	90	105	#291	23	130
Internal Link Dist (ft)		715		254		111		603
Turn Bay Length (ft)	125		100		75		150	
Base Capacity (vph)	159	1637	252	1565	342	647	167	648
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.46	0.58	0.69	0.52	0.77	0.16	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	620	110	140	1010	25	170	415	60	25	235	35
Future Volume (veh/h)	30	620	110	140	1010	25	170	415	60	25	235	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	646	115	146	1052	26	177	432	62	26	245	36
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	339	1407	250	311	1654	41	375	560	80	219	558	82
Arrive On Green	0.15	0.15	0.15	0.93	0.93	0.93	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	523	3015	536	705	3544	88	1098	1599	230	903	1594	234
Grp Volume(v), veh/h	31	380	381	146	527	551	177	0	494	26	0	281
Grp Sat Flow(s),veh/h/ln	523	1777	1774	705	1777	1855	1098	0	1829	903	0	1828
Q Serve(g_s), s	3.1	11.7	11.7	9.7	2.9	2.9	8.9	0.0	14.4	1.6	0.0	7.1
Cycle Q Clear(g_c), s	6.0	11.7	11.7	21.4	2.9	2.9	15.9	0.0	14.4	16.0	0.0	7.1
Prop In Lane	1.00		0.30	1.00		0.05	1.00		0.13	1.00		0.13
Lane Grp Cap(c), veh/h	339	829	828	311	829	865	375	0	640	219	0	640
V/C Ratio(X)	0.09	0.46	0.46	0.47	0.64	0.64	0.47	0.00	0.77	0.12	0.00	0.44
Avail Cap(c_a), veh/h	339	829	828	311	829	865	375	0	640	219	0	640
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.4	18.5	18.5	6.4	1.2	1.2	21.1	0.0	17.4	24.5	0.0	15.0
Incr Delay (d2), s/veh	0.5	1.8	1.8	5.0	3.7	3.6	4.2	0.0	8.8	1.1	0.0	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	5.8	5.8	0.9	1.3	1.3	2.5	0.0	6.9	0.4	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	20.3	20.3	11.4	4.9	4.7	25.3	0.0	26.1	25.6	0.0	17.2
LnGrp LOS	B	C	C	B	A	A	C	A	C	C	A	B
Approach Vol, veh/h		792			1224			671			307	
Approach Delay, s/veh		20.2			5.6			25.9			17.9	
Approach LOS		C			A			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		34.0		26.0		34.0		26.0				
Change Period (Y+Rc), s		* 6		5.0		* 6		5.0				
Max Green Setting (Gmax), s		* 28		21.0		* 28		21.0				
Max Q Clear Time (g_c+I1), s		8.0		18.0		0.0		17.9				
Green Ext Time (p_c), s		0.2		0.4		0.0		1.0				

Intersection Summary												
HCM 6th Ctrl Delay			15.3									
HCM 6th LOS			B									

Notes

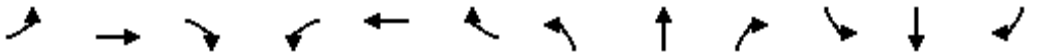
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	72	745	317	500	167	56	739	256	289	1339
v/c Ratio	0.25	0.90	0.81	0.47	0.21	0.67	0.62	0.32	0.86	0.76
Control Delay	53.9	57.9	68.7	37.0	7.7	74.4	36.3	19.3	44.2	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	57.9	68.7	37.0	7.7	74.4	36.3	19.3	44.2	27.7
Queue Length 50th (ft)	27	284	125	172	22	37	252	115	130	424
Queue Length 95th (ft)	51	#399	#190	227	65	#112	320	175	#252	515
Internal Link Dist (ft)		368		409			880			1134
Turn Bay Length (ft)	125		100		60	100		250	125	
Base Capacity (vph)	286	824	400	1061	800	84	1189	795	342	1754
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.90	0.79	0.47	0.21	0.67	0.62	0.32	0.85	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	455	215	285	450	150	50	665	230	260	1105	100
Future Volume (veh/h)	65	455	215	285	450	150	50	665	230	260	1105	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	72	506	128	317	500	84	56	739	145	289	1228	89
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	262	659	166	374	977	621	153	1211	712	373	1706	123
Arrive On Green	0.08	0.23	0.23	0.11	0.28	0.28	0.34	0.34	0.34	0.12	0.51	0.51
Sat Flow, veh/h	3456	2812	708	3456	3554	1585	417	3554	1585	1781	3360	243
Grp Volume(v), veh/h	72	319	315	317	500	84	56	739	145	289	648	669
Grp Sat Flow(s),veh/h/ln	1728	1777	1743	1728	1777	1585	417	1777	1585	1781	1777	1827
Q Serve(g_s), s	2.4	20.1	20.3	10.8	14.2	4.1	14.5	20.8	6.7	12.6	34.0	34.1
Cycle Q Clear(g_c), s	2.4	20.1	20.3	10.8	14.2	4.1	28.6	20.8	6.7	12.6	34.0	34.1
Prop In Lane	1.00		0.41	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	262	416	408	374	977	621	153	1211	712	373	902	927
V/C Ratio(X)	0.27	0.77	0.77	0.85	0.51	0.14	0.37	0.61	0.20	0.77	0.72	0.72
Avail Cap(c_a), veh/h	288	416	408	403	977	621	153	1211	712	373	902	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	42.9	43.0	52.5	36.7	23.4	41.8	32.9	20.0	24.4	22.9	22.9
Incr Delay (d2), s/veh	0.6	12.6	13.2	14.0	1.8	0.4	6.6	2.3	0.6	8.9	4.9	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	10.3	10.2	5.4	6.4	1.6	1.8	9.2	2.6	6.1	14.8	15.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.9	55.5	56.2	66.5	38.5	23.9	48.4	35.2	20.7	33.3	27.8	27.8
LnGrp LOS	D	E	E	E	D	C	D	D	C	C	C	C
Approach Vol, veh/h		706			901			940			1606	
Approach Delay, s/veh		55.6			47.0			33.8			28.8	
Approach LOS		E			D			C			C	

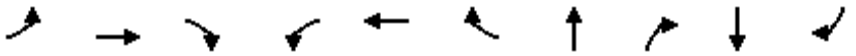
Timer - Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	34.1		66.9	14.1	39.0	20.0	46.9
Change Period (Y+Rc), s	6.0	* 6		* 6	5.0	* 6	6.0	* 6
Max Green Setting (Gmax), s	14.0	* 28		* 60	10.0	* 33	14.0	* 40
Max Q Clear Time (g_c+I1), s	12.8	0.0		0.0	4.4	0.0	14.6	30.6
Green Ext Time (p_c), s	0.2	0.0		0.0	0.1	0.0	0.0	0.2

Intersection Summary		
HCM 6th Ctrl Delay		38.4
HCM 6th LOS		D

Notes

User approved pedestrian interval to be less than phase max green.

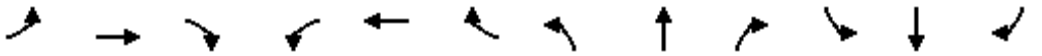
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	38	725	71	44	429	27	252	66	280	27
v/c Ratio	0.08	0.70	0.08	0.17	0.41	0.03	0.58	0.15	0.66	0.06
Control Delay	2.8	10.5	0.8	8.6	9.2	2.2	25.8	6.5	28.2	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.8	10.5	0.8	8.6	9.2	2.2	25.8	6.5	28.2	2.7
Queue Length 50th (ft)	2	160	0	7	77	0	80	1	91	0
Queue Length 95th (ft)	m5	182	2	23	137	7	143	25	160	8
Internal Link Dist (ft)		586			575		1892		587	
Turn Bay Length (ft)	65		65	65		65		50		65
Base Capacity (vph)	498	1043	907	263	1043	902	448	469	444	462
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.70	0.08	0.17	0.41	0.03	0.56	0.14	0.63	0.06

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



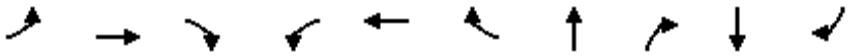
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	660	65	40	390	25	35	195	60	45	210	25
Future Volume (veh/h)	35	660	65	40	390	25	35	195	60	45	210	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	725	71	44	429	27	38	214	66	49	231	27
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	509	1029	872	247	1029	872	69	202	423	71	170	423
Arrive On Green	0.18	0.18	0.18	0.55	0.55	0.55	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	935	1870	1585	682	1870	1585	0	757	1585	0	638	1585
Grp Volume(v), veh/h	38	725	71	44	429	27	252	0	66	280	0	27
Grp Sat Flow(s),veh/h/ln	935	1870	1585	682	1870	1585	757	0	1585	638	0	1585
Q Serve(g_s), s	2.1	21.8	2.2	3.4	8.0	0.5	0.0	0.0	1.9	0.0	0.0	0.8
Cycle Q Clear(g_c), s	10.2	21.8	2.2	25.2	8.0	0.5	16.0	0.0	1.9	16.0	0.0	0.8
Prop In Lane	1.00		1.00	1.00		1.00	0.15		1.00	0.17		1.00
Lane Grp Cap(c), veh/h	509	1029	872	247	1029	872	271	0	423	241	0	423
V/C Ratio(X)	0.07	0.70	0.08	0.18	0.42	0.03	0.93	0.00	0.16	1.16	0.00	0.06
Avail Cap(c_a), veh/h	509	1029	872	247	1029	872	271	0	423	241	0	423
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.7	20.0	12.0	21.2	7.9	6.2	19.8	0.0	16.8	20.6	0.0	16.4
Incr Delay (d2), s/veh	0.3	3.6	0.2	1.6	1.2	0.1	36.5	0.0	0.2	109.2	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	11.6	0.7	0.6	2.9	0.1	5.5	0.0	0.7	9.9	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.0	23.6	12.1	22.8	9.1	6.2	56.3	0.0	17.0	129.8	0.0	16.5
LnGrp LOS	B	C	B	C	A	A	E	A	B	F	A	B
Approach Vol, veh/h		834			500			318			307	
Approach Delay, s/veh		22.4			10.2			48.2			119.8	
Approach LOS		C			B			D			F	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		39.0		21.0		39.0		21.0				
Change Period (Y+Rc), s		* 6		* 5		* 6		* 5				
Max Green Setting (Gmax), s		* 33		* 16		* 33		* 16				
Max Q Clear Time (g_c+I1), s		12.2		18.0		27.2		18.0				
Green Ext Time (p_c), s		0.2		0.0		0.1		0.0				

Intersection Summary												
HCM 6th Ctrl Delay			38.7									
HCM 6th LOS			D									

Notes

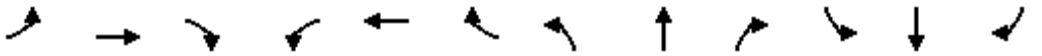
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	22	753	27	16	462	16	203	38	214	22
v/c Ratio	0.05	0.69	0.03	0.06	0.43	0.02	0.46	0.09	0.51	0.05
Control Delay	5.3	10.5	2.4	3.1	4.1	0.1	23.1	7.5	24.3	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	10.5	2.4	3.1	4.1	0.1	23.1	7.5	24.3	5.0
Queue Length 50th (ft)	4	178	1	1	32	0	62	0	66	0
Queue Length 95th (ft)	m7	m273	m3	m4	46	m1	117	19	124	11
Internal Link Dist (ft)		1750			556		1279		589	
Turn Bay Length (ft)	65		65	65		65		65		65
Base Capacity (vph)	484	1086	938	259	1086	938	442	424	423	422
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.69	0.03	0.06	0.43	0.02	0.46	0.09	0.51	0.05

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	685	25	15	420	15	20	165	35	35	160	20
Future Volume (veh/h)	20	685	25	15	420	15	20	165	35	35	160	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	753	27	16	462	16	22	181	38	38	176	22
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	456	1091	925	390	1091	925	90	431	396	116	395	396
Arrive On Green	0.78	0.78	0.78	0.19	0.19	0.19	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	916	1870	1585	693	1870	1585	92	1725	1585	181	1579	1585
Grp Volume(v), veh/h	22	753	27	16	462	16	203	0	38	214	0	22
Grp Sat Flow(s),veh/h/ln	916	1870	1585	693	1870	1585	1817	0	1585	1760	0	1585
Q Serve(g_s), s	0.8	11.7	0.2	1.2	13.0	0.5	0.0	0.0	1.1	0.0	0.0	0.6
Cycle Q Clear(g_c), s	13.8	11.7	0.2	12.9	13.0	0.5	5.5	0.0	1.1	5.8	0.0	0.6
Prop In Lane	1.00		1.00	1.00		1.00	0.11		1.00	0.18		1.00
Lane Grp Cap(c), veh/h	456	1091	925	390	1091	925	521	0	396	511	0	396
V/C Ratio(X)	0.05	0.69	0.03	0.04	0.42	0.02	0.39	0.00	0.10	0.42	0.00	0.06
Avail Cap(c_a), veh/h	456	1091	925	390	1091	925	521	0	396	511	0	396
HCM Platoon Ratio	1.33	1.33	1.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.41	0.97	0.97	0.97	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.8	4.1	2.8	20.4	15.4	10.3	18.9	0.0	17.3	19.1	0.0	17.1
Incr Delay (d2), s/veh	0.1	1.5	0.0	0.2	1.2	0.0	0.5	0.0	0.1	0.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.5	0.1	0.2	6.6	0.1	2.3	0.0	0.4	2.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.9	5.6	2.9	20.6	16.5	10.3	19.4	0.0	17.4	19.6	0.0	17.2
LnGrp LOS	A	A	A	C	B	B	B	A	B	B	A	B
Approach Vol, veh/h		802			494			241			236	
Approach Delay, s/veh		5.6			16.5			19.1			19.4	
Approach LOS		A			B			B			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		35.0		15.0		35.0		15.0				
Max Q Clear Time (g_c+I1), s		15.8		7.8		14.9		7.5				
Green Ext Time (p_c), s		0.2		0.5		0.1		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			12.3									
HCM 6th LOS			B									

Notes

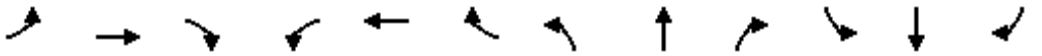
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	113	484	392	672	323	161	1392	206	177	1086
v/c Ratio	0.66	0.96	0.86	0.84	0.60	0.63	0.89	0.22	0.86	0.70
Control Delay	73.0	66.0	65.9	47.2	24.3	24.9	38.9	4.2	63.0	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Total Delay	73.0	66.0	65.9	47.2	24.3	25.2	38.9	4.2	63.0	29.7
Queue Length 50th (ft)	47	196	164	251	97	55	512	22	85	344
Queue Length 95th (ft)	m72	m#271	#242	#319	153	96	619	41	#212	441
Internal Link Dist (ft)		368		409			880			1134
Turn Bay Length (ft)	125		100		60	100		250	125	
Base Capacity (vph)	171	503	457	796	544	293	1571	948	209	1561
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	9	0	0	0	62
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.96	0.86	0.84	0.59	0.57	0.89	0.22	0.85	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	370	80	365	625	300	150	1295	192	165	900	110
Future Volume (veh/h)	105	370	80	365	625	300	150	1295	192	165	900	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	113	398	86	392	672	323	161	1392	206	177	968	118
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	412	88	457	800	466	293	1624	934	217	1472	179
Arrive On Green	0.02	0.05	0.05	0.22	0.38	0.38	0.06	0.46	0.46	0.07	0.46	0.46
Sat Flow, veh/h	3456	2912	623	3456	3554	1585	1781	3554	1585	1781	3189	389
Grp Volume(v), veh/h	113	241	243	392	672	323	161	1392	206	177	539	547
Grp Sat Flow(s),veh/h/ln	1728	1777	1758	1728	1777	1585	1781	1777	1585	1781	1777	1800
Q Serve(g_s), s	3.9	16.3	16.5	13.1	20.7	15.1	5.6	42.0	2.1	6.3	28.1	28.2
Cycle Q Clear(g_c), s	3.9	16.3	16.5	13.1	20.7	15.1	5.6	42.0	2.1	6.3	28.1	28.2
Prop In Lane	1.00		0.35	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	169	252	249	457	800	466	293	1624	934	217	820	831
V/C Ratio(X)	0.67	0.96	0.97	0.86	0.84	0.69	0.55	0.86	0.22	0.81	0.66	0.66
Avail Cap(c_a), veh/h	173	252	249	461	800	466	356	1624	934	243	820	831
HCM Platoon Ratio	0.33	0.33	0.33	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.1	56.8	57.0	45.7	35.5	16.1	19.6	29.1	3.5	26.2	25.0	25.0
Incr Delay (d2), s/veh	9.3	47.1	50.7	12.9	9.0	7.0	0.6	6.1	0.5	15.4	4.1	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	11.1	11.3	5.9	8.8	5.2	2.3	18.5	1.0	3.4	12.4	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.4	104.0	107.7	58.6	44.5	23.1	20.2	35.2	4.1	41.6	29.1	29.0
LnGrp LOS	E	F	F	E	D	C	C	D	A	D	C	C
Approach Vol, veh/h		597			1387			1759			1263	
Approach Delay, s/veh		98.5			43.5			30.2			30.8	
Approach LOS		F			D			C			C	

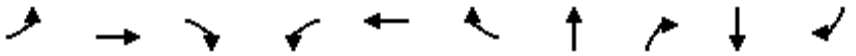
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.9	23.0	13.7	61.4	11.9	33.0	14.3	60.8
Change Period (Y+Rc), s	* 6	6.0	6.0	* 6	* 6	6.0	6.0	* 6
Max Green Setting (Gmax), s	* 16	17.0	12.0	* 51	* 6	27.0	10.0	* 53
Max Q Clear Time (g_c+I1), s	15.1	0.0	7.6	0.0	5.9	0.0	8.3	4.1
Green Ext Time (p_c), s	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	42.2
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

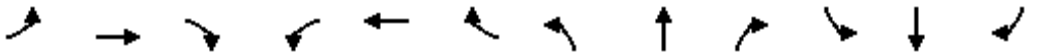


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	61	533	44	83	839	111	389	17	344	44
v/c Ratio	0.42	0.54	0.05	0.22	0.85	0.13	0.85	0.03	0.72	0.09
Control Delay	20.3	12.1	3.5	9.3	20.0	4.3	39.6	0.5	28.9	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	12.1	3.5	9.3	20.0	4.3	39.6	0.5	28.9	4.8
Queue Length 50th (ft)	13	119	1	18	289	12	128	0	108	0
Queue Length 95th (ft)	#52	198	13	m20	m349	m13	#261	2	#199	16
Internal Link Dist (ft)		586			575		1892		587	
Turn Bay Length (ft)			65			65		50		65
Base Capacity (vph)	145	989	857	376	989	868	482	513	504	513
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.54	0.05	0.22	0.85	0.13	0.81	0.03	0.68	0.09

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



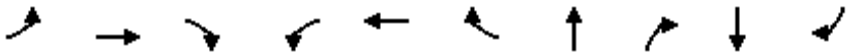
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	480	40	75	755	100	35	315	15	20	290	40
Future Volume (veh/h)	55	480	40	75	755	100	35	315	15	20	290	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	533	44	83	839	111	39	350	17	22	322	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	966	819	391	966	819	66	231	476	64	303	476
Arrive On Green	0.52	0.52	0.52	0.69	0.69	0.69	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	590	1870	1585	836	1870	1585	0	771	1585	0	1009	1585
Grp Volume(v), veh/h	61	533	44	83	839	111	389	0	17	344	0	44
Grp Sat Flow(s),veh/h/ln	590	1870	1585	836	1870	1585	771	0	1585	1009	0	1585
Q Serve(g_s), s	5.7	11.6	0.8	3.9	20.9	1.4	0.0	0.0	0.5	0.0	0.0	1.2
Cycle Q Clear(g_c), s	26.6	11.6	0.8	15.5	20.9	1.4	18.0	0.0	0.5	18.0	0.0	1.2
Prop In Lane	1.00		1.00	1.00		1.00	0.10		1.00	0.06		1.00
Lane Grp Cap(c), veh/h	220	966	819	391	966	819	297	0	476	367	0	476
V/C Ratio(X)	0.28	0.55	0.05	0.21	0.87	0.14	1.31	0.00	0.04	0.94	0.00	0.09
Avail Cap(c_a), veh/h	220	966	819	391	966	819	297	0	476	367	0	476
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.1	9.8	7.2	10.7	7.8	4.8	18.9	0.0	14.9	18.6	0.0	15.1
Incr Delay (d2), s/veh	3.0	2.2	0.1	1.2	10.4	0.3	161.0	0.0	0.0	31.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.4	0.3	0.7	6.8	0.5	16.5	0.0	0.2	7.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.1	12.0	7.3	12.0	18.2	5.1	179.9	0.0	14.9	50.1	0.0	15.2
LnGrp LOS	C	B	A	B	B	A	F	A	B	D	A	B
Approach Vol, veh/h		638			1033			406			388	
Approach Delay, s/veh		13.0			16.3			172.9			46.2	
Approach LOS		B			B			F			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	37.0	23.0	37.0	23.0
Change Period (Y+Rc), s	* 6	* 5	* 6	* 5
Max Green Setting (Gmax), s	* 31	* 18	* 31	* 18
Max Q Clear Time (g_c+I1), s	28.6	20.0	17.5	20.0
Green Ext Time (p_c), s	0.1	0.0	0.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	46.0
HCM 6th LOS	D

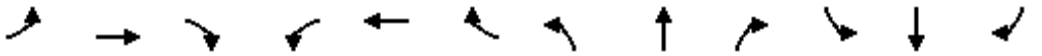
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	73	624	107	135	685	96	281	17	286	17
v/c Ratio	0.25	0.59	0.11	0.40	0.65	0.10	0.61	0.04	0.60	0.04
Control Delay	9.6	11.4	2.9	12.0	12.6	3.2	25.7	3.3	25.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.6	11.4	2.9	12.0	12.6	3.2	25.7	3.3	25.0	3.3
Queue Length 50th (ft)	11	124	3	23	143	4	91	0	92	0
Queue Length 95th (ft)	35	223	21	64	258	21	151	7	152	7
Internal Link Dist (ft)		1750			556		1279		589	
Turn Bay Length (ft)			65			65		65		65
Base Capacity (vph)	293	1062	938	338	1062	932	497	474	518	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.59	0.11	0.40	0.65	0.10	0.57	0.04	0.55	0.04

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	555	95	120	610	85	25	225	15	10	245	15
Future Volume (veh/h)	65	555	95	120	610	85	25	225	15	10	245	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	624	107	135	685	96	28	253	17	11	275	17
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	1091	925	392	1091	925	86	398	396	69	457	396
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	692	1870	1585	725	1870	1585	80	1593	1585	25	1827	1585
Grp Volume(v), veh/h	73	624	107	135	685	96	281	0	17	286	0	17
Grp Sat Flow(s),veh/h/ln	692	1870	1585	725	1870	1585	1673	0	1585	1853	0	1585
Q Serve(g_s), s	4.7	12.5	1.8	8.6	14.4	1.6	1.3	0.0	0.5	0.0	0.0	0.5
Cycle Q Clear(g_c), s	19.1	12.5	1.8	21.1	14.4	1.6	9.4	0.0	0.5	8.1	0.0	0.5
Prop In Lane	1.00		1.00	1.00		1.00	0.10		1.00	0.04		1.00
Lane Grp Cap(c), veh/h	357	1091	925	392	1091	925	484	0	396	526	0	396
V/C Ratio(X)	0.20	0.57	0.12	0.34	0.63	0.10	0.58	0.00	0.04	0.54	0.00	0.04
Avail Cap(c_a), veh/h	357	1091	925	392	1091	925	542	0	449	586	0	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.54	0.54	0.88	0.88	0.88	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	7.8	5.6	14.4	8.2	5.5	20.0	0.0	17.1	19.9	0.0	17.1
Incr Delay (d2), s/veh	0.7	1.2	0.1	2.1	2.4	0.2	1.2	0.0	0.0	0.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.2	0.5	1.5	5.1	0.5	3.4	0.0	0.2	3.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.2	9.0	5.7	16.5	10.6	5.7	21.2	0.0	17.1	20.8	0.0	17.1
LnGrp LOS	B	A	A	B	B	A	C	A	B	C	A	B
Approach Vol, veh/h		804			916			298			303	
Approach Delay, s/veh		9.1			11.0			21.0			20.6	
Approach LOS		A			B			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		20.0		40.0		20.0				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		33.0		17.0		33.0		17.0				
Max Q Clear Time (g_c+I1), s		21.1		10.1		23.1		11.4				
Green Ext Time (p_c), s		0.2		0.7		0.2		0.6				

Intersection Summary												
HCM 6th Ctrl Delay			12.9									
HCM 6th LOS			B									

Notes

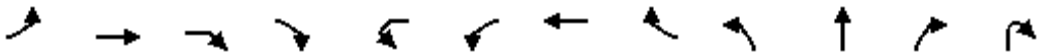
User approved pedestrian interval to be less than phase max green.

Lane Group	EBL	EBT	EBR	EBR2	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	33	393	371	110	159	830	165	467	32	396
v/c Ratio	0.12	0.49	0.49	0.13	0.40	0.50	0.81	0.82	0.22	0.67
Control Delay	9.4	12.5	12.8	2.4	8.0	6.1	41.0	22.3	19.6	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.5	0.0	0.0	7.1	0.0	0.0
Total Delay	9.4	12.5	12.8	2.5	8.5	6.1	41.0	29.3	19.6	23.9
Queue Length 50th (ft)	6	91	86	0	17	44	24	50	8	117
Queue Length 95th (ft)	19	160	153	20	m30	58	m#129	#274	29	202
Internal Link Dist (ft)		715				585		118		603
Turn Bay Length (ft)	125		125	125	100		75		150	
Base Capacity (vph)	277	808	752	846	393	1674	204	571	148	587
Starvation Cap Reductn	0	0	0	0	0	0	0	71	0	0
Spillback Cap Reductn	0	0	0	120	59	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.49	0.49	0.15	0.48	0.50	0.81	0.93	0.22	0.68

Intersection Summary

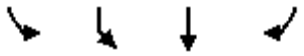
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	30	150	545	100	10	135	715	40	150	250	75	100
Future Volume (vph)	30	150	545	100	10	135	715	40	150	250	75	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0		6.0	6.0		5.0	5.0		
Lane Util. Factor	1.00	0.95	0.95	1.00		1.00	0.95		1.00	1.00		
Frt	1.00	0.91	0.85	0.85		1.00	0.99		1.00	0.94		
Flt Protected	0.95	1.00	1.00	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1616	1504	1583		1593	3336		1770	1748		
Flt Permitted	0.30	1.00	1.00	1.00		0.47	1.00		0.35	1.00		
Satd. Flow (perm)	556	1616	1504	1583		786	3336		644	1748		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	33	165	599	110	11	148	786	44	165	275	82	110
RTOR Reduction (vph)	0	0	0	55	0	0	7	0	0	18	0	0
Lane Group Flow (vph)	33	393	371	55	0	159	824	0	165	449	0	0
Parking (#/hr)						0	0					
Turn Type	Perm	NA	Prot	Perm	Perm	Perm	NA		Perm	NA		
Protected Phases		2	2				6			8		
Permitted Phases	2			2	6	6			8			
Actuated Green, G (s)	30.0	30.0	30.0	30.0		30.0	30.0		19.0	19.0		
Effective Green, g (s)	30.0	30.0	30.0	30.0		30.0	30.0		19.0	19.0		
Actuated g/C Ratio	0.50	0.50	0.50	0.50		0.50	0.50		0.32	0.32		
Clearance Time (s)	6.0	6.0	6.0	6.0		6.0	6.0		5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	278	808	752	791		393	1668		203	553		
v/s Ratio Prot		0.24	0.25				c0.25			c0.26		
v/s Ratio Perm	0.06			0.03		0.20			0.26			
v/c Ratio	0.12	0.49	0.49	0.07		0.40	0.49		0.81	0.81		
Uniform Delay, d1	8.0	9.9	10.0	7.8		9.4	10.0		18.9	18.9		
Progression Factor	1.00	1.00	1.00	1.00		0.51	0.52		0.55	0.52		
Incremental Delay, d2	0.9	2.1	2.3	0.2		2.7	0.9		25.0	10.5		
Delay (s)	8.8	12.0	12.3	7.9		7.5	6.1		35.3	20.3		
Level of Service	A	B	B	A		A	A		D	C		
Approach Delay (s)		11.5					6.3			24.2		
Approach LOS		B					A			C		

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	89.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBL2	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	15	15	300	60
Future Volume (vph)	15	15	300	60
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	
Lane Util. Factor		1.00	1.00	
Frt		1.00	0.97	
Flt Protected		0.95	1.00	
Satd. Flow (prot)		1770	1816	
Flt Permitted		0.25	1.00	
Satd. Flow (perm)		468	1816	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91
Adj. Flow (vph)	16	16	330	66
RTOR Reduction (vph)	0	0	12	0
Lane Group Flow (vph)	0	32	384	0
Parking (#/hr)				
Turn Type	Perm	Perm	NA	
Protected Phases			4	
Permitted Phases	4	4		
Actuated Green, G (s)		19.0	19.0	
Effective Green, g (s)		19.0	19.0	
Actuated g/C Ratio		0.32	0.32	
Clearance Time (s)		5.0	5.0	
Vehicle Extension (s)		3.0	3.0	
Lane Grp Cap (vph)		148	575	
v/s Ratio Prot			0.21	
v/s Ratio Perm		0.07		
v/c Ratio		0.22	0.67	
Uniform Delay, d1		15.0	17.8	
Progression Factor		1.00	1.00	
Incremental Delay, d2		3.3	6.0	
Delay (s)		18.4	23.8	
Level of Service		B	C	
Approach Delay (s)			23.4	
Approach LOS			C	

Intersection Summary

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	56	601	601
v/c Ratio	0.11	0.61	0.61
Control Delay	10.1	12.8	9.1
Queue Delay	0.0	0.9	2.6
Total Delay	10.1	13.8	11.7
Queue Length 50th (ft)	7	134	84
Queue Length 95th (ft)	28	220	134
Internal Link Dist (ft)	249	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	527	990	993
Starvation Cap Reductn	0	0	267
Spillback Cap Reductn	2	170	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.11	0.73	0.83

Intersection Summary

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	25	510	25	0	535
Future Volume (vph)	25	25	510	25	0	535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			5.0
Lane Util. Factor	1.00		1.00			1.00
Frt	0.93		0.99			1.00
Flt Protected	0.98		1.00			1.00
Satd. Flow (prot)	1695		1851			1863
Flt Permitted	0.98		1.00			1.00
Satd. Flow (perm)	1695		1851			1863
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	28	28	573	28	0	601
RTOR Reduction (vph)	20	0	3	0	0	0
Lane Group Flow (vph)	36	0	598	0	0	601
Turn Type	Prot		NA			NA
Protected Phases	6		8			4
Permitted Phases						
Actuated Green, G (s)	18.0		32.0			32.0
Effective Green, g (s)	18.0		32.0			32.0
Actuated g/C Ratio	0.30		0.53			0.53
Clearance Time (s)	5.0		5.0			5.0
Lane Grp Cap (vph)	508		987			993
v/s Ratio Prot	c0.02		c0.32			0.32
v/s Ratio Perm						
v/c Ratio	0.07		0.61			0.61
Uniform Delay, d1	15.0		9.7			9.6
Progression Factor	1.00		1.00			0.66
Incremental Delay, d2	0.3		2.8			2.4
Delay (s)	15.3		12.4			8.7
Level of Service	B		B			A
Approach Delay (s)	15.3		12.4			8.7
Approach LOS	B		B			A

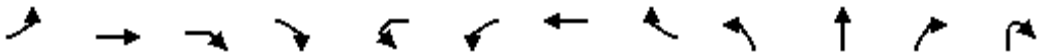
Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	EBR2	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	31	330	300	115	146	1078	177	573	26	281
v/c Ratio	0.18	0.41	0.41	0.14	0.34	0.67	0.55	0.94	0.21	0.46
Control Delay	9.1	10.2	10.4	2.2	7.4	7.8	15.1	34.2	19.6	17.9
Queue Delay	0.0	0.0	0.0	0.1	0.6	0.0	1.3	44.0	0.0	0.0
Total Delay	9.1	10.2	10.4	2.2	8.0	7.8	16.5	78.2	19.6	17.9
Queue Length 50th (ft)	4	68	61	1	13	51	15	56	7	74
Queue Length 95th (ft)	14	138	133	3	m25	82	m41	m#328	25	135
Internal Link Dist (ft)		715				585		118		603
Turn Bay Length (ft)	125		125	125	100		75		150	
Base Capacity (vph)	171	797	726	824	426	1621	321	607	124	617
Starvation Cap Reductn	0	0	0	0	0	0	44	97	0	0
Spillback Cap Reductn	0	0	0	175	96	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.41	0.41	0.18	0.44	0.67	0.64	1.12	0.21	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

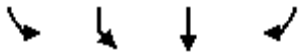
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBL	NBT	NBR	NBR2
Lane Configurations												
Traffic Volume (vph)	30	175	430	110	15	125	1010	25	170	415	60	75
Future Volume (vph)	30	175	430	110	15	125	1010	25	170	415	60	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0	6.0		6.0	6.0		5.0	5.0		
Lane Util. Factor	1.00	0.95	0.95	1.00		1.00	0.95		1.00	1.00		
Frt	1.00	0.93	0.85	0.85		1.00	1.00		1.00	0.96		
Flt Protected	0.95	1.00	1.00	1.00		0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1651	1504	1583		1593	3350		1770	1794		
Flt Permitted	0.19	1.00	1.00	1.00		0.53	1.00		0.52	1.00		
Satd. Flow (perm)	353	1651	1504	1583		881	3350		962	1794		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	31	182	448	115	16	130	1052	26	177	432	62	78
RTOR Reduction (vph)	0	0	0	59	0	0	3	0	0	9	0	0
Lane Group Flow (vph)	31	330	300	56	0	146	1075	0	177	564	0	0
Parking (#/hr)						0	0					
Turn Type	Perm	NA	Prot	Perm	Perm	Perm	NA		Perm	NA		
Protected Phases		2	2				6			8		
Permitted Phases	2			2	6	6			8			
Actuated Green, G (s)	29.0	29.0	29.0	29.0		29.0	29.0		20.0	20.0		
Effective Green, g (s)	29.0	29.0	29.0	29.0		29.0	29.0		20.0	20.0		
Actuated g/C Ratio	0.48	0.48	0.48	0.48		0.48	0.48		0.33	0.33		
Clearance Time (s)	6.0	6.0	6.0	6.0		6.0	6.0		5.0	5.0		
Lane Grp Cap (vph)	170	797	726	765		425	1619		320	598		
v/s Ratio Prot		0.20	0.20				c0.32			c0.31		
v/s Ratio Perm	0.09			0.04		0.17			0.18			
v/c Ratio	0.18	0.41	0.41	0.07		0.34	0.66		0.55	0.94		
Uniform Delay, d1	8.8	10.0	10.0	8.3		9.6	11.8		16.3	19.4		
Progression Factor	0.73	0.85	0.85	1.18		0.56	0.51		0.61	0.58		
Incremental Delay, d2	2.3	1.5	1.7	0.2		1.6	1.6		4.5	18.9		
Delay (s)	8.7	10.0	10.2	10.0		7.0	7.7		14.5	30.1		
Level of Service	A	B	B	A		A	A		B	C		
Approach Delay (s)		10.0					7.6			26.4		
Approach LOS		B					A			C		

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



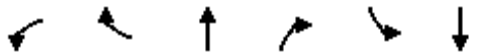
Movement	SBL2	SBL	SBT	SBR
Lane Configurations				
Traffic Volume (vph)	15	10	235	35
Future Volume (vph)	15	10	235	35
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	
Lane Util. Factor		1.00	1.00	
Frt		1.00	0.98	
Flt Protected		0.95	1.00	
Satd. Flow (prot)		1770	1827	
Flt Permitted		0.20	1.00	
Satd. Flow (perm)		373	1827	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96
Adj. Flow (vph)	16	10	245	36
RTOR Reduction (vph)	0	0	9	0
Lane Group Flow (vph)	0	26	272	0
Parking (#/hr)				
Turn Type	Perm	Perm	NA	
Protected Phases			4	
Permitted Phases	4	4		
Actuated Green, G (s)		20.0	20.0	
Effective Green, g (s)		20.0	20.0	
Actuated g/C Ratio		0.33	0.33	
Clearance Time (s)		5.0	5.0	
Lane Grp Cap (vph)		124	609	
v/s Ratio Prot			0.15	
v/s Ratio Perm		0.07		
v/c Ratio		0.21	0.45	
Uniform Delay, d1		14.3	15.7	
Progression Factor		1.00	1.00	
Incremental Delay, d2		3.8	2.4	
Delay (s)		18.1	18.0	
Level of Service		B	B	
Approach Delay (s)			18.0	
Approach LOS			B	

Intersection Summary

Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	106	766	516
v/c Ratio	0.19	0.77	0.52
Control Delay	10.2	18.1	10.5
Queue Delay	0.2	10.5	1.1
Total Delay	10.3	28.6	11.6
Queue Length 50th (ft)	14	197	108
Queue Length 95th (ft)	44	#351	146
Internal Link Dist (ft)	249	346	118
Turn Bay Length (ft)			
Base Capacity (vph)	545	989	993
Starvation Cap Reductn	0	0	259
Spillback Cap Reductn	126	202	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	0.97	0.70

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	50	50	670	50	0	485
Future Volume (vph)	50	50	670	50	0	485
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		5.0			5.0
Lane Util. Factor	1.00		1.00			1.00
Frt	0.93		0.99			1.00
Flt Protected	0.98		1.00			1.00
Satd. Flow (prot)	1695		1845			1863
Flt Permitted	0.98		1.00			1.00
Satd. Flow (perm)	1695		1845			1863
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	53	53	713	53	0	516
RTOR Reduction (vph)	37	0	5	0	0	0
Lane Group Flow (vph)	69	0	761	0	0	516
Turn Type	Prot		NA			NA
Protected Phases	6		8			4
Permitted Phases						
Actuated Green, G (s)	18.0		32.0			32.0
Effective Green, g (s)	18.0		32.0			32.0
Actuated g/C Ratio	0.30		0.53			0.53
Clearance Time (s)	5.0		5.0			5.0
Lane Grp Cap (vph)	508		984			993
v/s Ratio Prot	c0.04		c0.41			0.28
v/s Ratio Perm						
v/c Ratio	0.14		0.77			0.52
Uniform Delay, d1	15.3		11.1			9.0
Progression Factor	1.00		1.00			0.94
Incremental Delay, d2	0.6		5.9			1.9
Delay (s)	15.9		17.0			10.3
Level of Service	B		B			B
Approach Delay (s)	15.9		17.0			10.3
Approach LOS	B		B			B

Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

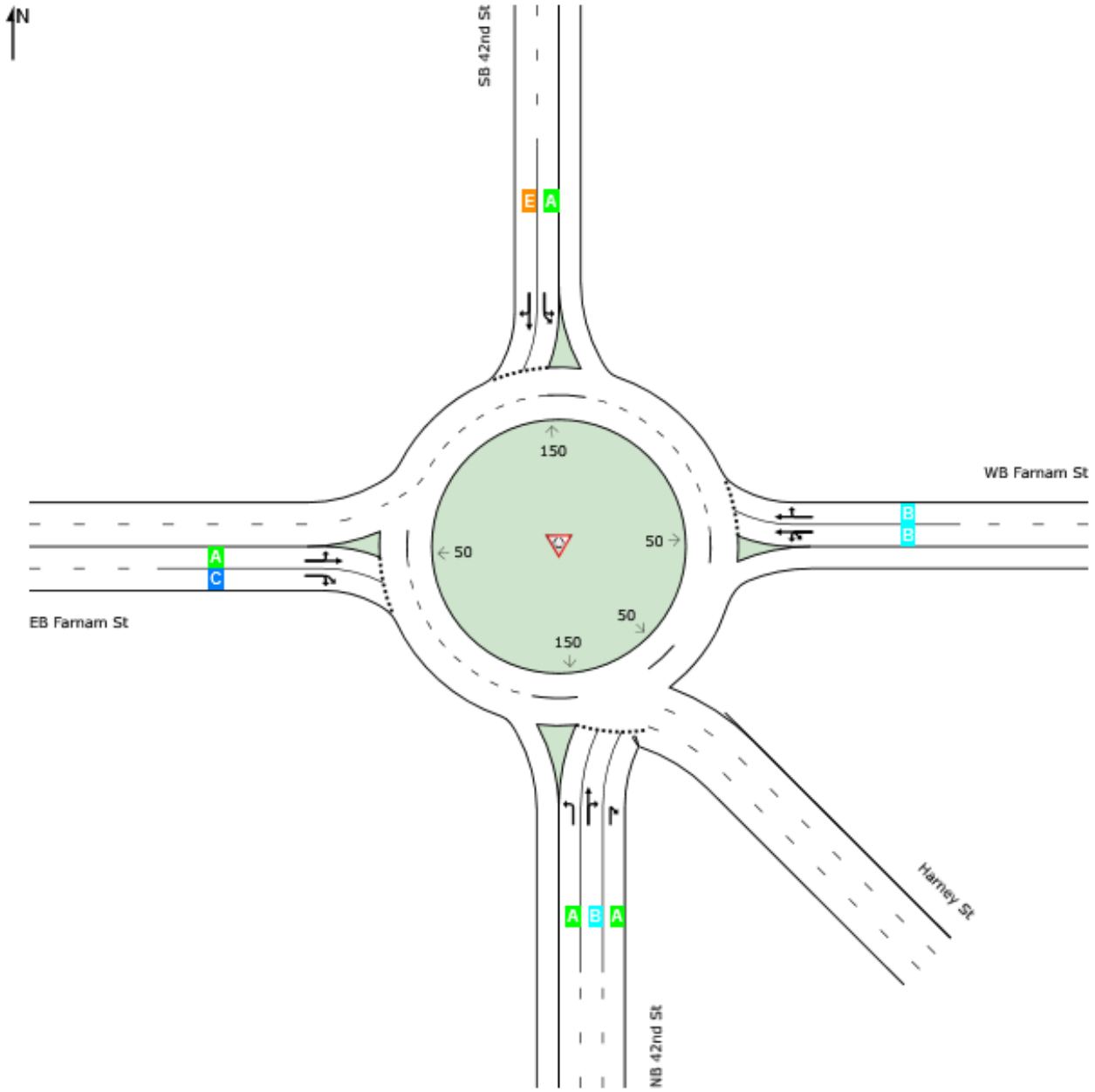
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 323 [a2040 Alt 4 Peanut (Site Folder: General)]

42nd St & Farnam St / Harney St
2040 AM Alt 4 Peanut
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	B	E	C	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

MOVEMENT SUMMARY

Site: 323 [a2040 Alt 2 ML (Site Folder: General)]

42nd St & Farnam St / Harney St
2040 AM Alt 2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 42nd St														
3	L2	110	2.0	120	2.0	0.190	8.0	LOS A	0.7	17.4	0.61	0.61	0.61	31.4
8	T1	250	2.0	272	2.0	0.505	12.8	LOS B	2.9	74.7	0.71	0.83	1.10	31.5
18	R2	75	2.0	82	2.0	0.505	12.8	LOS B	2.9	74.7	0.71	0.83	1.10	30.7
18b	R3	100	2.0	109	2.0	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.7
Approach		535	2.0	582	2.0	0.505	9.4	LOS A	2.9	74.7	0.56	0.63	0.79	32.2
East: WB Farnam St														
1b	L3	10	2.0	11	2.0	0.642	14.5	LOS B	6.6	168.0	0.73	0.93	1.27	30.7
1	L2	125	2.0	136	2.0	0.642	14.5	LOS B	6.6	168.0	0.73	0.93	1.27	30.3
6	T1	890	2.0	967	2.0	0.642	14.0	LOS B	6.7	170.5	0.72	0.91	1.25	30.8
16	R2	40	2.0	48	2.0	0.642	13.6	LOS B	6.7	170.5	0.71	0.90	1.23	30.3
Approach		1065	2.0	1162	2.0	0.642	14.0	LOS B	6.7	170.5	0.72	0.91	1.25	30.7
North: SB 42nd St														
7	L2	15	2.0	18	2.0	0.078	9.2	LOS A	0.3	6.6	0.70	0.70	0.70	32.9
7a	L1	15	2.0	16	2.0	0.078	9.2	LOS A	0.3	6.6	0.70	0.70	0.70	30.7
4	T1	300	2.0	326	2.0	0.883	48.9	LOS E	8.9	226.2	0.94	1.48	2.87	21.0
14	R2	60	2.0	65	2.0	0.883	48.9	LOS E	8.9	226.2	0.94	1.48	2.87	20.6
Approach		390	2.0	426	2.0	0.883	45.7	LOS E	8.9	226.2	0.92	1.41	2.69	21.5
West: EB Farnam St														
5	L2	30	2.0	33	2.0	0.246	7.2	LOS A	1.0	24.3	0.54	0.52	0.54	33.8
2	T1	150	2.0	163	2.0	0.246	7.2	LOS A	1.0	24.3	0.54	0.52	0.54	33.7
12a	R1	495	2.0	538	2.0	0.746	19.0	LOS C	9.7	247.1	0.82	1.17	1.76	28.8
12	R2	100	2.0	109	2.0	0.746	19.0	LOS C	9.7	247.1	0.82	1.17	1.76	28.3
Approach		775	2.0	842	2.0	0.746	16.3	LOS C	9.7	247.1	0.75	1.02	1.47	29.8
All Vehicles		2765	2.0	3012	2.0	0.883	18.2	LOS C	9.7	247.1	0.73	0.96	1.43	29.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 323 [p2040 Alt 2 ML (Site Folder: General)]

42nd St & Farnam St / Harney St
2040 PM Alt 2
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 42nd St														
3	L2	170	2.0	185	2.0	0.287	9.3	LOS A	1.1	27.8	0.63	0.63	0.63	30.9
8	T1	415	2.0	451	2.0	0.722	20.6	LOS C	6.8	174.0	0.83	1.13	1.76	28.5
18	R2	60	2.0	65	2.0	0.722	20.6	LOS C	6.8	174.0	0.83	1.13	1.76	27.8
18b	R3	75	2.0	82	2.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	36.7
Approach		720	2.0	783	2.0	0.722	15.8	LOS C	6.8	174.0	0.69	0.89	1.31	29.6
East: WB Farnam St														
1b	L3	15	2.0	16	2.0	0.872	34.2	LOS D	13.9	354.1	0.95	1.55	2.74	24.3
1	L2	125	2.0	136	2.0	0.872	34.2	LOS D	13.9	354.1	0.95	1.55	2.74	24.1
6	T1	1010	2.0	1098	2.0	0.872	32.8	LOS D	14.7	373.1	0.95	1.56	2.75	24.6
16	R2	25	2.0	30	2.0	0.872	31.9	LOS D	14.7	373.1	0.95	1.56	2.75	24.4
Approach		1175	2.0	1280	2.0	0.872	33.0	LOS D	14.7	373.1	0.95	1.55	2.74	24.5
North: SB 42nd St														
7	L2	15	2.0	18	2.0	0.079	11.0	LOS B	0.3	6.5	0.75	0.75	0.75	32.1
7a	L1	10	2.0	11	2.0	0.079	11.0	LOS B	0.3	6.5	0.75	0.75	0.75	30.0
4	T1	235	2.0	255	2.0	0.798	43.1	LOS E	5.5	140.3	0.93	1.28	2.25	22.2
14	R2	35	2.0	38	2.0	0.798	43.1	LOS E	5.5	140.3	0.93	1.28	2.25	21.7
Approach		295	2.0	322	2.0	0.798	40.2	LOS E	5.5	140.3	0.91	1.23	2.11	22.7
West: EB Farnam St														
5	L2	30	2.0	33	2.0	0.264	7.1	LOS A	1.1	26.8	0.52	0.47	0.52	33.9
2	T1	175	2.0	190	2.0	0.264	7.1	LOS A	1.1	26.8	0.52	0.47	0.52	33.8
12a	R1	445	2.0	484	2.0	0.658	14.4	LOS B	7.0	178.2	0.72	0.94	1.31	30.6
12	R2	110	2.0	120	2.0	0.658	14.4	LOS B	7.0	178.2	0.72	0.94	1.31	30.0
Approach		760	2.0	826	2.0	0.658	12.4	LOS B	7.0	178.2	0.67	0.81	1.09	31.3
All Vehicles		2950	2.0	3211	2.0	0.872	24.2	LOS C	14.7	373.1	0.81	1.17	1.91	26.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 323 [a2040 Alt 4 Peanut (Site Folder: General)]

42nd St & Farnam St / Harney St
2040 AM Alt 4 Peanut
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 42nd St														
3	L2	110	2.0	120	2.0	0.190	8.0	LOS A	0.7	17.4	0.61	0.61	0.61	31.4
8	T1	250	2.0	272	2.0	0.505	12.8	LOS B	2.9	74.7	0.71	0.83	1.10	31.1
18	R2	75	2.0	82	2.0	0.505	12.8	LOS B	2.9	74.7	0.71	0.83	1.10	30.4
18b	R3	100	2.0	109	2.0	0.173	7.8	LOS A	0.6	15.7	0.60	0.60	0.60	32.6
Approach		535	2.0	582	2.0	0.505	10.9	LOS B	2.9	74.7	0.67	0.74	0.90	31.3
East: WB Farnam St														
1b	L3	10	2.0	11	2.0	0.642	14.5	LOS B	6.6	168.0	0.73	0.93	1.27	30.7
1	L2	125	2.0	136	2.0	0.642	14.5	LOS B	6.6	168.0	0.73	0.93	1.27	30.1
6	T1	890	2.0	967	2.0	0.642	14.0	LOS B	6.7	170.5	0.72	0.91	1.25	30.7
16	R2	40	2.0	48	2.0	0.642	13.6	LOS B	6.7	170.5	0.71	0.90	1.23	29.8
Approach		1065	2.0	1162	2.0	0.642	14.0	LOS B	6.7	170.5	0.72	0.91	1.25	30.6
North: SB 42nd St														
7	L2	15	2.0	18	2.0	0.083	9.8	LOS A	0.3	6.8	0.70	0.70	0.70	32.6
7a	L1	15	2.0	16	2.0	0.083	9.8	LOS A	0.3	6.8	0.70	0.70	0.70	30.7
4	T1	300	2.0	326	2.0	0.819	37.5	LOS E	6.9	174.6	0.91	1.31	2.36	23.5
14	R2	60	2.0	65	2.0	0.819	37.5	LOS E	6.9	174.6	0.91	1.31	2.36	23.2
Approach		390	2.0	426	2.0	0.819	35.3	LOS E	6.9	174.6	0.89	1.26	2.23	24.0
West: EB Farnam St														
5	L2	30	2.0	33	2.0	0.246	7.2	LOS A	1.0	24.3	0.54	0.52	0.54	33.1
2	T1	150	2.0	163	2.0	0.246	7.2	LOS A	1.0	24.3	0.54	0.52	0.54	33.3
12a	R1	495	2.0	538	2.0	0.746	19.0	LOS C	9.7	247.1	0.82	1.17	1.76	28.8
12	R2	100	2.0	109	2.0	0.746	19.0	LOS C	9.7	247.1	0.82	1.17	1.76	27.8
Approach		775	2.0	842	2.0	0.746	16.3	LOS C	9.7	247.1	0.75	1.02	1.47	29.6
All Vehicles		2765	2.0	3012	2.0	0.819	17.1	LOS C	9.7	247.1	0.74	0.96	1.38	29.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

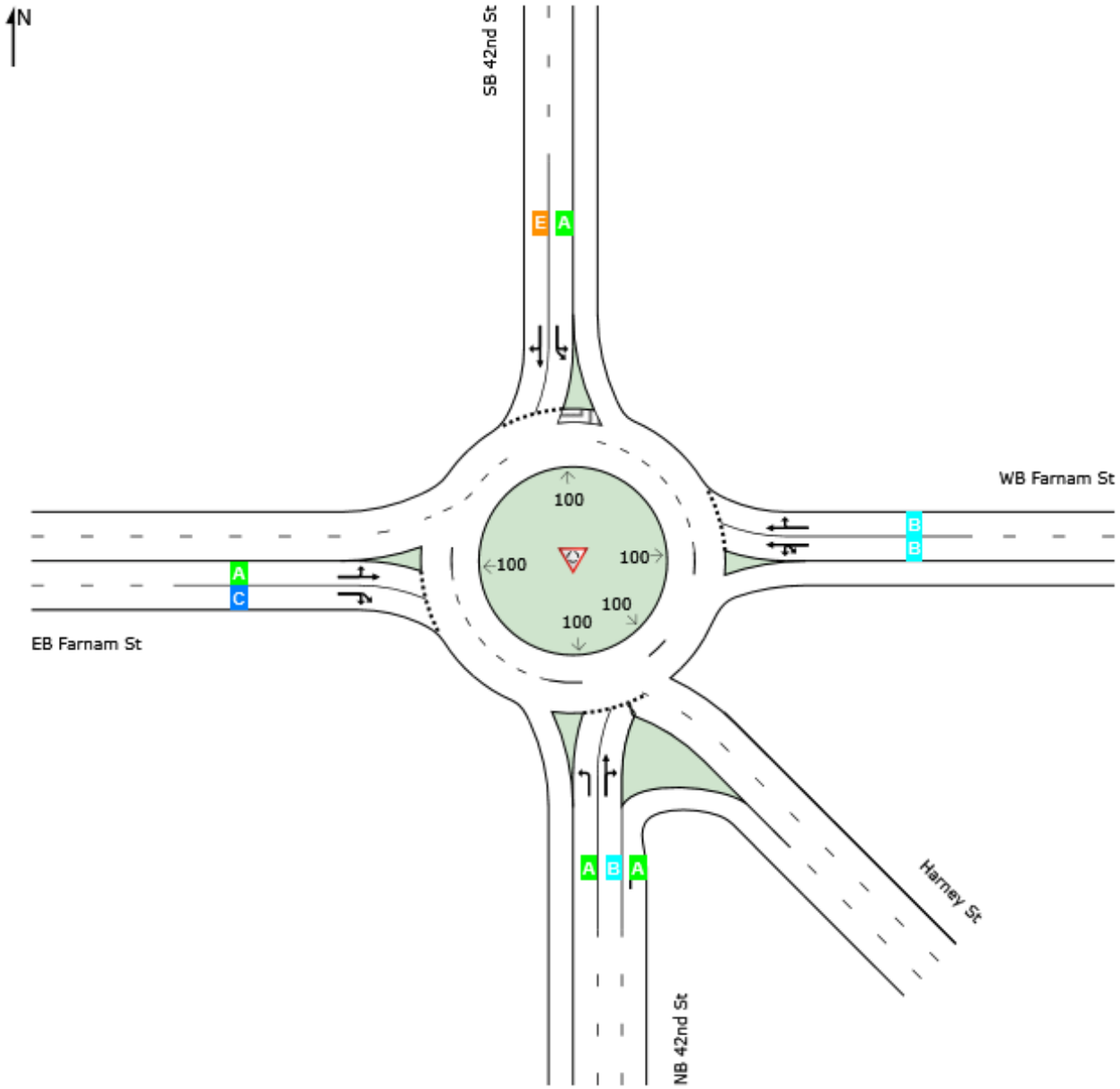
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 323 [a2040 Alt 2 ML (Site Folder: General)]

42nd St & Farnam St / Harney St
2040 AM Alt 2
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	A	B	E	C	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

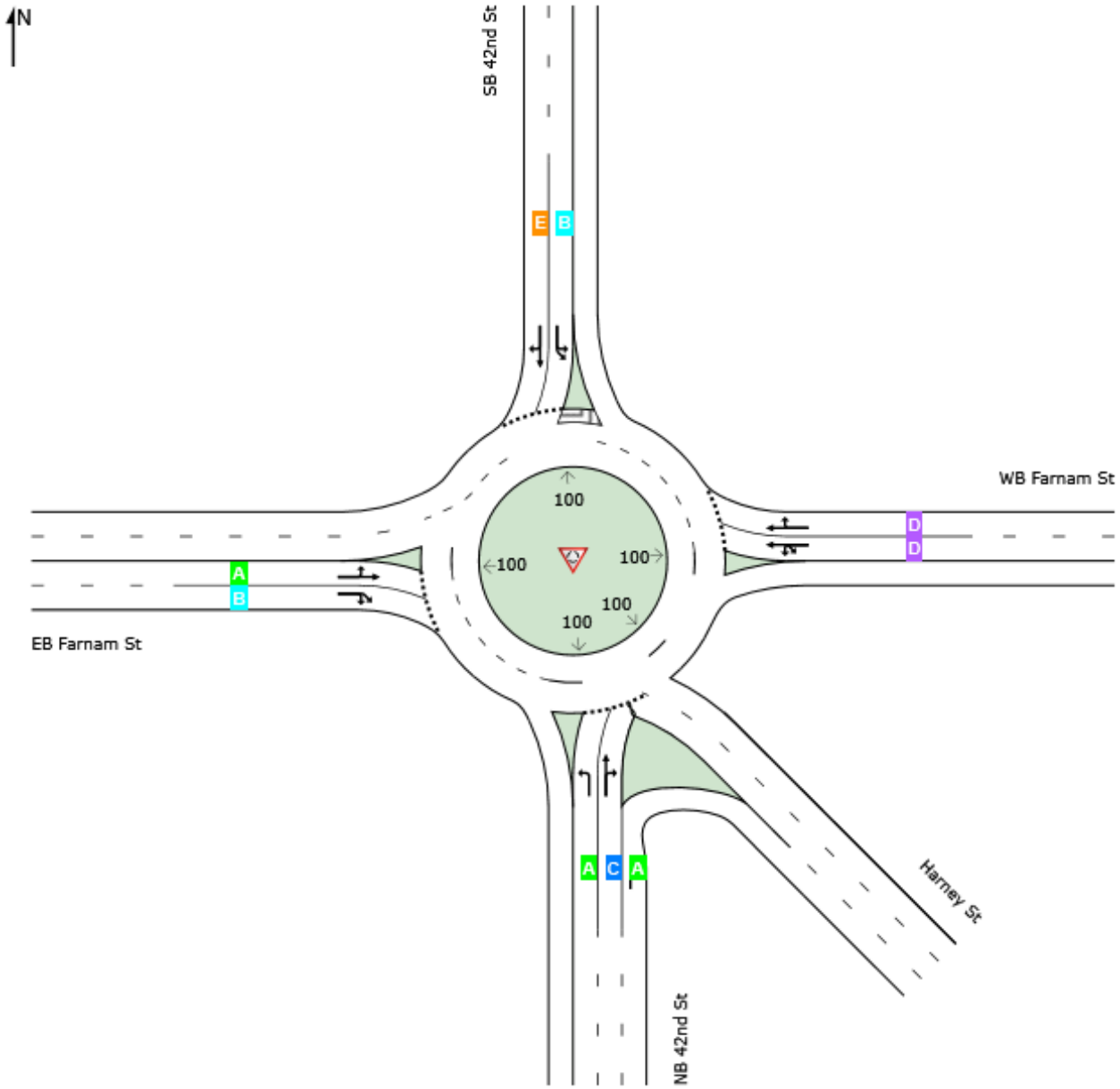
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 323 [p2040 Alt 2 ML (Site Folder: General)]

42nd St & Farnam St / Harney St
2040 PM Alt 2
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	C	D	E	B	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

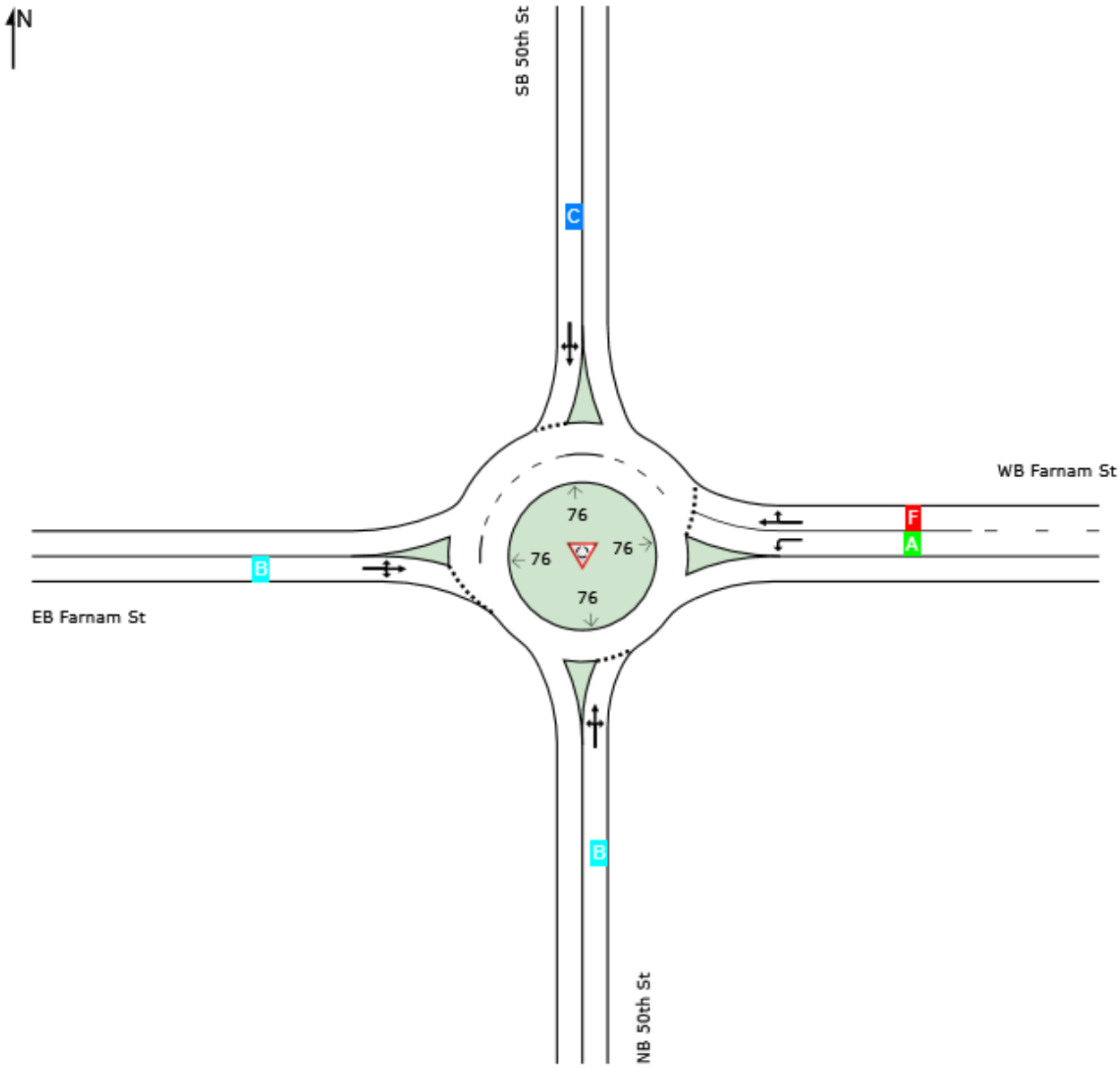
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 362 [p2040 1+WBLT (Site Folder: General)]

50th St & Farnam St
2040 PM 1 lane + WBLT
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	F	C	B	D



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

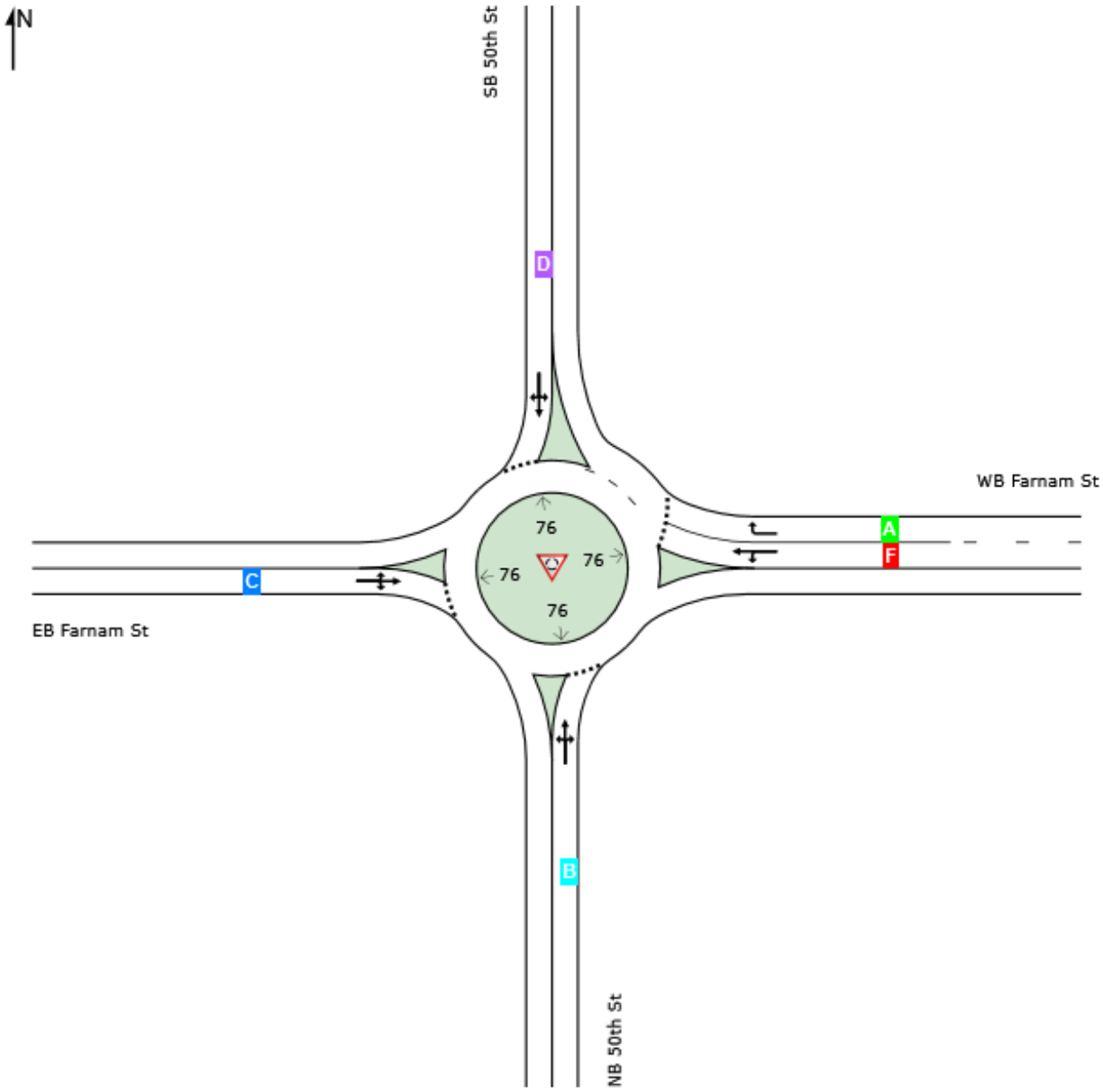
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 362 [p2040 1+WBRT (Site Folder: General)]

50th St & Farnam St
2040 PM 1 lane + WBRT
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	E	D	C	D



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

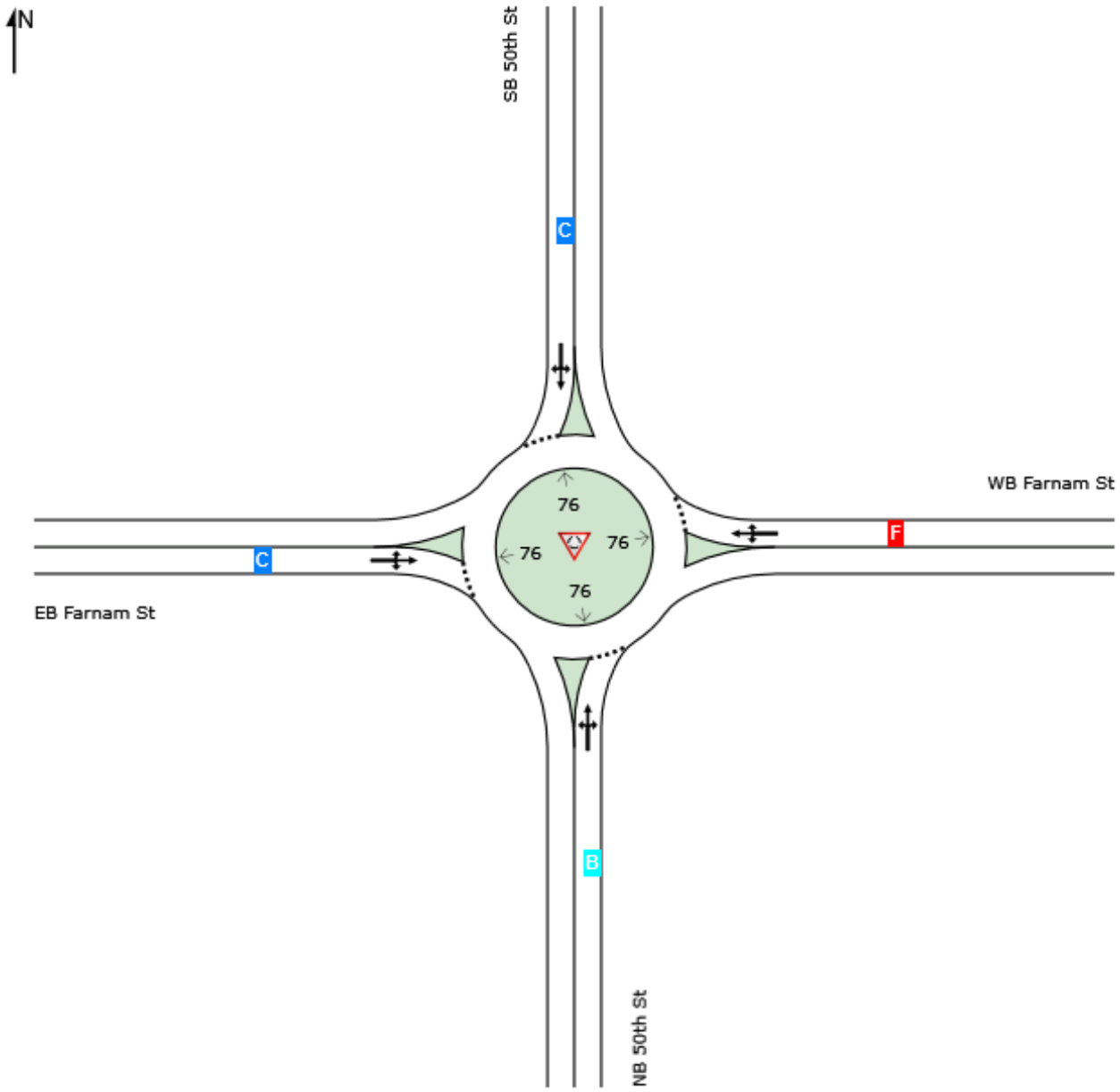
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 362 [p2040 1 (Site Folder: General)]

50th St & Farnam St
2040 PM 1 lane
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	F	C	C	F



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

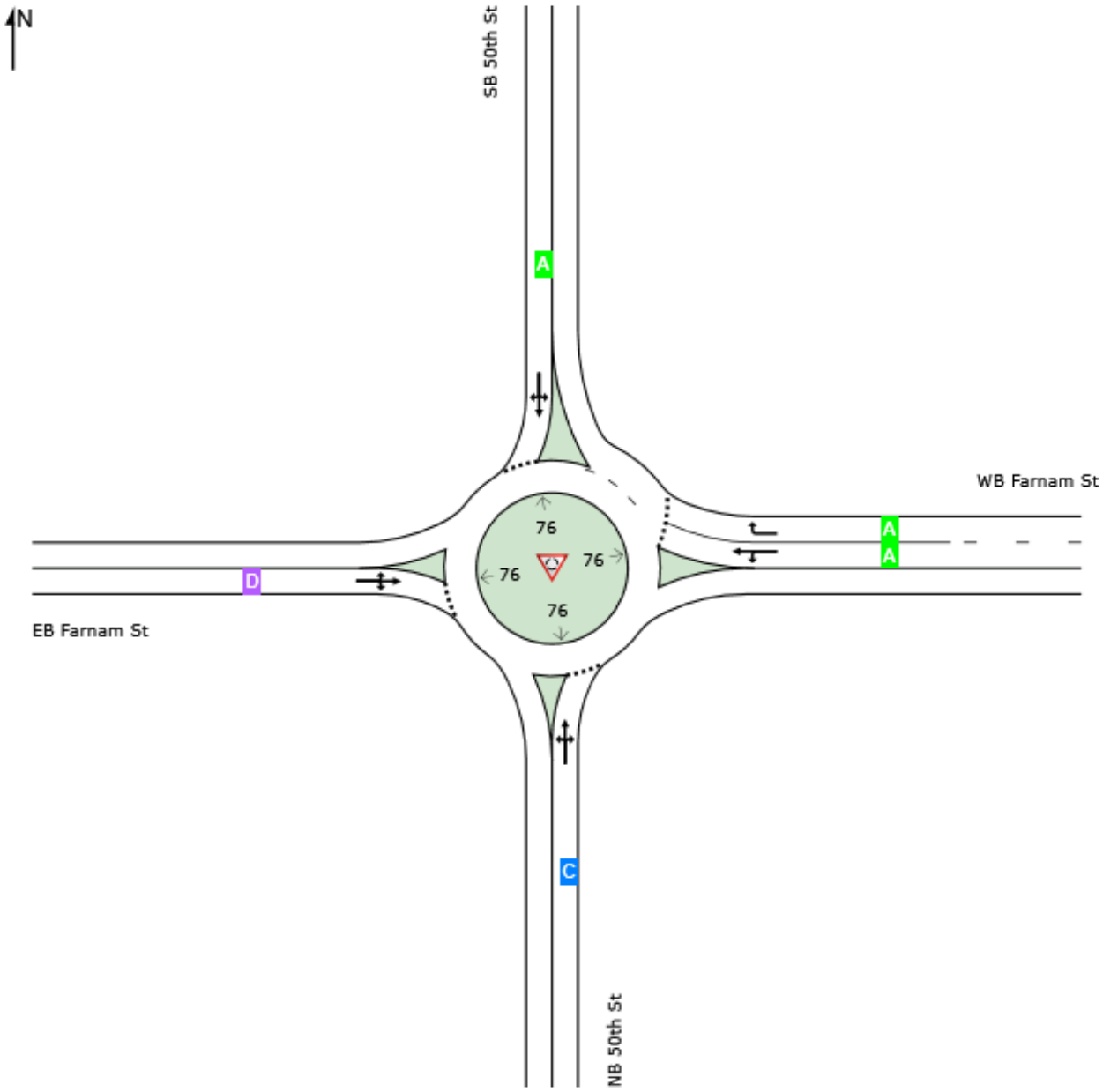
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 362 [a2040 1+WBRT (Site Folder: General)]

50th St & Farnam St
2040 AM 1 lane + WBRT
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	C	A	A	D	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

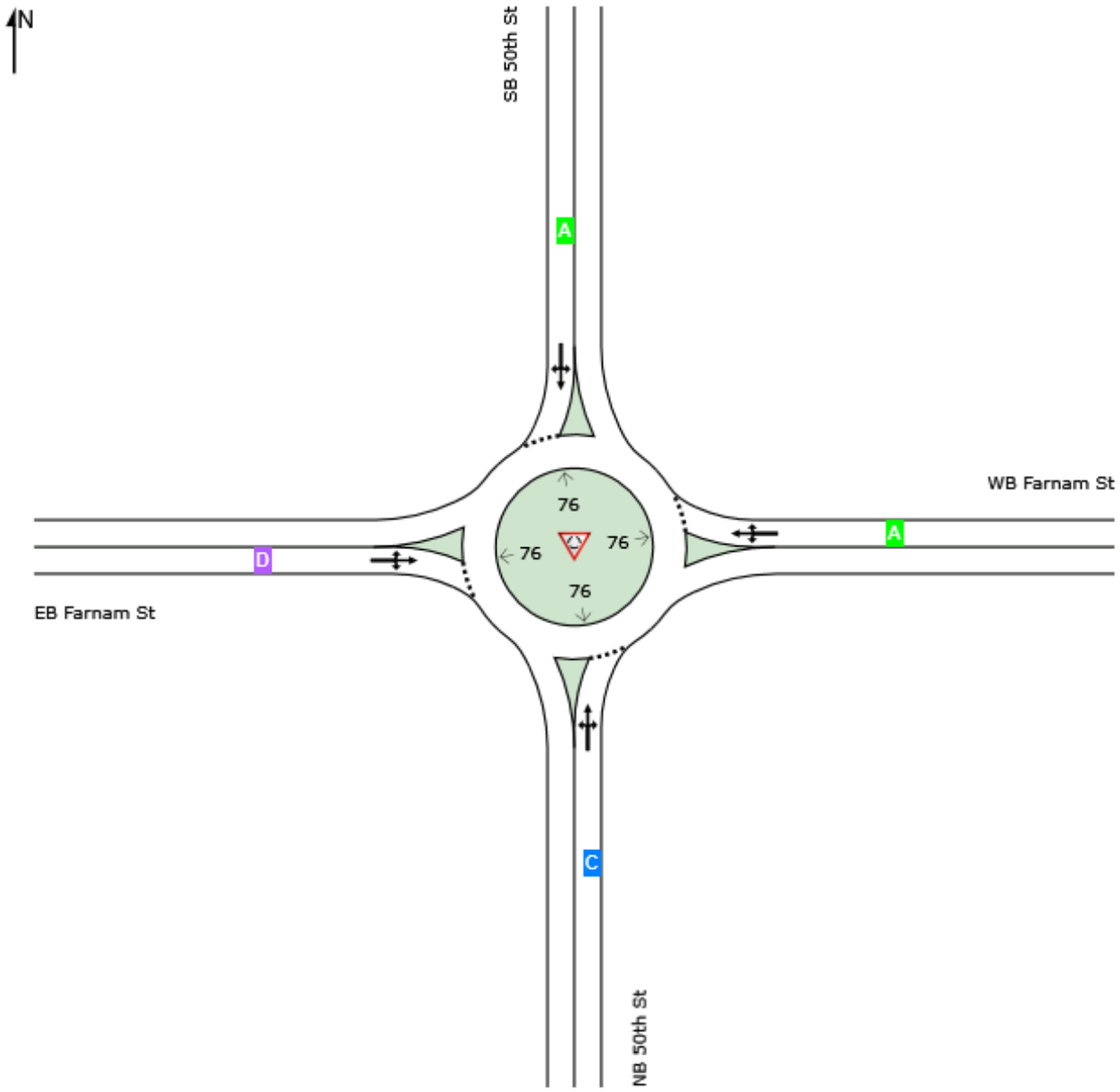
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 362 [a2040 1 (Site Folder: General)]

50th St & Farnam St
2040 AM 1 lane
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	C	A	A	D	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

MOVEMENT SUMMARY

Site: 362 [p2040 1+WBLT (Site Folder: General)]

50th St & Farnam St
2040 PM 1 lane + WBLT
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 50th St														
3	L2	35	2.0	38	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.5
8	T1	315	2.0	342	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.6
18	R2	15	2.0	16	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	29.9
Approach		365	2.0	397	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.6
East: WB Farnam St														
1	L2	75	2.0	82	2.0	0.090	4.8	LOS A	0.3	8.5	0.47	0.38	0.47	32.2
6	T1	755	2.0	821	2.0	1.041	62.4	LOS F	47.9	1217.5	1.00	2.51	4.82	18.4
16	R2	100	2.0	120	2.0	1.041	62.4	LOS F	47.9	1217.5	1.00	2.51	4.82	18.2
Approach		930	2.0	1023	2.0	1.041	57.8	LOS F	47.9	1217.5	0.96	2.34	4.48	19.0
North: SB 50th St														
7	L2	20	2.0	24	2.0	0.608	17.2	LOS C	4.0	101.5	0.77	0.96	1.39	30.7
4	T1	290	2.0	315	2.0	0.608	17.2	LOS C	4.0	101.5	0.77	0.96	1.39	28.8
14	R2	40	2.0	43	2.0	0.608	17.2	LOS C	4.0	101.5	0.77	0.96	1.39	28.2
Approach		350	2.0	383	2.0	0.608	17.2	LOS C	4.0	101.5	0.77	0.96	1.39	28.9
West: EB Farnam St														
5	L2	55	2.0	60	2.0	0.647	13.5	LOS B	7.1	179.5	0.73	0.91	1.25	30.4
2	T1	480	2.0	522	2.0	0.647	13.5	LOS B	7.1	179.5	0.73	0.91	1.25	30.4
12	R2	40	2.0	43	2.0	0.647	13.5	LOS B	7.1	179.5	0.73	0.91	1.25	29.7
Approach		575	2.0	625	2.0	0.647	13.5	LOS B	7.1	179.5	0.73	0.91	1.25	30.4
All Vehicles		2220	2.0	2427	2.0	1.041	32.8	LOS D	47.9	1217.5	0.84	1.52	2.62	24.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 362 [p2040 1+WBRT (Site Folder: General)]

50th St & Farnam St
2040 PM 1 lane + WBRT
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 50th St														
3	L2	35	2.0	38	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.2
8	T1	315	2.0	342	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.3
18	R2	15	2.0	16	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	29.6
Approach		365	2.0	397	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.3
East: WB Farnam St														
1	L2	75	2.0	82	2.0	0.998	50.8	LOS F	38.8	984.8	1.00	2.23	4.12	20.2
6	T1	755	2.0	821	2.0	0.998	50.8	LOS F	38.8	984.8	1.00	2.23	4.12	20.2
16	R2	100	2.0	120	2.0	0.133	5.3	LOS A	0.5	13.0	0.48	0.40	0.48	33.3
Approach		930	2.0	1023	2.0	0.998	45.4	LOS E	38.8	984.8	0.94	2.01	3.69	21.2
North: SB 50th St														
7	L2	20	2.0	24	2.0	0.753	29.3	LOS D	6.4	163.5	0.88	1.20	1.95	26.4
4	T1	290	2.0	315	2.0	0.753	29.3	LOS D	6.4	163.5	0.88	1.20	1.95	25.1
14	R2	40	2.0	43	2.0	0.753	29.3	LOS D	6.4	163.5	0.88	1.20	1.95	24.6
Approach		350	2.0	383	2.0	0.753	29.3	LOS D	6.4	163.5	0.88	1.20	1.95	25.1
West: EB Farnam St														
5	L2	55	2.0	60	2.0	0.716	17.4	LOS C	9.9	250.4	0.85	1.13	1.59	28.8
2	T1	480	2.0	522	2.0	0.716	17.4	LOS C	9.9	250.4	0.85	1.13	1.59	28.9
12	R2	40	2.0	43	2.0	0.716	17.4	LOS C	9.9	250.4	0.85	1.13	1.59	28.3
Approach		575	2.0	625	2.0	0.716	17.4	LOS C	9.9	250.4	0.85	1.13	1.59	28.8
All Vehicles		2220	2.0	2427	2.0	0.998	30.5	LOS D	38.8	984.8	0.88	1.48	2.46	24.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 362 [p2040 1 (Site Folder: General)]

50th St & Farnam St
2040 PM 1 lane
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 50th St														
3	L2	35	2.0	38	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.2
8	T1	315	2.0	342	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.3
18	R2	15	2.0	16	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	29.6
Approach		365	2.0	397	2.0	0.551	13.7	LOS B	4.1	103.9	0.77	0.91	1.18	30.3
East: WB Farnam St														
1	L2	75	2.0	82	2.0	1.200	120.0	LOS F	81.8	2077.9	1.00	3.50	7.43	12.5
6	T1	755	2.0	821	2.0	1.200	120.0	LOS F	81.8	2077.9	1.00	3.50	7.43	12.5
16	R2	100	2.0	120	2.0	1.200	120.0	LOS F	81.8	2077.9	1.00	3.50	7.43	12.4
Approach		930	2.0	1023	2.0	1.200	120.0	LOS F	81.8	2077.9	1.00	3.50	7.43	12.5
North: SB 50th St														
7	L2	20	2.0	24	2.0	0.649	19.9	LOS C	5.0	127.4	0.83	1.05	1.53	29.7
4	T1	290	2.0	315	2.0	0.649	19.9	LOS C	5.0	127.4	0.83	1.05	1.53	28.0
14	R2	40	2.0	43	2.0	0.649	19.9	LOS C	5.0	127.4	0.83	1.05	1.53	27.5
Approach		350	2.0	383	2.0	0.649	19.9	LOS C	5.0	127.4	0.83	1.05	1.53	28.1
West: EB Farnam St														
5	L2	55	2.0	60	2.0	0.706	16.7	LOS C	9.6	244.0	0.84	1.10	1.53	29.1
2	T1	480	2.0	522	2.0	0.706	16.7	LOS C	9.6	244.0	0.84	1.10	1.53	29.1
12	R2	40	2.0	43	2.0	0.706	16.7	LOS C	9.6	244.0	0.84	1.10	1.53	28.5
Approach		575	2.0	625	2.0	0.706	16.7	LOS C	9.6	244.0	0.84	1.10	1.53	29.1
All Vehicles		2220	2.0	2427	2.0	1.200	60.2	LOS F	81.8	2077.9	0.89	2.07	3.96	18.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 362 [a2040 1+WBRT (Site Folder: General)]

50th St & Farnam St
2040 AM 1 lane + WBRT
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 50th St														
3	L2	35	2.0	38	2.0	0.541	15.9	LOS C	3.4	87.1	0.78	0.93	1.25	29.3
8	T1	195	2.0	212	2.0	0.541	15.9	LOS C	3.4	87.1	0.78	0.93	1.25	29.4
18	R2	60	2.0	65	2.0	0.541	15.9	LOS C	3.4	87.1	0.78	0.93	1.25	28.7
Approach		290	2.0	315	2.0	0.541	15.9	LOS C	3.4	87.1	0.78	0.93	1.25	29.2
East: WB Farnam St														
1	L2	40	2.0	43	2.0	0.451	8.6	LOS A	2.4	60.8	0.53	0.43	0.53	32.5
6	T1	390	2.0	424	2.0	0.451	8.6	LOS A	2.4	60.8	0.53	0.43	0.53	32.6
16	R2	25	2.0	30	2.0	0.029	3.7	LOS A	0.1	2.7	0.37	0.23	0.37	34.1
Approach		455	2.0	498	2.0	0.451	8.3	LOS A	2.4	60.8	0.52	0.42	0.52	32.6
North: SB 50th St														
7	L2	45	2.0	54	2.0	0.387	9.3	LOS A	2.0	51.3	0.65	0.66	0.71	34.3
4	T1	210	2.0	228	2.0	0.387	9.3	LOS A	2.0	51.3	0.65	0.66	0.71	32.1
14	R2	25	2.0	27	2.0	0.387	9.3	LOS A	2.0	51.3	0.65	0.66	0.71	31.3
Approach		280	2.0	310	2.0	0.387	9.3	LOS A	2.0	51.3	0.65	0.66	0.71	32.4
West: EB Farnam St														
5	L2	35	2.0	38	2.0	0.857	25.6	LOS D	23.0	584.8	1.00	1.49	2.31	26.1
2	T1	660	2.0	717	2.0	0.857	25.6	LOS D	23.0	584.8	1.00	1.49	2.31	26.2
12	R2	65	2.0	71	2.0	0.857	25.6	LOS D	23.0	584.8	1.00	1.49	2.31	25.7
Approach		760	2.0	826	2.0	0.857	25.6	LOS D	23.0	584.8	1.00	1.49	2.31	26.1
All Vehicles		1785	2.0	1948	2.0	0.857	17.0	LOS C	23.0	584.8	0.79	0.99	1.43	29.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 362 [a2040 1 (Site Folder: General)]

50th St & Farnam St
2040 AM 1 lane
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 50th St														
3	L2	35	2.0	38	2.0	0.541	15.9	LOS C	3.4	87.1	0.78	0.93	1.25	29.3
8	T1	195	2.0	212	2.0	0.541	15.9	LOS C	3.4	87.1	0.78	0.93	1.25	29.4
18	R2	60	2.0	65	2.0	0.541	15.9	LOS C	3.4	87.1	0.78	0.93	1.25	28.7
Approach		290	2.0	315	2.0	0.541	15.9	LOS C	3.4	87.1	0.78	0.93	1.25	29.2
East: WB Farnam St														
1	L2	40	2.0	43	2.0	0.498	9.6	LOS A	3.2	82.5	0.61	0.52	0.64	32.0
6	T1	390	2.0	424	2.0	0.498	9.6	LOS A	3.2	82.5	0.61	0.52	0.64	32.1
16	R2	25	2.0	30	2.0	0.498	9.6	LOS A	3.2	82.5	0.61	0.52	0.64	31.3
Approach		455	2.0	498	2.0	0.498	9.6	LOS A	3.2	82.5	0.61	0.52	0.64	32.0
North: SB 50th St														
7	L2	45	2.0	54	2.0	0.387	9.3	LOS A	2.0	51.3	0.65	0.66	0.71	34.3
4	T1	210	2.0	228	2.0	0.387	9.3	LOS A	2.0	51.3	0.65	0.66	0.71	32.1
14	R2	25	2.0	27	2.0	0.387	9.3	LOS A	2.0	51.3	0.65	0.66	0.71	31.3
Approach		280	2.0	310	2.0	0.387	9.3	LOS A	2.0	51.3	0.65	0.66	0.71	32.4
West: EB Farnam St														
5	L2	35	2.0	38	2.0	0.857	25.6	LOS D	23.0	584.8	1.00	1.49	2.31	26.1
2	T1	660	2.0	717	2.0	0.857	25.6	LOS D	23.0	584.8	1.00	1.49	2.31	26.2
12	R2	65	2.0	71	2.0	0.857	25.6	LOS D	23.0	584.8	1.00	1.49	2.31	25.7
Approach		760	2.0	826	2.0	0.857	25.6	LOS D	23.0	584.8	1.00	1.49	2.31	26.1
All Vehicles		1785	2.0	1948	2.0	0.857	17.4	LOS C	23.0	584.8	0.81	1.02	1.46	28.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

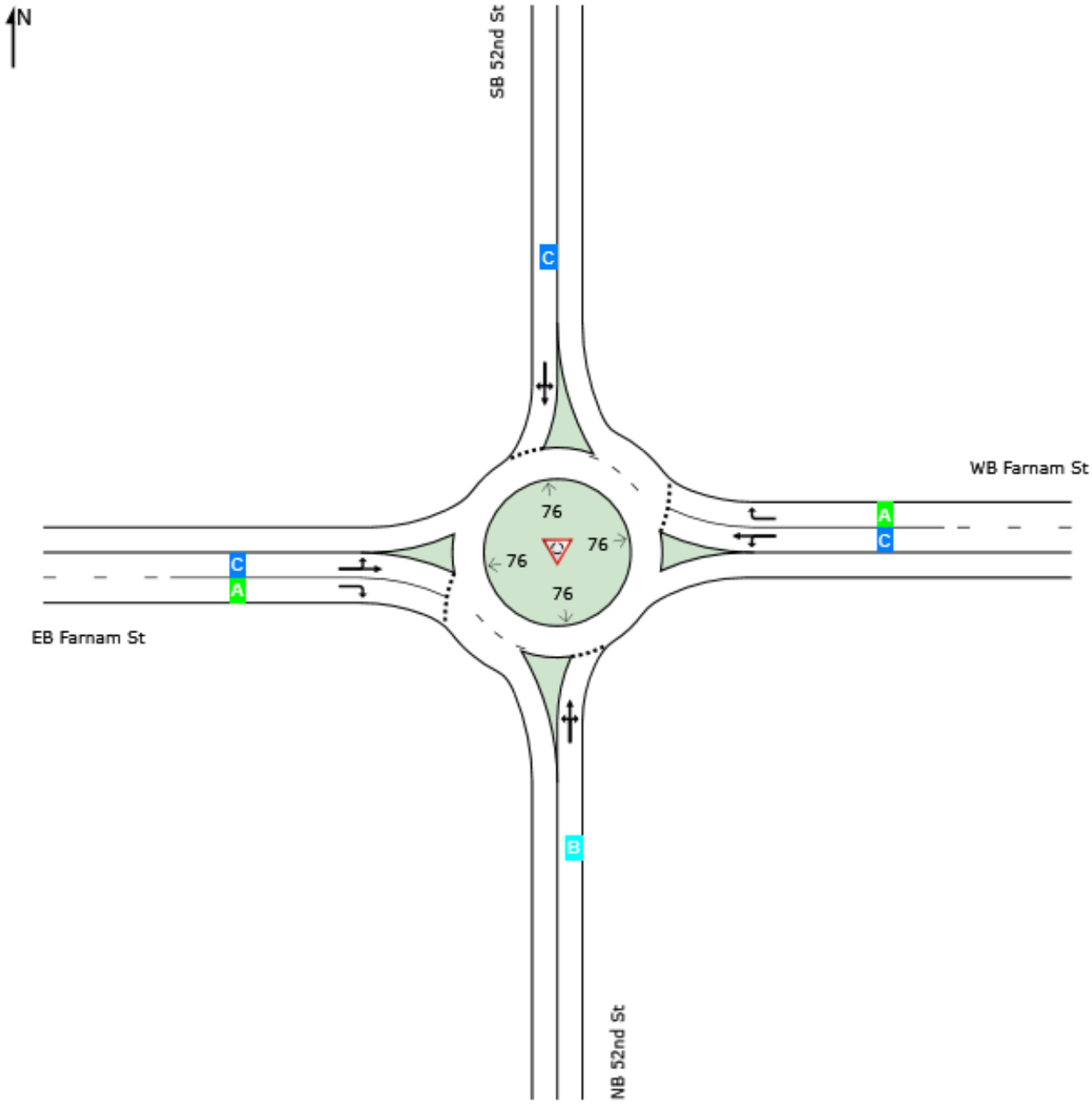
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 379 [p2040 1+EBRT WBRT (Site Folder: General)]

52nd St & Farnam St
2040 PM 1 lane + EBRT WBRT
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	C	C	B	C



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

MOVEMENT SUMMARY

Site: 379 [a2040 1 (Site Folder: General)]

52nd St & Farnam St
2040 AM 1 lane
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 52nd St														
3	L2	20	2.0	22	2.0	0.410	12.4	LOS B	2.1	53.2	0.73	0.81	0.96	30.8
8	T1	165	2.0	179	2.0	0.410	12.4	LOS B	2.1	53.2	0.73	0.81	0.96	30.8
18	R2	35	2.0	38	2.0	0.410	12.4	LOS B	2.1	53.2	0.73	0.81	0.96	30.1
Approach		220	2.0	239	2.0	0.410	12.4	LOS B	2.1	53.2	0.73	0.81	0.96	30.7
East: WB Farnam St														
1	L2	15	2.0	16	2.0	0.460	8.5	LOS A	2.8	71.7	0.53	0.40	0.53	32.7
6	T1	420	2.0	457	2.0	0.460	8.5	LOS A	2.8	71.7	0.53	0.40	0.53	32.7
16	R2	15	2.0	18	2.0	0.460	8.5	LOS A	2.8	71.7	0.53	0.40	0.53	32.0
Approach		450	2.0	491	2.0	0.460	8.5	LOS A	2.8	71.7	0.53	0.40	0.53	32.7
North: SB 52nd St														
7	L2	35	2.0	42	2.0	0.294	7.8	LOS A	1.4	34.3	0.61	0.58	0.61	35.1
4	T1	160	2.0	174	2.0	0.294	7.8	LOS A	1.4	34.3	0.61	0.58	0.61	32.7
14	R2	20	2.0	22	2.0	0.294	7.8	LOS A	1.4	34.3	0.61	0.58	0.61	32.0
Approach		215	2.0	238	2.0	0.294	7.8	LOS A	1.4	34.3	0.61	0.58	0.61	33.1
West: EB Farnam St														
5	L2	20	2.0	22	2.0	0.747	16.4	LOS C	14.7	373.3	0.82	0.92	1.36	29.3
2	T1	685	2.0	745	2.0	0.747	16.4	LOS C	14.7	373.3	0.82	0.92	1.36	29.4
12	R2	25	2.0	27	2.0	0.747	16.4	LOS C	14.7	373.3	0.82	0.92	1.36	28.8
Approach		730	2.0	793	2.0	0.747	16.4	LOS C	14.7	373.3	0.82	0.92	1.36	29.4
All Vehicles		1615	2.0	1761	2.0	0.747	12.5	LOS B	14.7	373.3	0.70	0.71	0.97	30.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 379 [a2040 1+EBRT WBRT (Site Folder: General)]

52nd St & Farnam St
2040 AM 1 lane + EBRT WBRT
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 52nd St														
3	L2	20	2.0	22	2.0	0.410	12.4	LOS B	2.1	53.2	0.73	0.81	0.96	30.8
8	T1	165	2.0	179	2.0	0.410	12.4	LOS B	2.1	53.2	0.73	0.81	0.96	30.8
18	R2	35	2.0	38	2.0	0.410	12.4	LOS B	2.1	53.2	0.73	0.81	0.96	30.1
Approach		220	2.0	239	2.0	0.410	12.4	LOS B	2.1	53.2	0.73	0.81	0.96	30.7
East: WB Farnam St														
1	L2	15	2.0	16	2.0	0.431	7.9	LOS A	2.3	58.6	0.47	0.35	0.47	32.9
6	T1	420	2.0	457	2.0	0.431	7.9	LOS A	2.3	58.6	0.47	0.35	0.47	33.0
16	R2	15	2.0	18	2.0	0.016	3.4	LOS A	0.1	1.5	0.32	0.17	0.32	34.3
Approach		450	2.0	491	2.0	0.431	7.7	LOS A	2.3	58.6	0.46	0.34	0.46	33.1
North: SB 52nd St														
7	L2	35	2.0	42	2.0	0.294	7.8	LOS A	1.4	34.3	0.61	0.58	0.61	35.1
4	T1	160	2.0	174	2.0	0.294	7.8	LOS A	1.4	34.3	0.61	0.58	0.61	32.7
14	R2	20	2.0	22	2.0	0.294	7.8	LOS A	1.4	34.3	0.61	0.58	0.61	32.0
Approach		215	2.0	238	2.0	0.294	7.8	LOS A	1.4	34.3	0.61	0.58	0.61	33.1
West: EB Farnam St														
5	L2	20	2.0	22	2.0	0.683	13.2	LOS B	9.7	245.7	0.69	0.70	1.01	30.6
2	T1	685	2.0	745	2.0	0.683	13.2	LOS B	9.7	245.7	0.69	0.70	1.01	30.6
12	R2	25	2.0	27	2.0	0.024	3.4	LOS A	0.1	2.3	0.33	0.18	0.33	34.3
Approach		730	2.0	793	2.0	0.683	12.9	LOS B	9.7	245.7	0.68	0.68	0.99	30.7
All Vehicles		1615	2.0	1761	2.0	0.683	10.7	LOS B	9.7	245.7	0.62	0.59	0.79	31.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 379 [p2040 1 (Site Folder: General)]

52nd St & Farnam St
2040 PM 1 lane
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 52nd St														
3	L2	25	2.0	27	2.0	0.435	11.7	LOS B	2.4	62.0	0.72	0.80	0.96	31.1
8	T1	225	2.0	245	2.0	0.435	11.7	LOS B	2.4	62.0	0.72	0.80	0.96	31.1
18	R2	15	2.0	16	2.0	0.435	11.7	LOS B	2.4	62.0	0.72	0.80	0.96	30.4
Approach		265	2.0	288	2.0	0.435	11.7	LOS B	2.4	62.0	0.72	0.80	0.96	31.1
East: WB Farnam St														
1	L2	120	2.0	130	2.0	0.950	39.2	LOS E	35.8	908.3	1.00	1.87	3.17	22.5
6	T1	610	2.0	663	2.0	0.950	39.2	LOS E	35.8	908.3	1.00	1.87	3.17	22.5
16	R2	85	2.0	102	2.0	0.950	39.2	LOS E	35.8	908.3	1.00	1.87	3.17	22.2
Approach		815	2.0	896	2.0	0.950	39.2	LOS E	35.8	908.3	1.00	1.87	3.17	22.5
North: SB 52nd St														
7	L2	10	2.0	12	2.0	0.511	15.2	LOS C	3.1	77.9	0.77	0.90	1.18	31.7
4	T1	245	2.0	266	2.0	0.511	15.2	LOS C	3.1	77.9	0.77	0.90	1.18	29.8
14	R2	15	2.0	16	2.0	0.511	15.2	LOS C	3.1	77.9	0.77	0.90	1.18	29.2
Approach		270	2.0	295	2.0	0.511	15.2	LOS C	3.1	77.9	0.77	0.90	1.18	29.9
West: EB Farnam St														
5	L2	65	2.0	71	2.0	0.879	29.7	LOS D	22.0	557.9	1.00	1.64	2.60	24.9
2	T1	555	2.0	603	2.0	0.879	29.7	LOS D	22.0	557.9	1.00	1.64	2.60	24.9
12	R2	95	2.0	103	2.0	0.879	29.7	LOS D	22.0	557.9	1.00	1.64	2.60	24.5
Approach		715	2.0	777	2.0	0.879	29.7	LOS D	22.0	557.9	1.00	1.64	2.60	24.9
All Vehicles		2065	2.0	2256	2.0	0.950	29.3	LOS D	35.8	908.3	0.93	1.53	2.44	25.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 379 [p2040 1+EBRT WBRT (Site Folder: General)]

52nd St & Farnam St
2040 PM 1 lane + EBRT WBRT
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB 52nd St														
3	L2	25	2.0	27	2.0	0.435	11.7	LOS B	2.4	62.0	0.72	0.80	0.96	31.1
8	T1	225	2.0	245	2.0	0.435	11.7	LOS B	2.4	62.0	0.72	0.80	0.96	31.1
18	R2	15	2.0	16	2.0	0.435	11.7	LOS B	2.4	62.0	0.72	0.80	0.96	30.4
Approach		265	2.0	288	2.0	0.435	11.7	LOS B	2.4	62.0	0.72	0.80	0.96	31.1
East: WB Farnam St														
1	L2	120	2.0	130	2.0	0.804	20.7	LOS C	16.7	425.1	0.88	1.26	1.92	27.5
6	T1	610	2.0	663	2.0	0.804	20.7	LOS C	16.7	425.1	0.88	1.26	1.92	27.6
16	R2	85	2.0	102	2.0	0.104	4.6	LOS A	0.4	10.1	0.42	0.31	0.42	33.7
Approach		815	2.0	896	2.0	0.804	18.9	LOS C	16.7	425.1	0.83	1.15	1.75	28.1
North: SB 52nd St														
7	L2	10	2.0	12	2.0	0.511	15.2	LOS C	3.1	77.9	0.77	0.90	1.18	31.7
4	T1	245	2.0	266	2.0	0.511	15.2	LOS C	3.1	77.9	0.77	0.90	1.18	29.8
14	R2	15	2.0	16	2.0	0.511	15.2	LOS C	3.1	77.9	0.77	0.90	1.18	29.2
Approach		270	2.0	295	2.0	0.511	15.2	LOS C	3.1	77.9	0.77	0.90	1.18	29.9
West: EB Farnam St														
5	L2	65	2.0	71	2.0	0.707	15.9	LOS C	9.7	245.9	0.81	1.06	1.50	29.4
2	T1	555	2.0	603	2.0	0.707	15.9	LOS C	9.7	245.9	0.81	1.06	1.50	29.4
12	R2	95	2.0	103	2.0	0.108	4.8	LOS A	0.4	10.7	0.46	0.37	0.46	33.6
Approach		715	2.0	777	2.0	0.707	14.4	LOS B	9.7	245.9	0.76	0.97	1.36	29.9
All Vehicles		2065	2.0	2256	2.0	0.804	16.0	LOS C	16.7	425.1	0.79	1.01	1.44	29.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

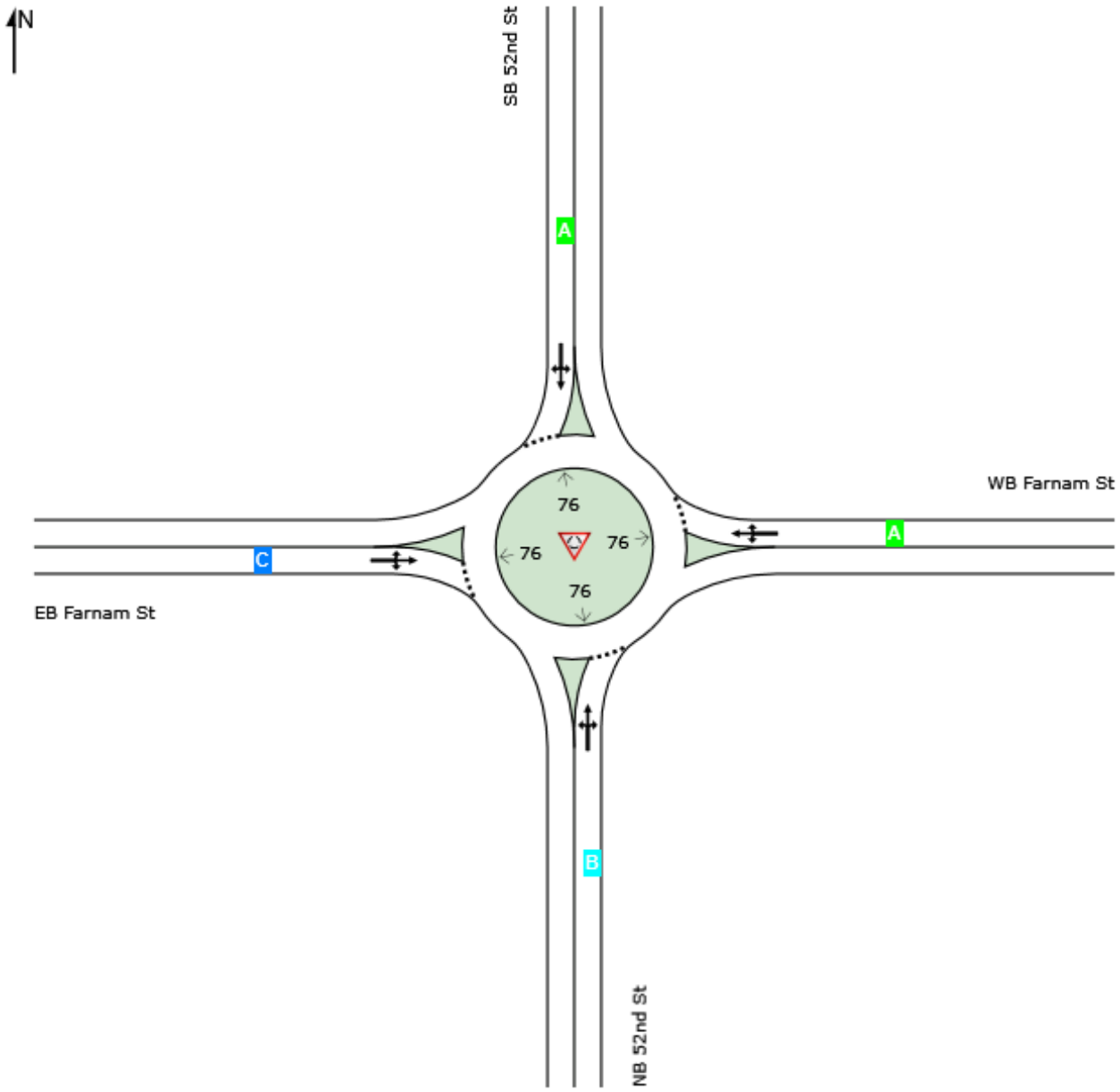
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 379 [a2040 1 (Site Folder: General)]

52nd St & Farnam St
2040 AM 1 lane
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	A	A	C	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

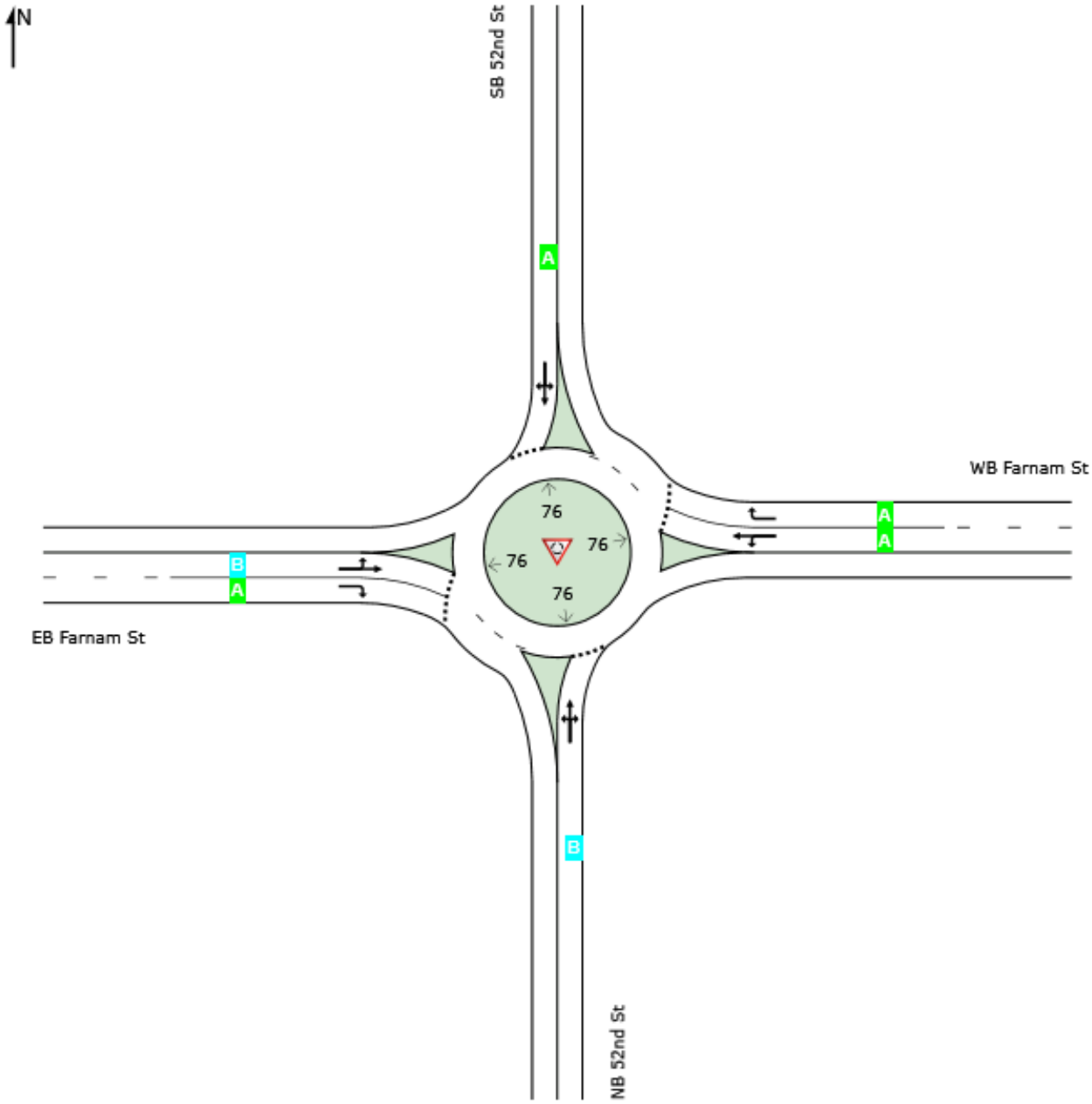
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 379 [a2040 1+EBRT WBRT (Site Folder: General)]

52nd St & Farnam St
2040 AM 1 lane + EBRT WBRT
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	A	A	B	B



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

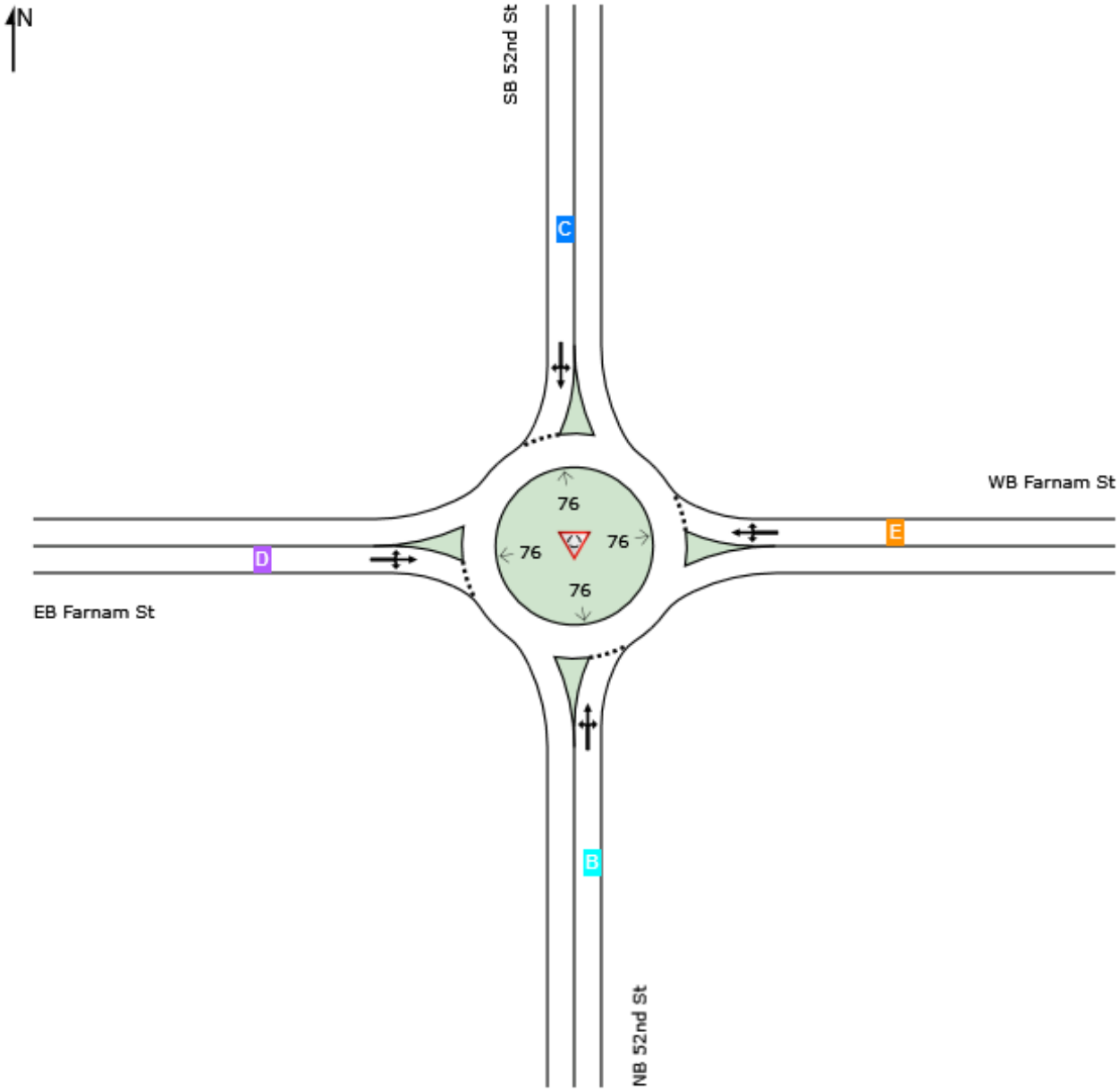
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 379 [p2040 1 (Site Folder: General)]

52nd St & Farnam St
2040 PM 1 lane
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	E	C	D	D



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

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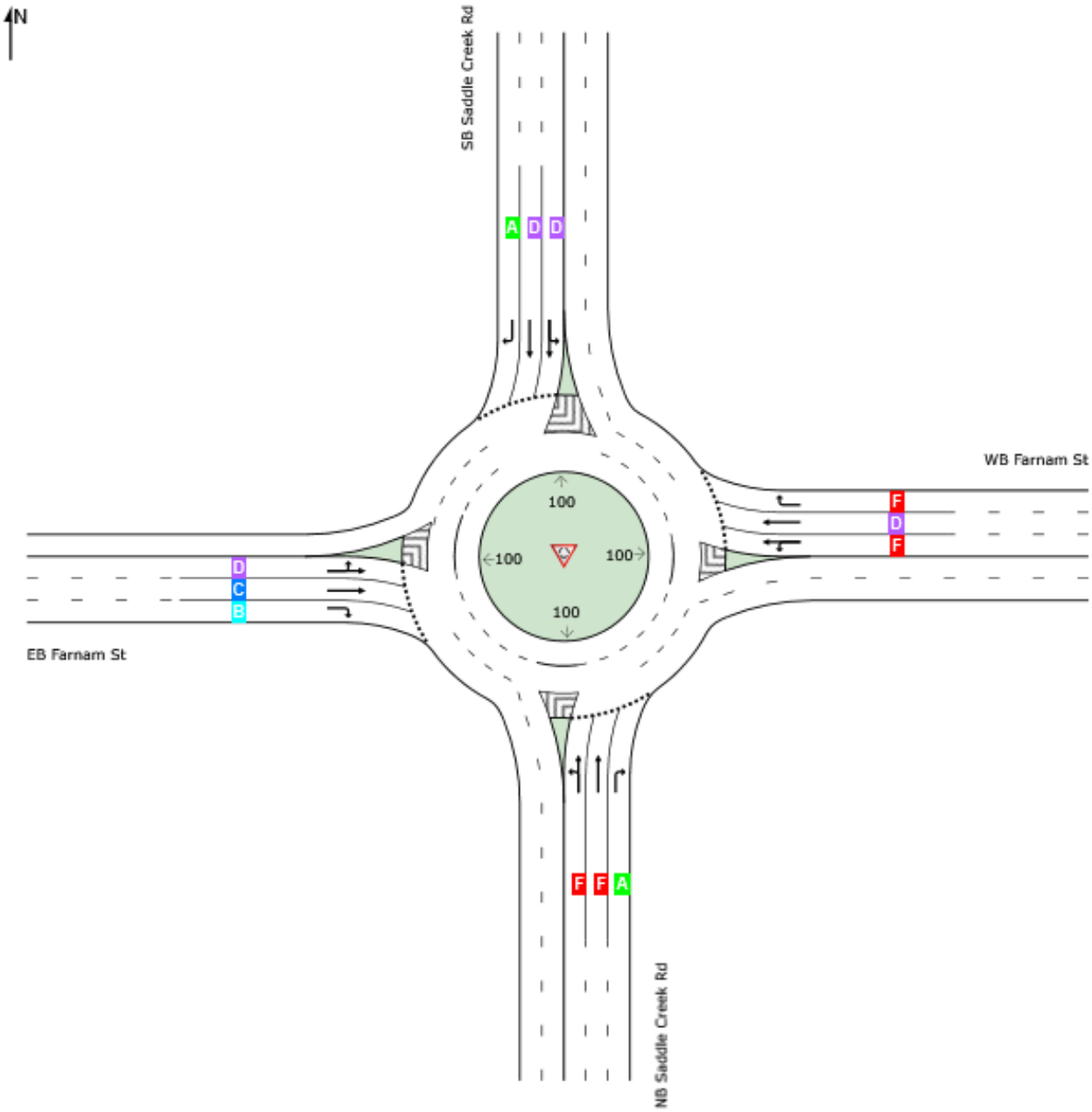
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 76 [p2040 Alt 4 (Site Folder: General)]

Farnam St & Saddle Creek Rd
2040 PM Alt 3
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	F	F	D	C	F



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

MOVEMENT SUMMARY

Site: 76 [a2040 Alt 3 (Site Folder: General)]

Farnam St & Saddle Creek Rd
2040 AM Alt 3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Saddle Creek Rd														
3	L2	50	2.0	54	2.0	0.709	21.3	LOS C	6.4	162.2	0.83	1.11	1.71	28.1
8	T1	623	2.0	677	2.0	0.709	20.6	LOS C	6.6	167.8	0.83	1.11	1.70	28.3
18	R2	228	2.0	248	2.0	0.709	19.6	LOS C	6.6	167.8	0.82	1.11	1.69	27.9
Approach		901	2.0	979	2.0	0.709	20.4	LOS C	6.6	167.8	0.82	1.11	1.70	28.2
East: WB Farnam St														
1	L2	284	2.0	309	2.0	1.143	102.9	LOS F	49.4	1253.8	1.00	3.15	7.71	14.0
6	T1	450	2.0	489	2.0	1.143	102.9	LOS F	49.4	1253.8	1.00	3.15	7.71	14.0
16	R2	150	2.0	181	2.0	0.288	9.5	LOS A	1.1	28.0	0.64	0.64	0.65	31.9
Approach		884	2.0	979	2.0	1.143	85.7	LOS F	49.4	1253.8	0.93	2.69	6.41	15.5
North: SB Saddle Creek Rd														
7	L2	260	2.0	313	2.0	1.186	119.8	LOS F	57.5	1459.9	1.00	3.41	8.40	13.0
4	T1	1105	2.0	1201	2.0	1.186	119.8	LOS F	57.5	1459.9	1.00	3.41	8.40	12.7
14	R2	97	2.0	105	2.0	1.186	119.8	LOS F	57.5	1459.9	1.00	3.41	8.40	12.6
Approach		1462	2.0	1620	2.0	1.186	119.8	LOS F	57.5	1459.9	1.00	3.41	8.40	12.7
West: EB Farnam St														
5	L2	62	2.0	67	2.0	1.171	141.8	LOS F	25.2	639.2	1.00	2.48	6.76	11.3
2	T1	452	2.0	491	2.0	1.171	139.0	LOS F	28.6	726.5	1.00	2.55	7.00	11.4
12	R2	215	2.0	234	2.0	1.171	134.7	LOS F	28.6	726.5	1.00	2.66	7.38	11.5
Approach		729	2.0	792	2.0	1.171	138.0	LOS F	28.6	726.5	1.00	2.58	7.09	11.5
All Vehicles		3976	2.0	4370	2.0	1.186	93.2	LOS F	57.5	1459.9	0.95	2.58	6.21	14.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 76 [p2040 Alt 3 (Site Folder: General)]

Farnam St & Saddle Creek Rd
2040 PM Alt 3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Saddle Creek Rd														
3	L2	150	2.0	163	2.0	1.268	152.6	LOS F	72.4	1840.2	1.00	3.90	9.92	10.8
8	T1	1293	2.0	1405	2.0	1.268	151.4	LOS F	79.4	2015.6	1.00	4.02	10.18	10.8
18	R2	192	2.0	209	2.0	1.268	150.2	LOS F	79.4	2015.6	1.00	4.12	10.42	10.7
Approach		1635	2.0	1777	2.0	1.268	151.4	LOS F	79.4	2015.6	1.00	4.02	10.18	10.8
East: WB Farnam St														
1	L2	366	2.0	398	2.0	2.512	707.7	LOS F	214.6	5450.6	1.00	6.92	22.89	3.0
6	T1	623	2.0	677	2.0	2.512	707.7	LOS F	214.6	5450.6	1.00	6.92	22.89	3.0
16	R2	300	2.0	361	2.0	0.979	75.6	LOS F	12.3	313.3	0.98	1.78	3.96	16.4
Approach		1289	2.0	1436	2.0	2.512	548.7	LOS F	214.6	5450.6	1.00	5.62	18.12	3.7
North: SB Saddle Creek Rd														
7	L2	165	2.0	199	2.0	0.833	26.3	LOS D	13.9	353.0	0.94	1.45	2.35	27.5
4	T1	899	2.0	977	2.0	0.833	26.3	LOS D	13.9	353.0	0.94	1.45	2.35	26.3
14	R2	170	2.0	185	2.0	0.833	26.3	LOS D	13.9	353.0	0.94	1.45	2.35	25.9
Approach		1234	2.0	1361	2.0	0.833	26.3	LOS D	13.9	353.0	0.94	1.45	2.35	26.4
West: EB Farnam St														
5	L2	105	2.0	114	2.0	0.733	35.0	LOS E	4.6	116.3	0.90	1.17	1.93	23.7
2	T1	370	2.0	402	2.0	0.733	32.8	LOS D	4.8	121.1	0.89	1.17	1.92	24.5
12	R2	80	2.0	87	2.0	0.733	31.2	LOS D	4.8	121.1	0.89	1.17	1.92	24.5
Approach		555	2.0	603	2.0	0.733	33.0	LOS D	4.8	121.1	0.89	1.17	1.92	24.3
All Vehicles		4713	2.0	5178	2.0	2.512	214.9	LOS F	214.6	5450.6	0.97	3.46	9.36	8.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 76 [p2040 Alt 4 (Site Folder: General)]

Farnam St & Saddle Creek Rd
2040 PM Alt 3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Saddle Creek Rd														
3	L2	150	2.0	163	2.0	1.119	95.7	LOS F	44.1	1120.0	1.00	2.90	6.83	14.7
8	T1	1293	2.0	1405	2.0	1.119	94.0	LOS F	48.0	1218.3	1.00	2.97	6.99	14.8
18	R2	192	2.0	209	2.0	0.314	9.4	LOS A	1.3	31.9	0.63	0.64	0.66	31.7
Approach		1635	2.0	1777	2.0	1.119	84.3	LOS F	48.0	1218.3	0.96	2.69	6.23	15.8
East: WB Farnam St														
1	L2	366	2.0	398	2.0	2.393	657.7	LOS F	172.2	4374.4	1.00	6.18	20.83	3.2
6	T1	623	2.0	677	2.0	2.393	483.0	LOS F	172.2	4374.4	0.97	4.76	15.46	4.2
16	R2	300	2.0	361	2.0	1.144	132.0	LOS F	23.2	588.1	1.00	2.39	6.40	11.5
Approach		1289	2.0	1436	2.0	2.393	443.1	LOS F	172.2	4374.4	0.98	4.56	14.67	4.5
North: SB Saddle Creek Rd														
7	L2	165	2.0	199	2.0	0.826	28.4	LOS D	11.1	281.7	0.92	1.39	2.35	26.8
4	T1	899	2.0	977	2.0	0.826	28.4	LOS D	11.1	281.7	0.92	1.39	2.35	25.8
14	R2	170	2.0	185	2.0	0.260	8.1	LOS A	1.0	25.9	0.62	0.62	0.62	32.4
Approach		1234	2.0	1361	2.0	0.826	25.6	LOS D	11.1	281.7	0.88	1.29	2.11	26.6
West: EB Farnam St														
5	L2	105	2.0	114	2.0	0.633	27.7	LOS D	3.3	85.0	0.87	1.06	1.59	25.5
2	T1	370	2.0	402	2.0	0.633	25.5	LOS D	3.5	87.7	0.86	1.05	1.58	26.6
12	R2	80	2.0	87	2.0	0.230	13.5	LOS B	0.8	19.6	0.77	0.77	0.77	30.0
Approach		555	2.0	603	2.0	0.633	24.2	LOS C	3.5	87.7	0.85	1.01	1.47	26.8
All Vehicles		4713	2.0	5178	2.0	2.393	161.4	LOS F	172.2	4374.4	0.93	2.64	6.93	10.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 76 [a2040 Alt 4 (Site Folder: General)]

Farnam St & Saddle Creek Rd
2040 AM Alt 3
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: NB Saddle Creek Rd														
3	L2	50	2.0	54	2.0	0.569	16.3	LOS C	3.6	91.2	0.76	0.92	1.29	29.9
8	T1	623	2.0	677	2.0	0.569	15.5	LOS C	3.7	93.2	0.75	0.92	1.27	30.3
18	R2	228	2.0	248	2.0	0.407	12.0	LOS B	1.9	49.4	0.69	0.77	0.93	30.6
Approach		901	2.0	979	2.0	0.569	14.6	LOS B	3.7	93.2	0.74	0.88	1.19	30.3
East: WB Farnam St														
1	L2	284	2.0	309	2.0	0.942	45.5	LOS E	18.2	463.0	1.00	1.84	3.64	21.3
6	T1	450	2.0	489	2.0	0.942	34.6	LOS D	18.2	463.0	0.89	1.48	2.74	23.9
16	R2	150	2.0	181	2.0	0.291	9.6	LOS A	1.1	28.4	0.65	0.65	0.66	31.6
Approach		884	2.0	979	2.0	0.942	33.4	LOS D	18.2	463.0	0.88	1.44	2.64	24.0
North: SB Saddle Creek Rd														
7	L2	260	2.0	313	2.0	1.203	128.5	LOS F	55.6	1411.4	1.00	3.43	8.78	12.4
4	T1	1105	2.0	1201	2.0	1.203	128.5	LOS F	55.6	1411.4	1.00	3.43	8.78	12.1
14	R2	97	2.0	105	2.0	0.168	7.7	LOS A	0.6	15.6	0.62	0.62	0.62	32.5
Approach		1462	2.0	1620	2.0	1.203	120.6	LOS F	55.6	1411.4	0.98	3.25	8.25	12.7
West: EB Farnam St														
5	L2	62	2.0	67	2.0	0.850	57.8	LOS F	5.9	149.3	0.95	1.36	2.56	19.3
2	T1	452	2.0	491	2.0	0.850	53.8	LOS F	6.2	158.1	0.95	1.37	2.58	20.1
12	R2	215	2.0	234	2.0	0.774	46.9	LOS E	4.5	114.5	0.93	1.24	2.12	20.7
Approach		729	2.0	792	2.0	0.850	52.1	LOS F	6.2	158.1	0.94	1.33	2.44	20.2
All Vehicles		3976	2.0	4370	2.0	1.203	64.9	LOS F	55.6	1411.4	0.89	1.96	4.36	18.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

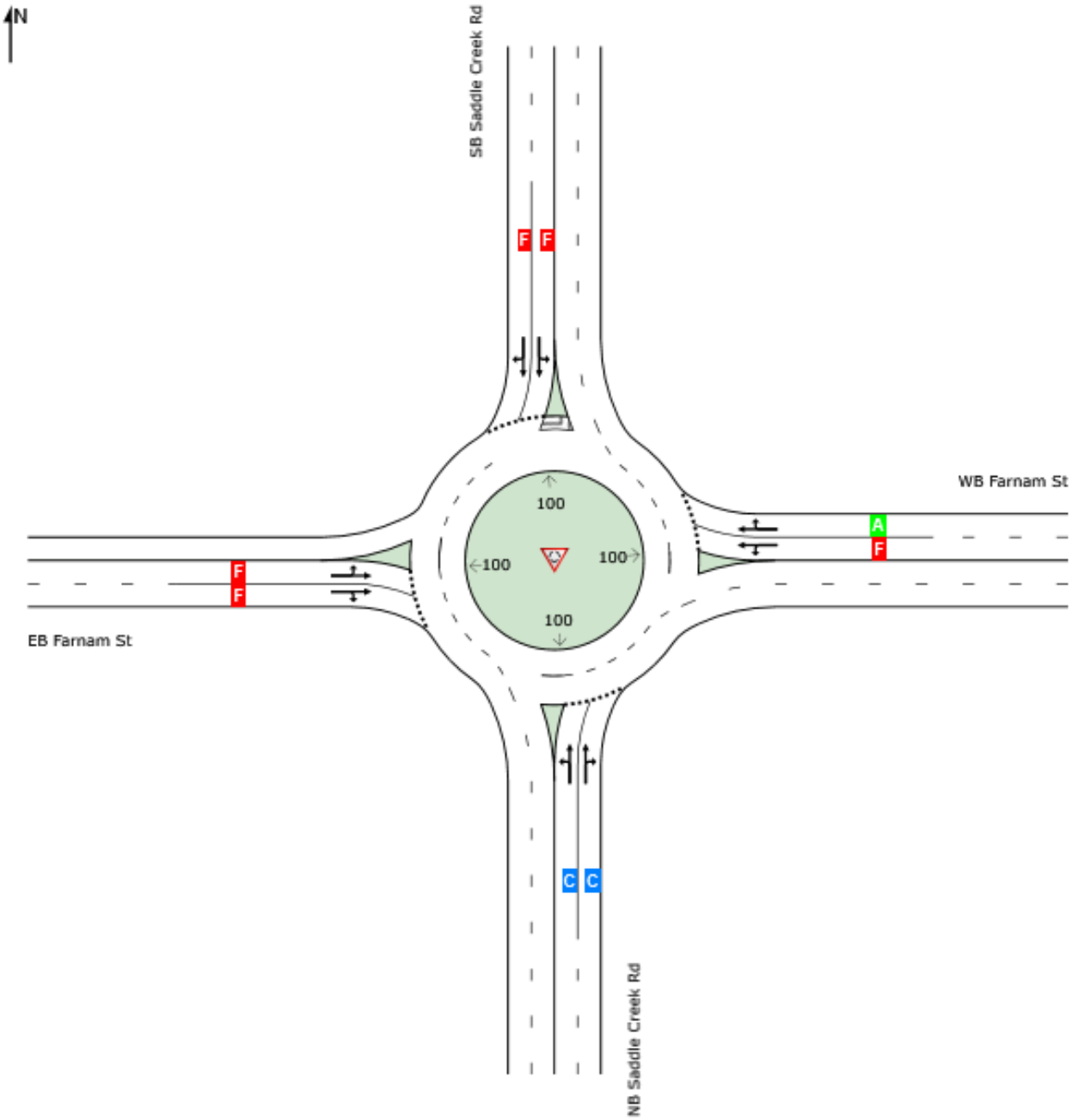
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 76 [a2040 Alt 3 (Site Folder: General)]

Farnam St & Saddle Creek Rd
2040 AM Alt 3
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	C	F	F	F	F



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

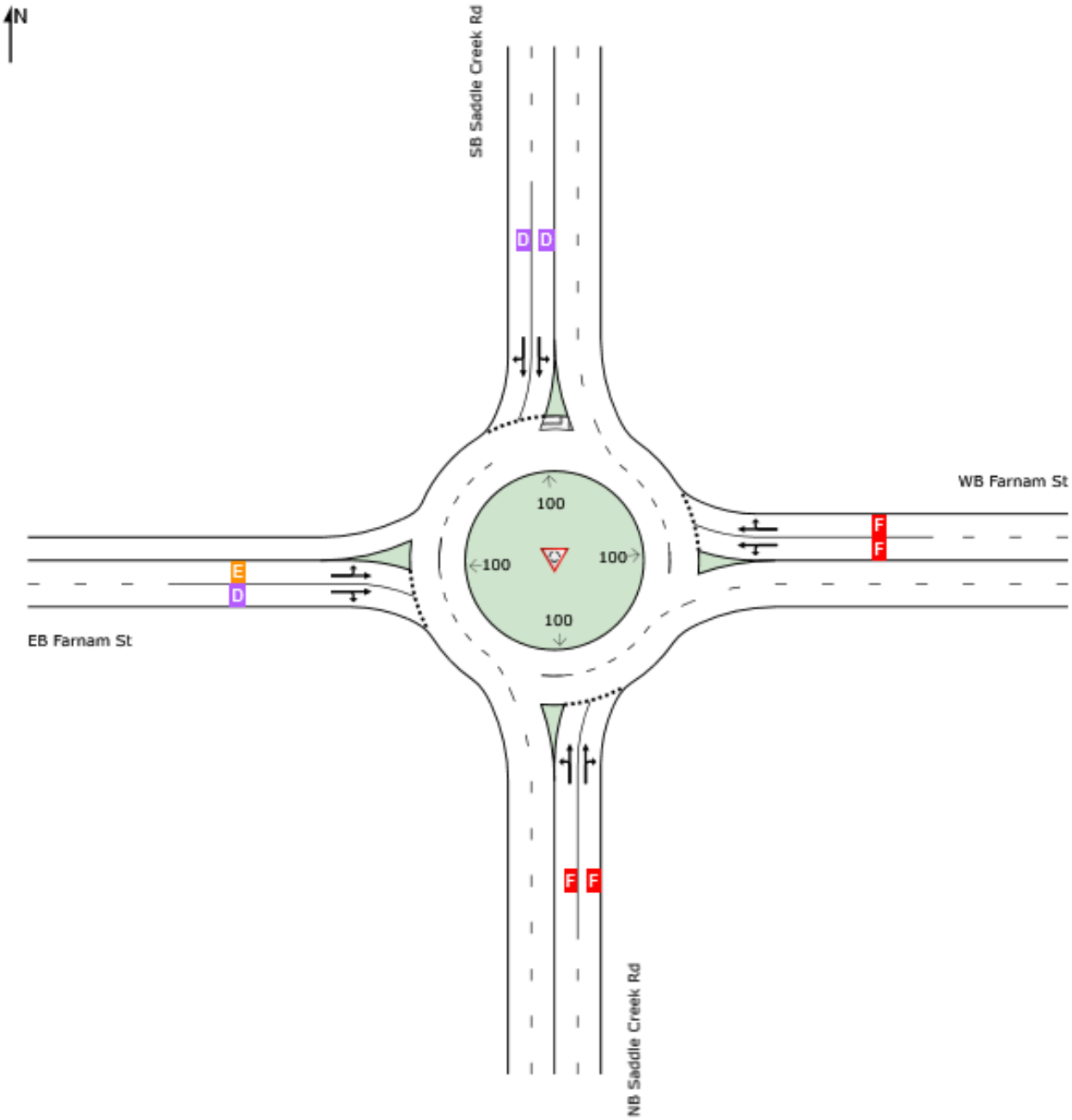
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 76 [p2040 Alt 3 (Site Folder: General)]

Farnam St & Saddle Creek Rd
2040 PM Alt 3
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	F	F	D	D	F



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

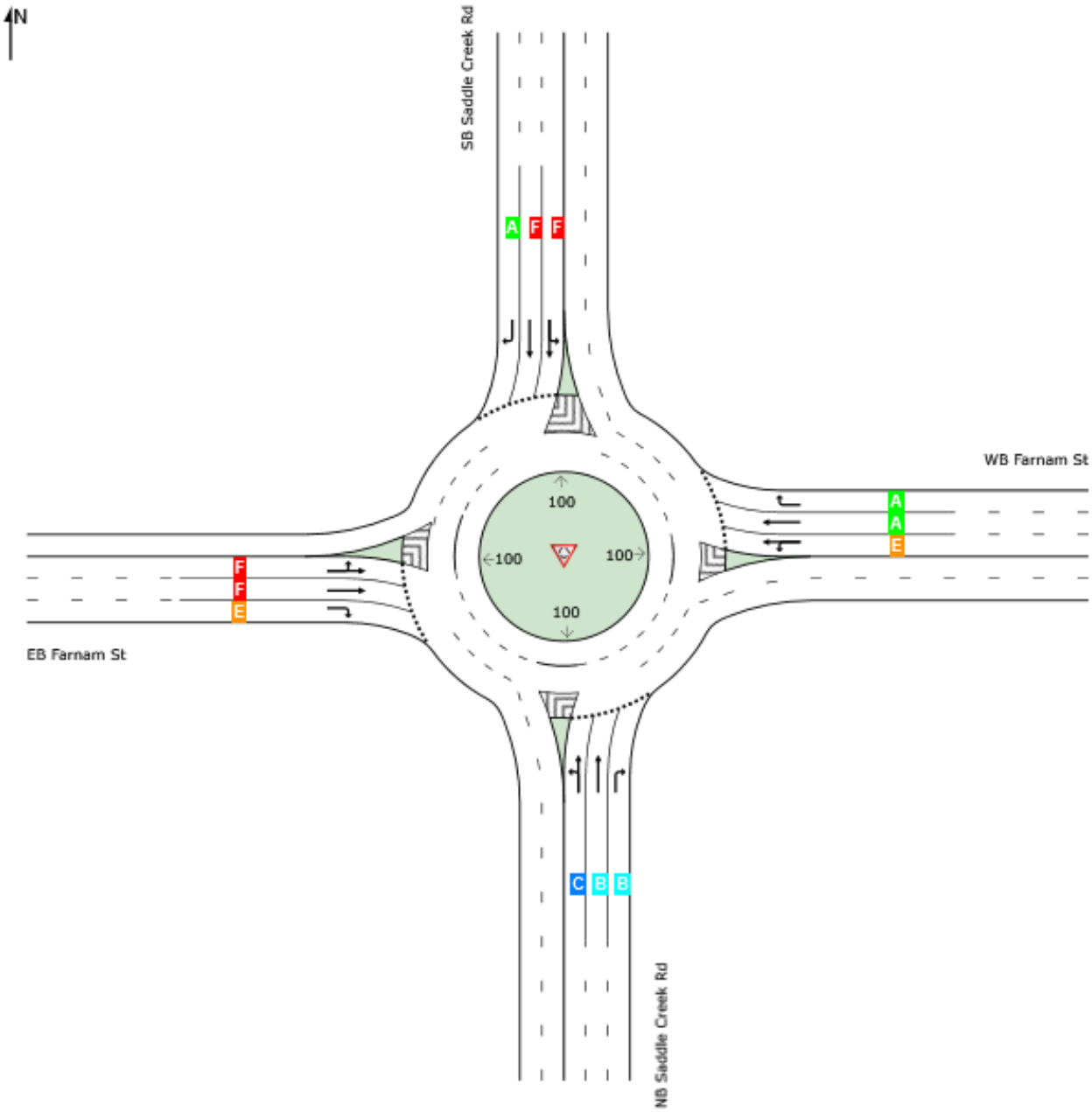
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 76 [a2040 Alt 4 (Site Folder: General)]

Farnam St & Saddle Creek Rd
2040 AM Alt 3
Site Category: (None)
Roundabout

	Approaches				Intersection
	South	East	North	West	
LOS	B	D	F	F	F



Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Delay Model: HCM Delay Formula (Geometric Delay is not included).

APPENDIX G. PI REPORT

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Public Open House Report

Farnam Street Two-way Conversion

50th and 52nd Street Intersection Improvements

(OPW 53944)

Meeting Held on: April 25, 2022

City of Omaha
1819 Farnam St
Omaha, NE 68183
cityofomaha.org
402-444-5220

PUBLIC OPEN HOUSE REPORT

Farnam Street Two-way Conversion
50th and 52nd Street Intersection Improvements
(OPW 53944)

Location: Barbara Weitz Community Engagement Center
Room: CEC 201/205/209
Date: April 25, 2022
Time: 5:00 PM to 7:00 PM

I. LOCATION AND ATTENDANCE

A public open house meeting was held for the Farman Street Two-way Conversion: 50th and 52nd Street intersection Improvements (OPW 53944) on April 25, 2022, at the Barbara Weitz Community Engagement Center on the campus of the University of Nebraska at Omaha. The meeting was held in rooms 201/205/209 and ran from 5:00 PM to 7:00 PM.

The open house began with a 20-minute presentation presenting the results of the study. There was no question-and-answer session following the presentation. This was followed by an open house format with several stations spread throughout the room, staffed by City officials and FHU staff to answer public questions and take comments. The presentation and meeting handout are attached to this report.

The meeting had 53 attendees listed on the sign-in sheet. There were several who declined to sign-in and several additional representatives from the City of Omaha, FHU, and local media outlets were present. In summary, there were an estimated 75 people in attendance. The sign-in sheet is attached to this report.

II. COMMENTS

Several opportunities and methods to solicit comments were provided to the citizens. Comment forms were provided at the public open house and online via the Keep Omaha Moving website (http://www.keepomahamoving.com/projects/farnam-street-two-way-conversion-50th-and-52nd-street-intersection-improvements-opw-53844). Additional comments were also provided to the City of Omaha via email and phone conversations.

A total of 92 comments were received for the project, and the breakdown by media type is below:

- Online – 63 comments
- Comment Forms – 6 comments
- Email or Phone – 23 comments

A summary of the comments is provided in a matrix attached to this report.

City of Omaha
1819 Farnam St
Omaha, NE 68183
cityofomaha.org
402-444-5220

III. SUMMARY

All comments were cataloged and separated into the following categories: Safety, Access, Traffic Flow, Traffic Operations, Pedestrians, Drainage, Pavement, Suggestion, and Other. Please note that some comments were split into multiple categories. The table below summarizes the number of comments by category.

Public Comments Summary by Category

Topic	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Total
Total Commented per Topic Category	**25**	**2**	**7**	**11**	**11**	**0**	**0**	**29**	**12**	**97**

Most comments were in favor of converting Farman Street to two-way traffic all-day, every-day, and acknowledged that addressing safety (crashes and speeds) for vehicles and pedestrians was important. However, there was a divide on what additional improvements are required.

Several comments noted wanting the conversion but without any additional improvements to the intersections of 50th Street and 52nd Street. The City indicated that completing the conversion without additional improvements is not an alternative due to the current safety issues.

The second theme favored of the conversion with safety as the top priority for pedestrians and vehicles. Many of these comments noted the roundabout as the safest option; however, there were a few that indicated roundabouts were not safe for pedestrians. Studies have shown that a single-lane roundabout provides a safer pedestrian crossing than a traffic signal.

IV. RECOMMENDATION

Based on the consensus of the comments received, it is recommended that Farnam Street be converted to two-way traffic, and Alternative 3 – Roundabouts is the recommended lane configuration for the intersections of 50th Street and 52nd Street.

ATTACHMENTS:

- ***Presentation***
- ***Meeting Handout***
- ***Sign-in Sheet***
- ***Comment Matrix***

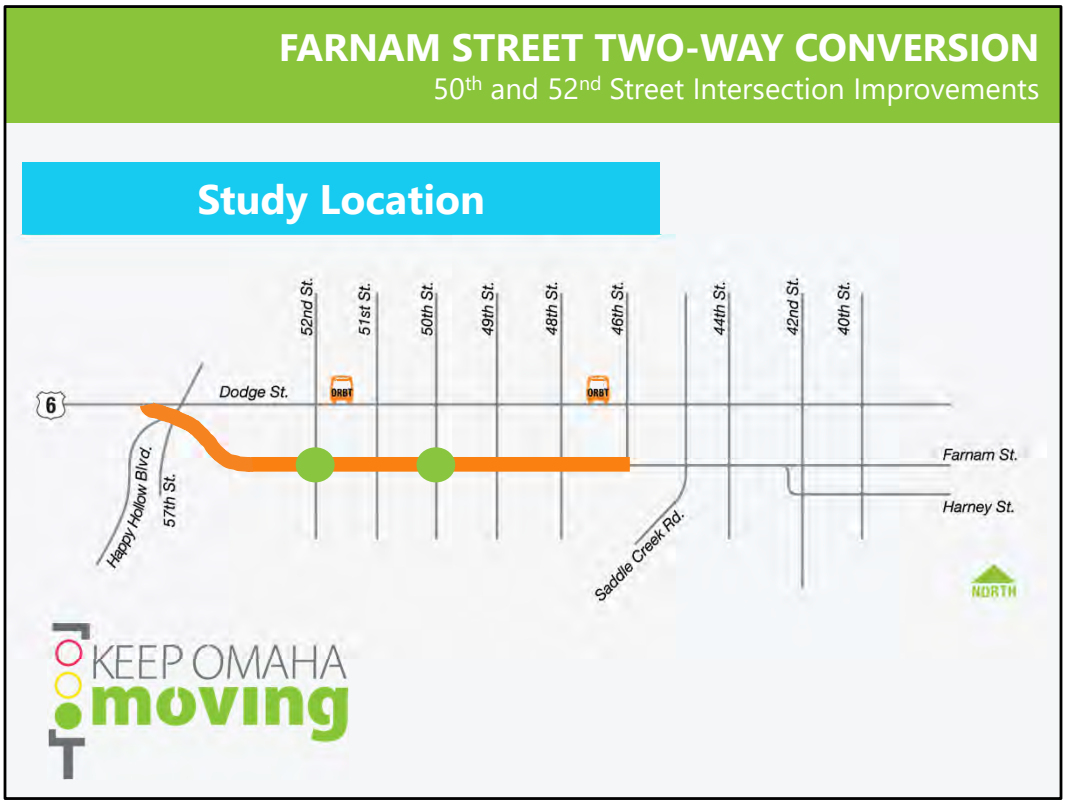
City of Omaha
1819 Farnam St
Omaha, NE 68183
cityofomaha.org
402-444-5220

PRESENTATION

WELCOME

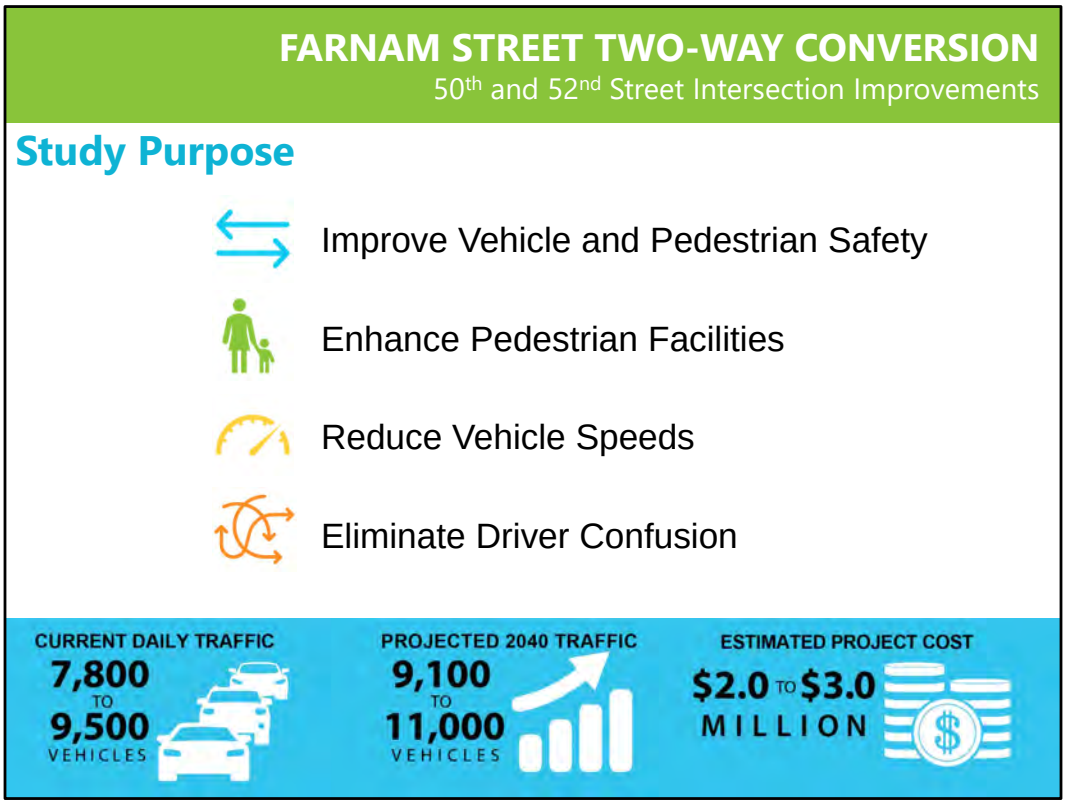
Welcome to the Public Open House Meeting for the Farnam Street Two-way Conversion: 50th and 52nd Street Intersection Improvements. This presentation is intended to be around 15 minutes, after which we will dismiss to the open house portion of the meeting, where project staff will be available to answer questions on a one-on-one basis.

This project is still in the conceptual phase, and alternatives are being considered. The intent of this meeting is to present the finding of the study and hear from property owners and users of the street system early in the process rather than after improvements are designed and planned for construction.



STUDY OVERVIEW

The study area is located along Farnam Street from Happy Hollow Boulevard to 46th Street. This segment of Farnam Street passes through the Dundee neighborhood and is unique as it switches between one-way and two-way operations throughout the day using variable lane assignment signs and signals. Farnam Street has operated in this condition since the early 1950s.



STUDY PURPOSE

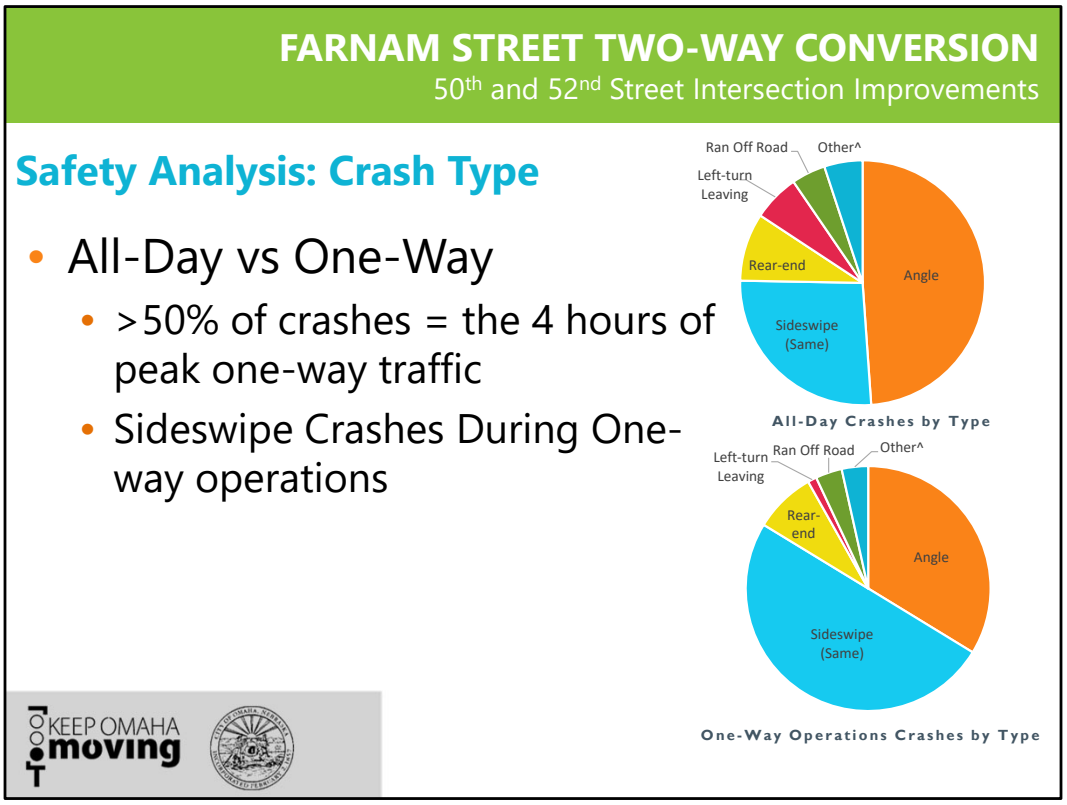
The City is studying the segment of Farnam Street between Happy Hollow Road and 46th Street to see if converting it to two-way traffic all day is feasible and, if so, what improvements might be needed to make it work.

The purpose of the study is to evaluate alternatives to improve vehicle and pedestrian safety, enhance pedestrian facilities, reduce vehicle speeds, eliminate driver confusion from time-of-day operation change, and improve transportation facility operations and mobility of the traveling public on Farnam Street.

STUDY OVERVIEW

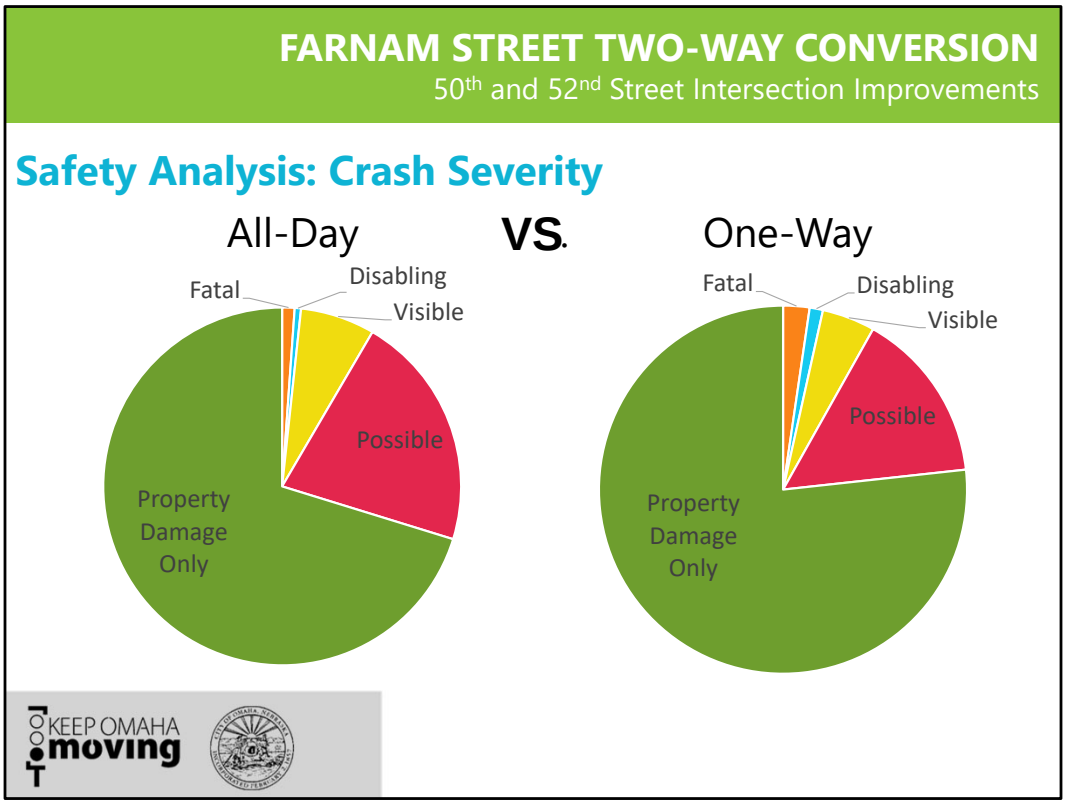
The Farnam Street Corridor Study (OPW 53944) included a detailed analysis evaluating the feasibility of permanently converting Farnam Street to a continuous, two-way street all day through the study area.

The study shows that two-way conversion is feasible so long as intersection improvements are made at 50th Street and 52nd Street. There are three improvement alternatives for each intersection that are being discussed at this meeting which were developed based on evaluation of the existing crash history and future traffic operation needs. Recommended improvements were then compared based on budget, vehicular and pedestrian safety, right-of-way impacts to adjacent property owners, driveway access impacts, and how well traffic will move through the intersections.



SAFETY ANALYSIS

To start off with are going to look a safety. A safety analysis was first completed comparing crashes occurring during the one-way operation time periods versus the total crashes occurring regardless of traffic flow direction for the whole corridor. The four hours of the day that Farnam Street operates as one-way it carries approximately 30% of weekday traffic, but those four hours only represent 17% of the time in a day. Comparatively, over 50% of all crashes occur during one-way operations. The analysis also indicates that sideswipe (same direction) type crashes make up a higher percentage of crashes during one-way operations, which is directly related to the two lanes of one-way travel during peak hours.



SAFETY ANALYSIS

Additionally, a comparison of crashes by severity showed that both fatal crashes, and just under 50% of high severity crashes occurred on the corridor during one-way operations. Both fatal crashes in the study period occurred during the PM peak period, with one in 2015 and one in 2019.

FARNAM STREET TWO-WAY CONVERSION

50th and 52nd Street Intersection Improvements

Safety Summary

- 58% of all crashes occur during one-way operations
- 48% of high severity crashes (fatal+injury) occur during one-way operations

Source: Citizen

Source: Citizen

KEEP OMAHA moving

SAFETY SUMMARY

In summary, one-way operations during the AM and PM peak periods carry approximately 30% of the daily traffic on Farnam Street, whereas the same 4-hour period accounts for 58% of all crashes throughout the day and 48% of high severity crashes.

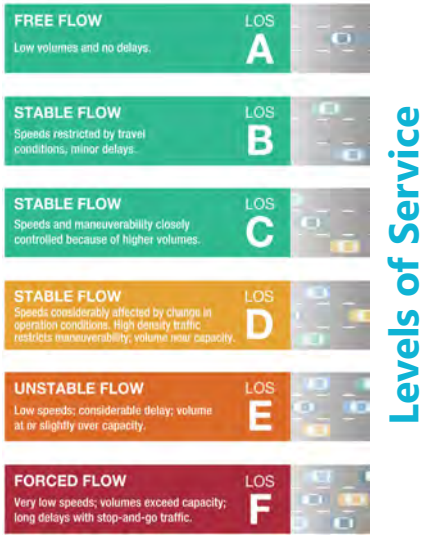
Comparing the corridor to other similar roadways in the City, Farnam Street has a significantly higher number of crashes per mile of roadway and higher crash severity during the AM and PM peak hours. During two-way conditions, Farnam Street's crash statistics are more in line with similar corridors.

FARNAM STREET TWO-WAY CONVERSION

50th and 52nd Street Intersection Improvements

Farnam Street w/ Two-way Traffic

- Future peak hour two-way traffic volumes result in the intersections of 50th & 52nd Streets failing to meet the traveling public's needs.
- Both intersections would be LOS F in future conditions.



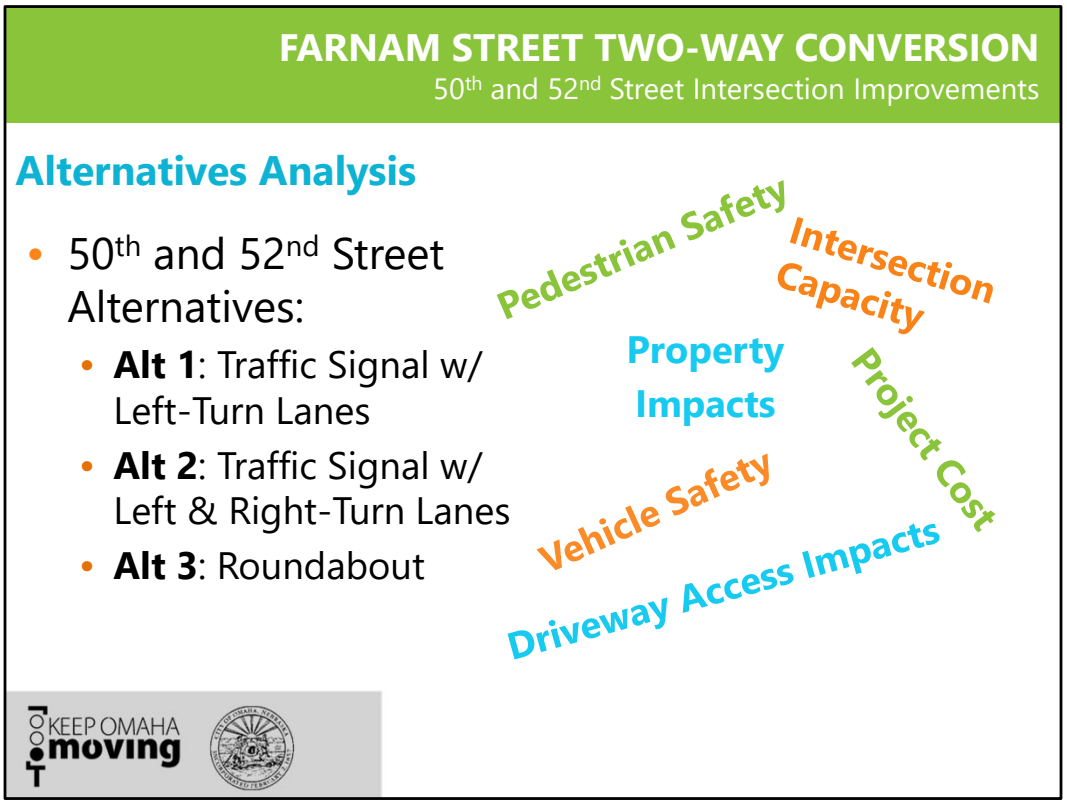
Source: Utah DOT (https://www.parleyseis.com)

TWO-WAY OPERATIONS

In addition to safety, traffic operations were also analyzed under two-way traffic conditions for existing and future volumes, including two-way traffic during the AM and PM peak hours. It should be noted the future two-way volumes did not assume any diversion to Dodge Street or Leavenworth Street due to the change to permanent two-way traffic. This provided a conservative estimate for the analysis.

The City of Omaha typically has an overall intersection operations goal of Level of Service (LOS) D or better for the future year. If the study area intersections remain in their current two-way configuration, all study area intersections are anticipated to operate at acceptable levels of service, except for the intersections of 50th Street and 52nd Street with Farnam Street. These two intersections are anticipated to operate at LOS F during the PM peak period and experience long westbound vehicles queues if they remain in their existing configuration.

In summary, based on safety and operations, the conversion of Farnam Street to permanent two-way traffic from Happy Hollow Road to 46th Street is feasible, with intersection improvements at 50th Street and 52nd Street needed to provide vehicle operation and pedestrian safety benefits along the corridor. The conversion will eliminate the driver confusion associated with the existing time-of-day changes and reduce vehicle speeds by restoring the roadway to a typical two-way street during higher volume traffic times.



ALTERNATIVES ANALYSIS

An alternatives analysis was completed as part of the corridor study to compare intersection configurations at the intersections of 50th Street and 52nd Street with Farnam Street. Three alternatives were developed based on traffic operations and safety needs of the intersections, and they include two traffic signal alternatives and a roundabout alternative.

No alternative roadway cross-sections were evaluated for Farnam Street. It is recommended that the existing cross-section be utilized with modifications to lane arrangements and pavement markings when needed to match intersection alternatives and to accommodate the removal of one-way operation during the peak commuter hours.

Screening criteria were developed to evaluate the intersection improvement alternatives. The analysis was based on various factors such as:

- Vehicle Safety
- Pedestrian Safety
- Project Cost
- Property Impacts
- Intersection Capacity & Queuing and
- Driveway Access Impacts

ALTERNATIVES ANALYSIS

First, let's start with the intersection of 50th Street with Farnam Street. The crash analysis showed thirty-five crashes were reported (13 injury, 22 property damage only) at the intersection during the study period. The crash rate for the intersection is over 2 times the citywide average crash rate compared to similar intersections throughout the City. Half of the thirty-five crashes were angle type crashes which typically result in an injury or worse.

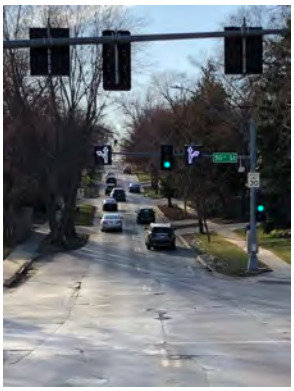
One of the three disabling crashes on the corridor occurred at the 50th Street with Farnam Street intersection. It took place between 5:00 PM and 6:00 PM on a Saturday. Two other injuries occurred at this incident, one visible and one possible. The contributing circumstance to the crash was a northbound vehicle running a red light. Red light running is an issue at this intersection, with almost half of the crashes attributed to running a red light. Crash types attributed to red light running, such as angle type crashes would be mitigated by replacing the traffic signal with a roundabout. Roundabouts also provide a safer crossing for pedestrians, only requiring the crossing of one-lane of slow-moving traffic at a time.

Therefore, based on the safety analysis for this intersection, a roundabout would be the recommended alternative. For purposes of this study, the roundabout will be called Alternative 3.

FARNAM STREET TWO-WAY CONVERSION
50th Street Intersection Improvements

50th Street Traffic Operations

- Unacceptable operations
- Left-turn lanes needed for safety and added capacity
- Right-turn lanes provide additional functionality
- Queuing concern with roundabout

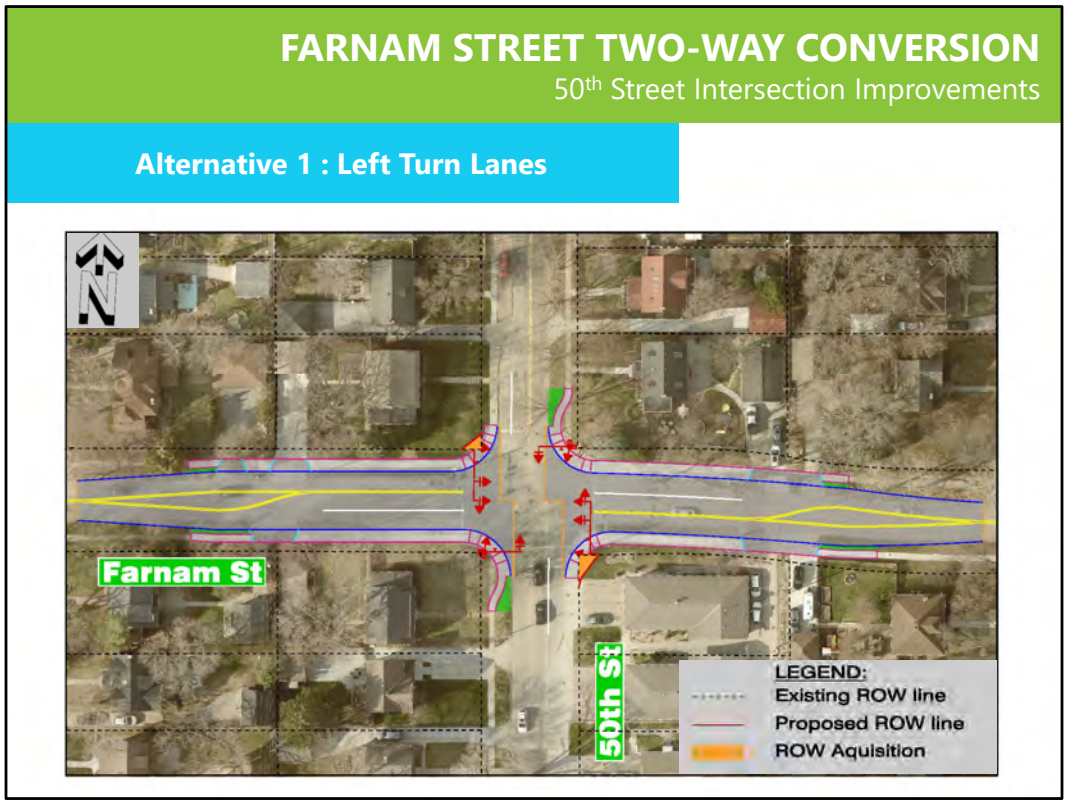


Operations Recommendation:
Signalized Intersection with Left-turn Lanes
Signalized Intersection with Left and Right-turn Lanes

ALTERNATIVES ANALYSIS

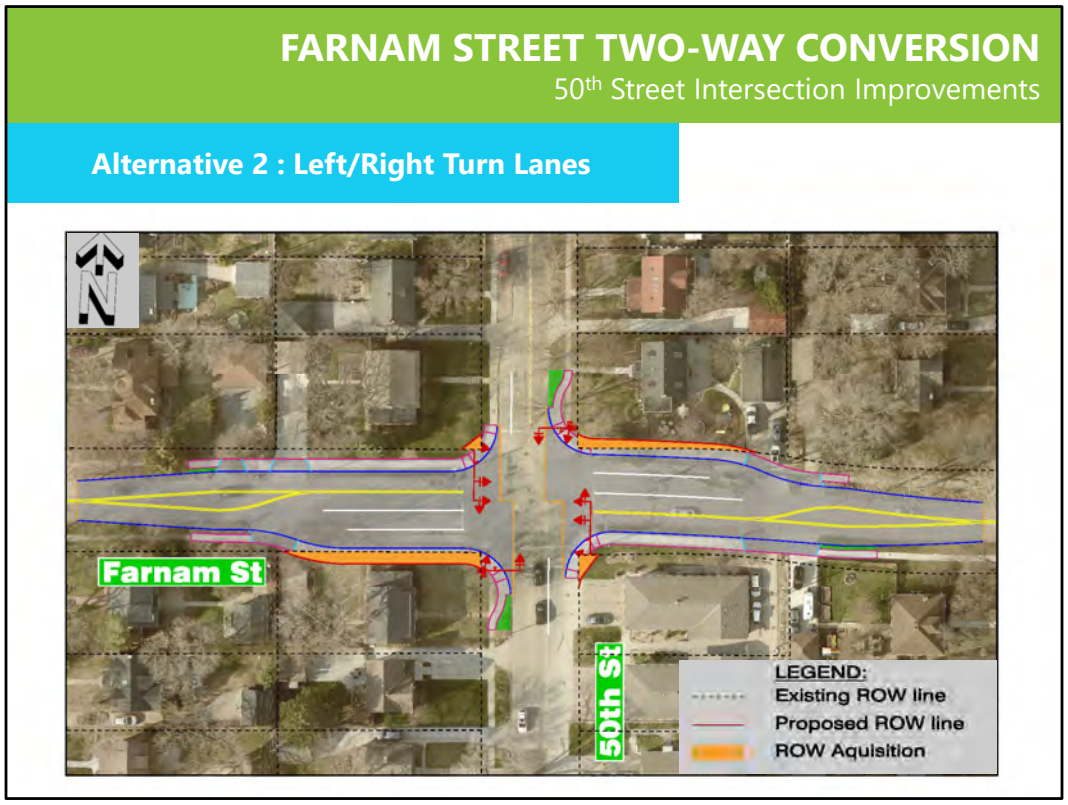
Next, the alternatives analysis looked at traffic operations at the intersection of 50th Street with Farnam Street. Under the existing lane configuration, LOS F operations are anticipated in the AM and PM peak hours. Three alternatives were considered. The first two maintain the signalized intersection, but Alternative 1 adds left-turns lanes only, and Alternative 2 adds left and right-turn lanes on Farnam Street. Both signalized alternatives provide acceptable operations and queuing for the intersection, except for Alternative 1 in the PM peak hour at LOS E. Alternative 3 evaluates the intersection as a single-lane roundabout, which was justified by the safety analysis. Under this configuration, acceptable operations are anticipated in the AM peak hour but not the PM peak hour. Long queues in the westbound direction are anticipated with the roundabout option.

Based on the future operations at this intersection, a signalized intersection would be the recommended alternative. Adding only a left-turn lane will improve traffic flow and safety. When considering moving traffic, providing left and right-turn lanes provide the best alternative for traffic flow as all turning traffic will be separated from through traffic.



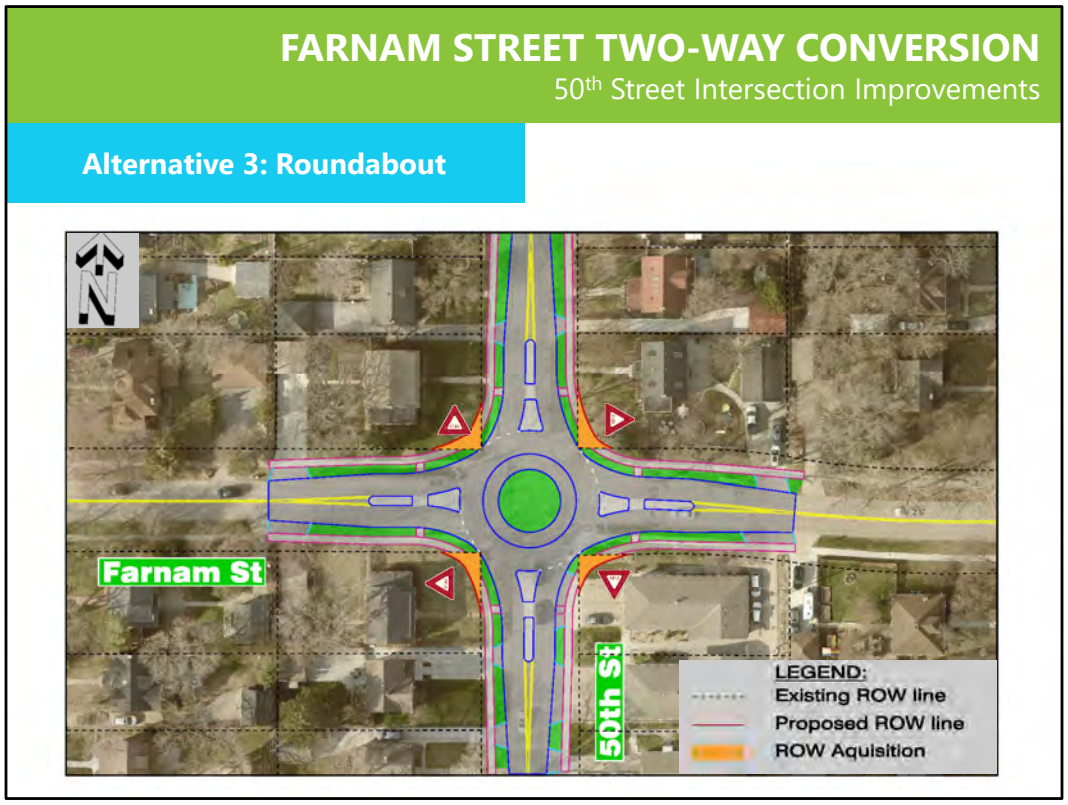
ALTERNATIVES ANALYSIS

Now we will look at the three alternatives for the 50th Street and Farnam Street intersection in more detail and discuss the screening criteria compared to the other Alternatives. Alternative 1, which includes providing left-turn lanes on Farnam Street, provides acceptable traffic operations in the AM but not in the PM under two-way traffic. This alternative requires the least amount of right-of-way impacts and does not impact any access to existing driveways. For pedestrian safety, crossing three lanes of traffic on Farnam Street will be required to get across the intersection. The vehicle safety issues at this intersection would not be directly addressed with this alternative; however, the addition of the left-turn lane would provide some safety benefits.



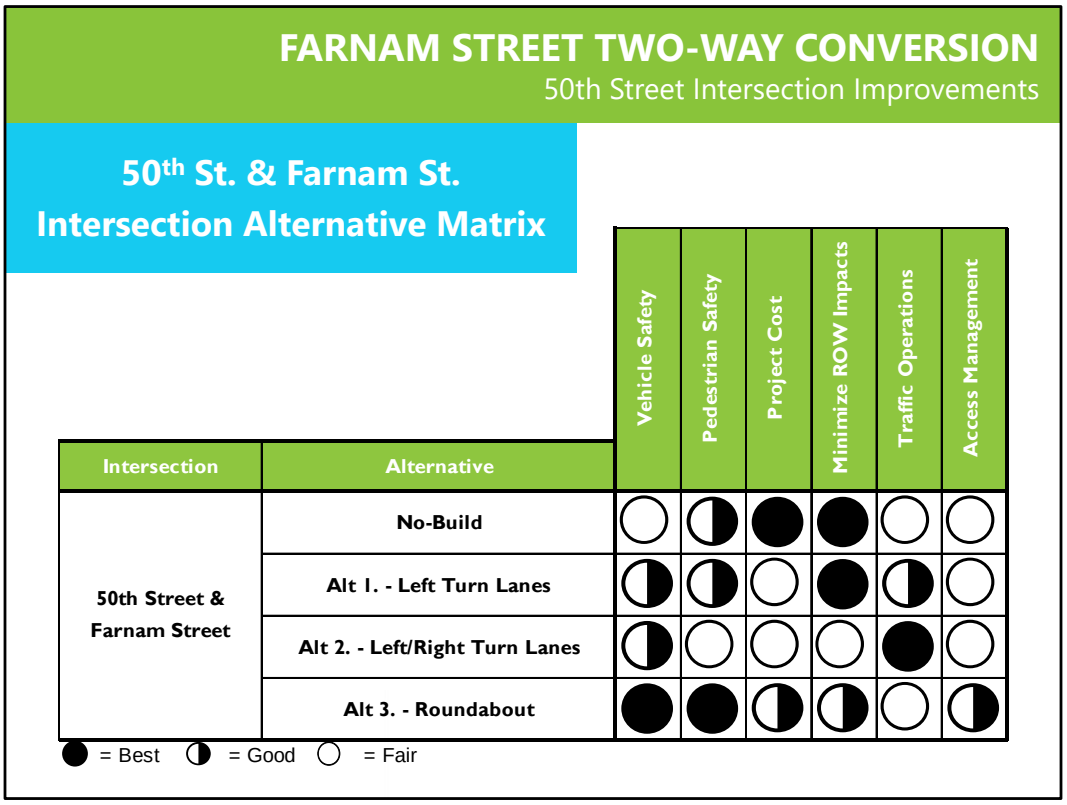
ALTERNATIVES ANALYSIS

Alternative 2 provides left and right-turn lanes on Farnam Street and is anticipated to provide acceptable traffic operations in both the AM and PM peak periods under two-way traffic. This alternative has the most right-of-way impacts due to the right-turn lane and is the costliest. No impacts to any existing driveways are anticipated. For pedestrian safety, exposure to four lanes of traffic on Farnam Street will be required to get across the intersection. The vehicle safety issues at this intersection would not be directly addressed with this alternative; however, the addition of the turn lanes would provide some safety benefits.



ALTERNATIVES ANALYSIS

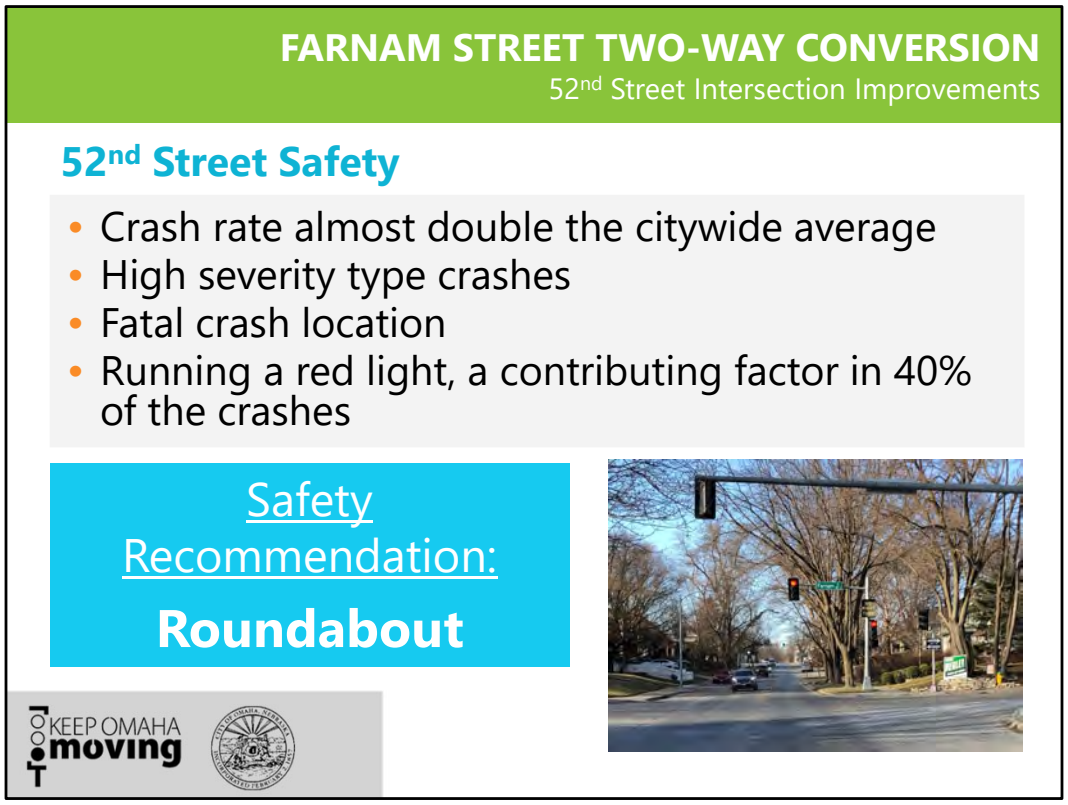
Alternative 3 converts the intersection to a single-lane roundabout. Acceptable traffic operations in the AM peak period only are anticipated under two-way traffic, but traffic backups are anticipated for the PM peak in the westbound direction. This alternative is the cheapest to construct but may limit access to existing driveways. Roundabouts provide a safer crossing for pedestrians, only requiring the crossing of one-lane of slow-moving traffic at a time. The vehicle safety issues at this intersection are directly addressed with this alternative.



ALTERNATIVES ANALYSIS

The alternatives analysis for the intersection of 50th Street with Farnam Street is summarized in this matrix, reviewing multiple components of the intersection, including vehicle safety and pedestrian safety, showing the roundabout as the safest option. To summarizes the analysis, the signalized alternatives provide the best traffic operations; however, the roundabout provides the safest intersection for vehicles and pedestrians.

The final component is public input, which will use comments received from this meeting to complete this alternatives analysis and make the final selections to move forward.



ALTERNATIVES ANALYSIS

Now we will focus on the intersection of 52nd Street with Farnam. The safety analysis reported twenty-five crashes (10 injury, 15 property damage only) at the intersection during the six-year study period. The crash rate for the intersection is almost double the citywide average crash rate for Minor Arterial/Local street intersection. Fifteen of the twenty-five crashes were angle type crashes, and eleven of the angle type crashes were due to vehicles running red lights.

The previously mentioned fatal crashes from 2015 and 2019, which occurred at this signalized intersection, both included additional injured individuals. Both crashes occurred during the PM commute and involved northbound vehicles colliding with a westbound vehicle. One of the occurrences had an unknown fault, but the other involved a northbound vehicle passing another northbound vehicle and running the red light. Crashes attributed to red light running, such as angle type crashes would be mitigated by replacing the traffic signal with a roundabout. Roundabouts also provide a safer crossing for pedestrians, only requiring the crossing of one-lane of slow-moving traffic at a time.

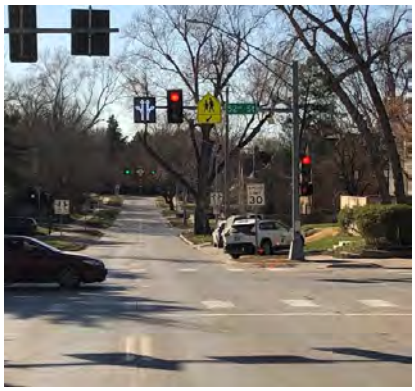
Therefore, based on the safety analysis for this intersection, a roundabout would be the recommended alternative. For purposes of this study, the roundabout will be called Alternative 3.

FARNAM STREET TWO-WAY CONVERSION

52nd Street Intersection Improvements

52nd Street Traffic Operations

- Unacceptable operations
- Left-turn lanes needed for safety and added capacity
- Right-turn lanes provide additional functionality
- Queuing concern with roundabout



Operations Recommendation:

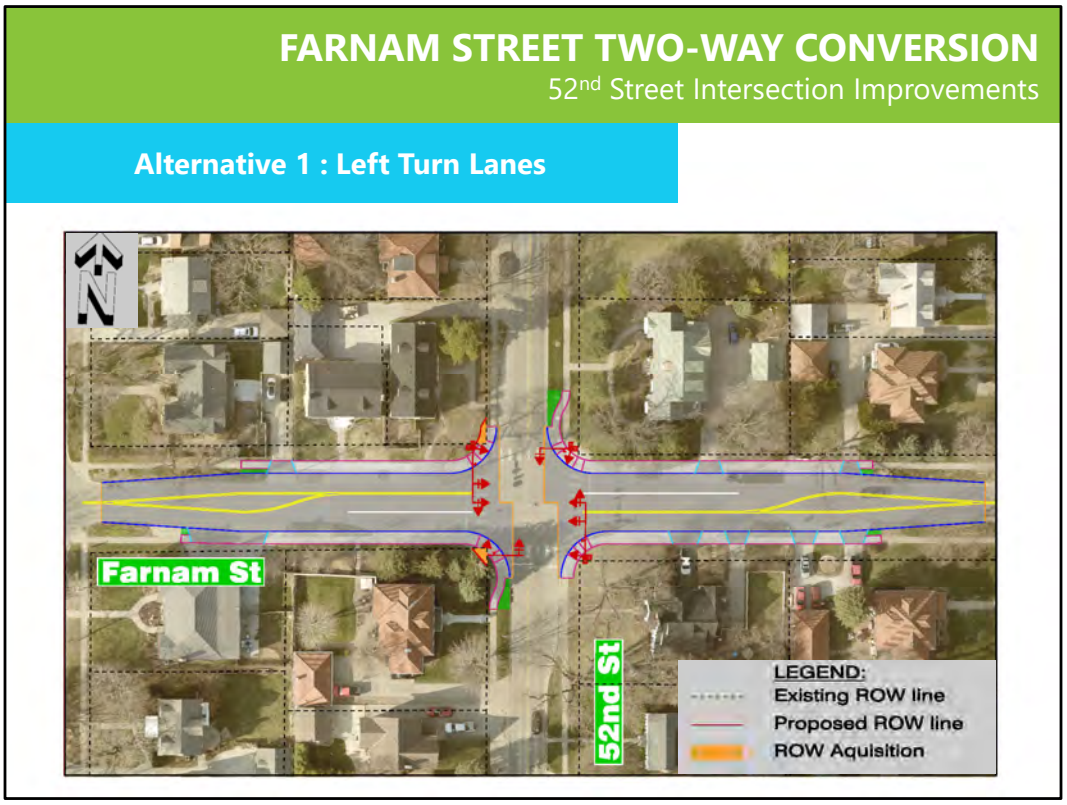
Signalized Intersection with Left-turn Lanes

Signalized Intersection with Left and Right-turn Lanes

ALTERNATIVES ANALYSIS

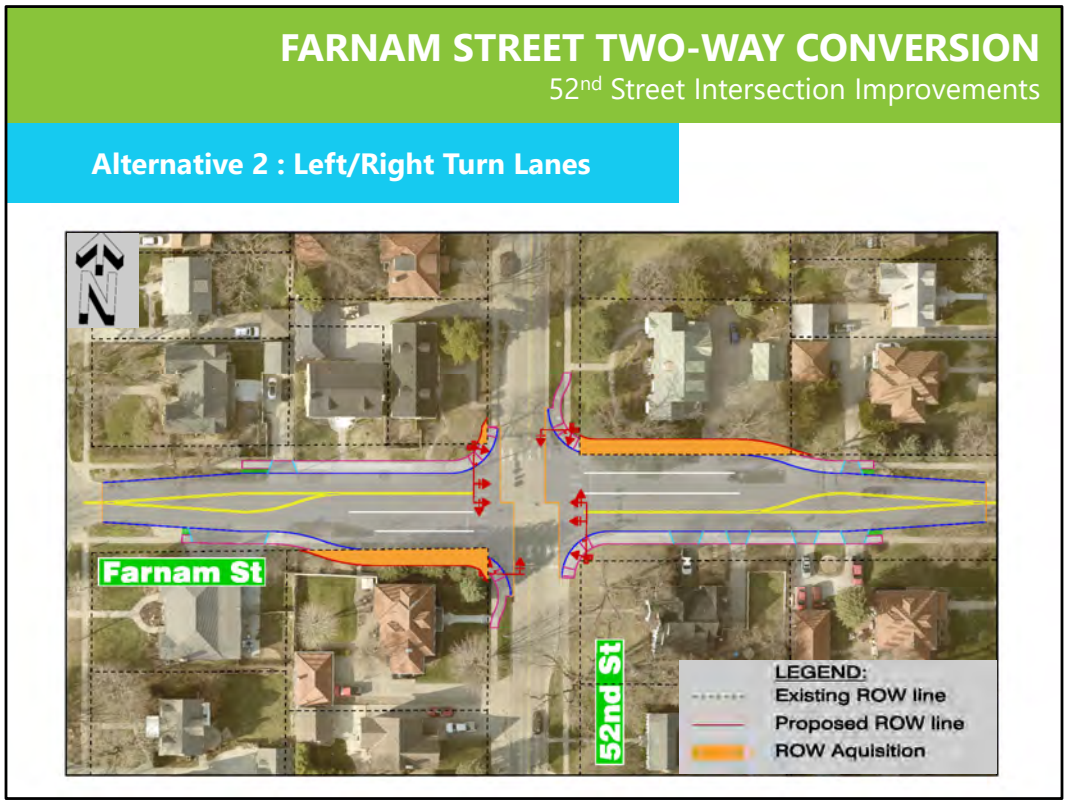
The alternatives analysis looked at traffic operations at the intersection of 52nd Street with Farnam Street. Under the existing lane configuration unacceptable operations are anticipated in the PM peak hour. Two of the alternatives maintained a traffic signal at the intersection. Alternative 1 adds left-turn lanes Farnam Street, and Alternative 2 adds left and right-turn lanes Farnam Street. Alternative 1 with only left-turn lanes will operate at LOS E in the PM peak hour. Acceptable operations and queuing are anticipated with Alternative 2. Long queues and unacceptable traffic operations are anticipated with Alternative 3 as a single-lane roundabout, which was justified by the safety analysis.

Based on the future operations at this intersection, a signalized intersection would be the recommended alternative. Adding a left-turn lane will only improve functionality and is better than a roundabout but when considering moving traffic, left, and right turns best meets this particular factor.



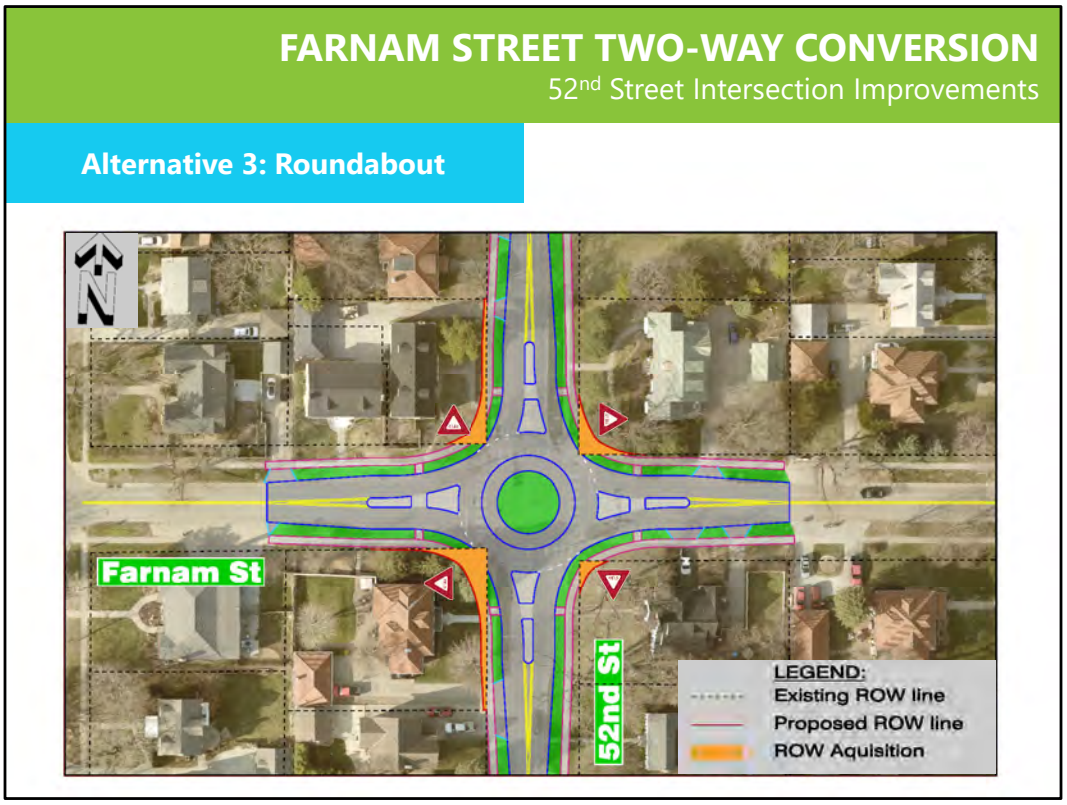
ALTERNATIVES ANALYSIS

Now we will look at the three alternatives for the 52nd Street and Farnam Street intersection and discuss the screening criteria compared to the other Alternatives. Alternative 1, which includes providing left-turn lanes on Farnam Street, provides acceptable traffic operations in the AM and PM under two-way traffic. This alternative requires the least amount of right-of-way impacts and does not impact any access to existing driveways. For pedestrian safety, exposure to three lanes of traffic on Farnam Street will be required to get across the intersection. The vehicle safety issues at this intersection would not be directly addressed with this alternative; however, the addition of the left-turn lane would provide some safety benefits.



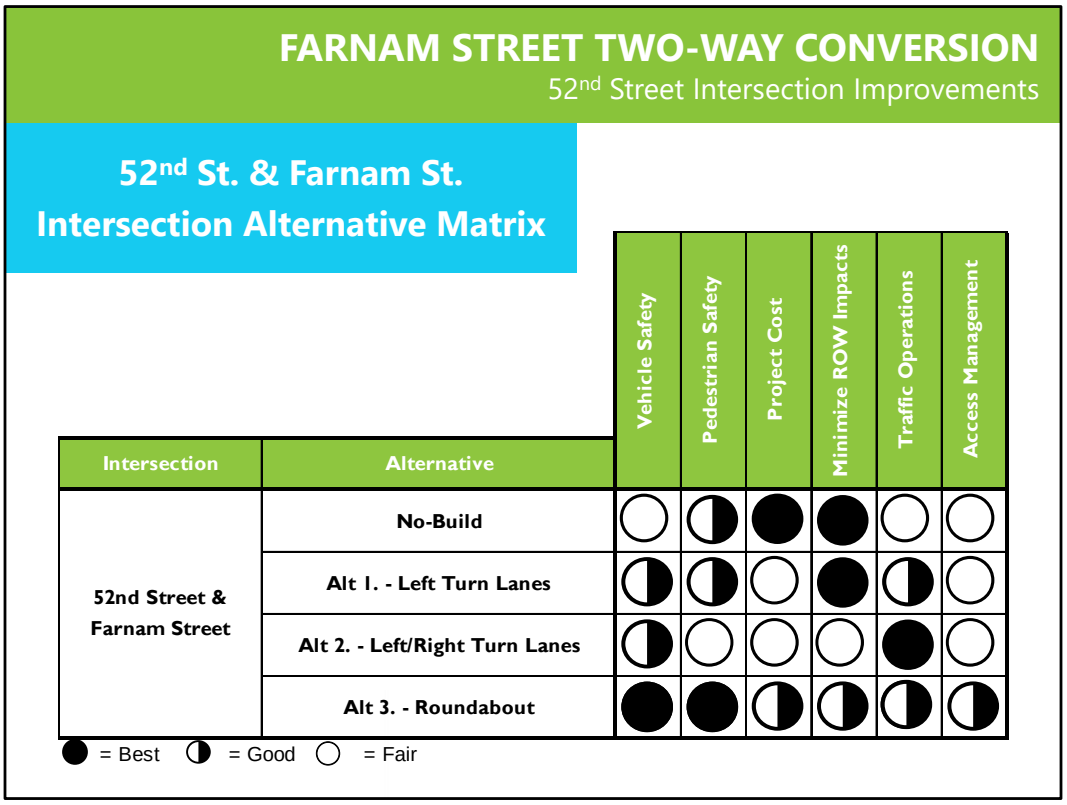
ALTERNATIVES ANALYSIS

Alternative 2 provides left and right-turn lanes on Farnam Street and is anticipated to provide acceptable traffic operations in both the AM and PM peak periods under two-way traffic. This alternative has the most right-of-way impacts due to the right-turn lane and is the costliest. No impacts to any existing driveways are anticipated. For pedestrian safety, exposure to four lanes of traffic on Farnam Street will be required to get across the intersection. The vehicle safety issues at this intersection would not be directly addressed with this alternative; however, the addition of the turn lanes would provide some safety benefits.



ALTERNATIVES ANALYSIS

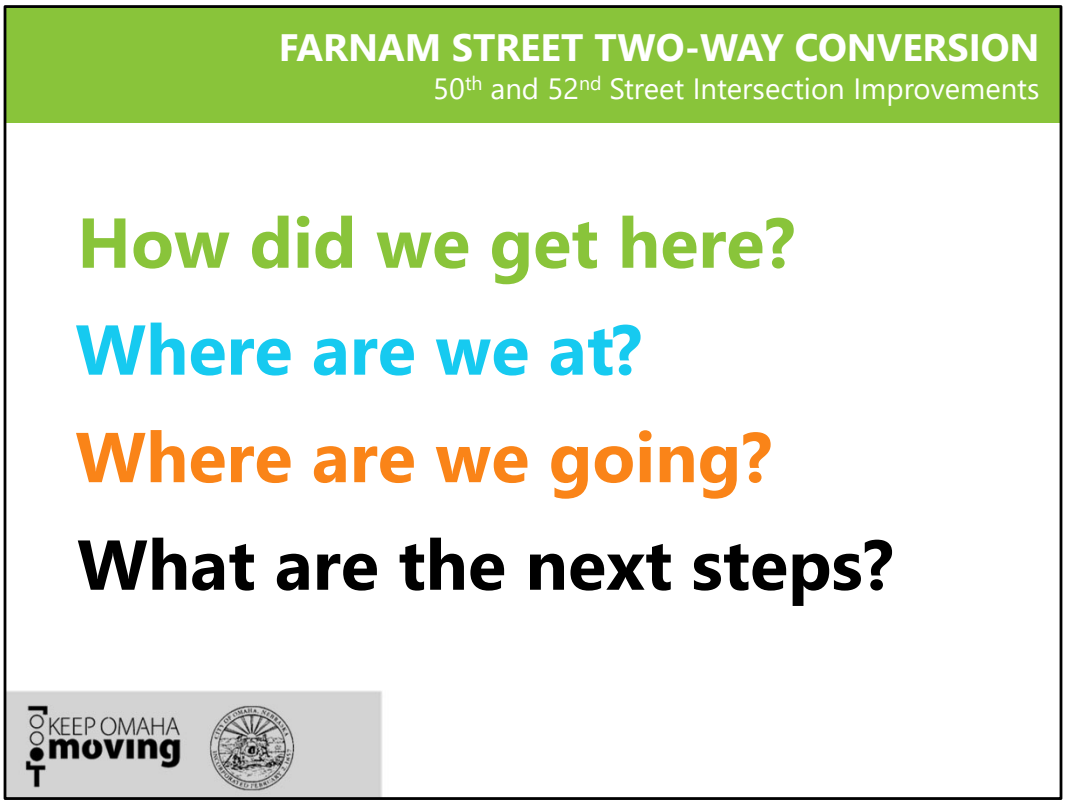
Alternative 3 converts the intersection to a single-lane roundabout. Acceptable traffic operations in both peak periods under two-way traffic are anticipated; however, traffic backups are anticipated for the PM peak in the westbound direction. This alternative is the cheapest to construct but may limit access to existing driveways. Roundabouts provide a safer crossing for pedestrians, only requiring the crossing of one-lane of slow-moving traffic at a time. The vehicle safety issues at this intersection are directly addressed with this alternative.



ALTERNATIVES ANALYSIS

The alternatives analysis for the intersection of 52nd Street with Farnam Street is summarized in this matrix, reviewing multiple components of the intersection, including vehicle safety and pedestrian safety, showing the roundabout as the safest option. For access management, the signalized intersection alternatives will not impact access to any existing driveways; however, the splitter island for the roundabout may restrict access to some driveways. To summarizes the analysis so far, the signalized alternatives provide the best traffic operations; however, the roundabout provides the safest intersection for vehicles and pedestrians.

The final component is public input, which will use comments received from this meeting to complete this alternatives analysis and make the final selections to move forward.



NEXT STEPS

How did we get here? - Tasked to complete a study to look at the feasibility of converting Farnam Street to two-way, all-day and what improvements would be necessary to have that happen. As discussed in the presentation, the conversion is feasible with improvements to 50th Street and 52nd Street required to address traffic and safety issues.

Where are we at? – We are at this open house meeting with you, the public, to inform you of the study and get feedback on the information provided and the different alternatives for intersection improvements. We want to hear from you and know what are your thoughts on the conversion in general or what are your thoughts on the intersection alternatives proposed? Comments will be taken through May 9th.

Where are we going? - All comments received along with the study and specific factors such as cost, safety, private property impacts, and intersection functionality will be used by the City to make an informed decision on to proceed forward.

Next Step? - Once the City makes a decision, postcards will go out to those who previously received them announcing the intersection configuration being carried forward to design. Updates will also be posted to Keep Omaha Moving website.

CLOSING

Thank you for your time. If you have not done so already, please refer to the project website page for the aerial views of the alternatives for the intersections of Farnam Street with 50th Street and 52nd Street, as well as the permanent conversion.

There are several opportunities to provide your input and stay involved with the Project, including:

Submitting a comment online or providing your comment on a map. Comments are due by May 9, 2022.

Emailing us:
info@KeepOmahaMoving.com

This concludes the presentation portion of the meeting, and now we will now move to the open house. Please visit the stations for discussions and comment tables to provide written comments.

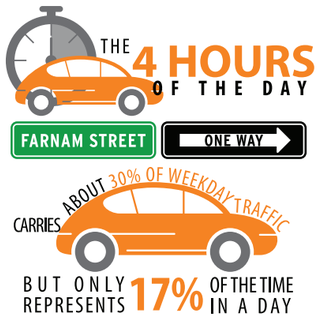
City of Omaha
1819 Farnam St
Omaha, NE 68183
cityofomaha.org
402-444-5220

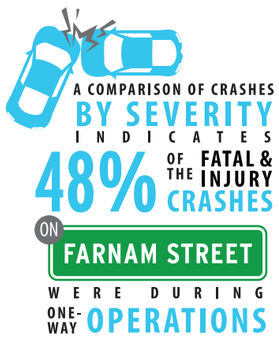
MEETING HANDOUT

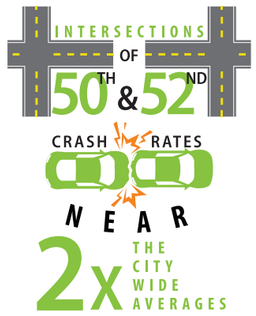
Study Overview

The traffic study evaluated the intersections along Farnam Street and the associated roadway segments to determine future traffic demand and anticipated intersection operations with permanent two-way traffic. The existing crash history and future operations were utilized to provide recommendations for improvements at the intersections of Farnam Street with 50th Street and with 52nd Street. The study also investigated the roadway improvements necessary for the conversion to permanent two-way traffic.

Two-Way Conversion Safety







Study Results

The conversion of Farnam Street to permanent two-way traffic is feasible with intersection improvements at 52nd Street & 50th Street. Driver confusion associated with time-of-day changes would be eliminated. Restoring the roadway to a typical two-way street during higher volume traffic would reduce vehicle speeds and provide vehicle and pedestrian benefits along the corridor.

For those without internet access, information can be requested by contacting:

Justin Zetterman, Project Manager, Public Works Division City of Omaha
Phone: 402-444-5220 | **Email:** justin.zetterman@cityofomaha.org

FELSBURG HOLT & ULLEVIG

KEEP OMAHA moving

CITY OF OMAHA
1819 Farnam St.
Omaha, NE 68183

Farnam Street Two-Way Conversion

50th & 52nd Street Intersection Improvements

City of Omaha Project 53844 | Omaha, NE

Welcome!

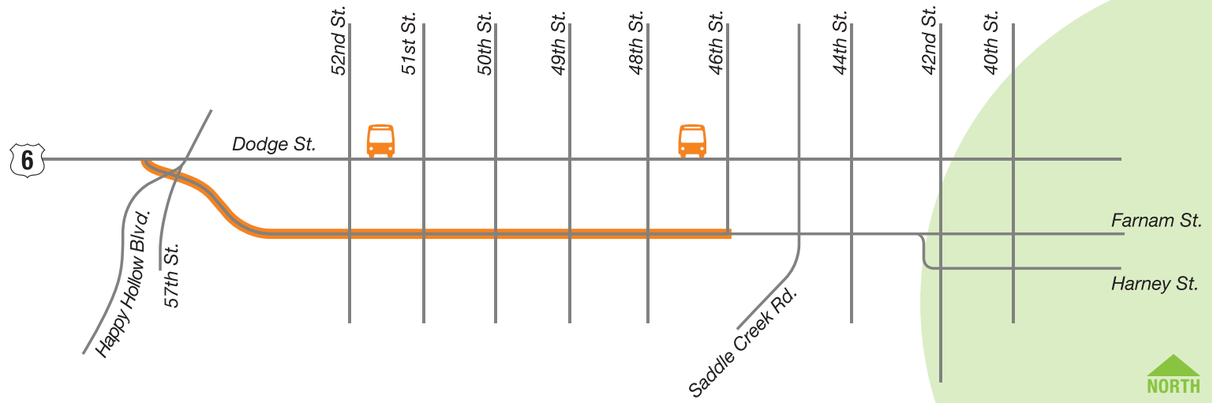
The City of Omaha is hosting a Public Open House meeting to discuss the Farnam Street Two-way Conversion Project. Information about the study including documents will be available after the meeting at:

www.keepomahamoving.com/index.php/projects

The website also provides the opportunity to submit project comments to the project team. A web map is provided allowing participants to tie their comments to specific locations within the study area.

Comments will be taken until May 9, 2022.

Study Area



Study Purpose

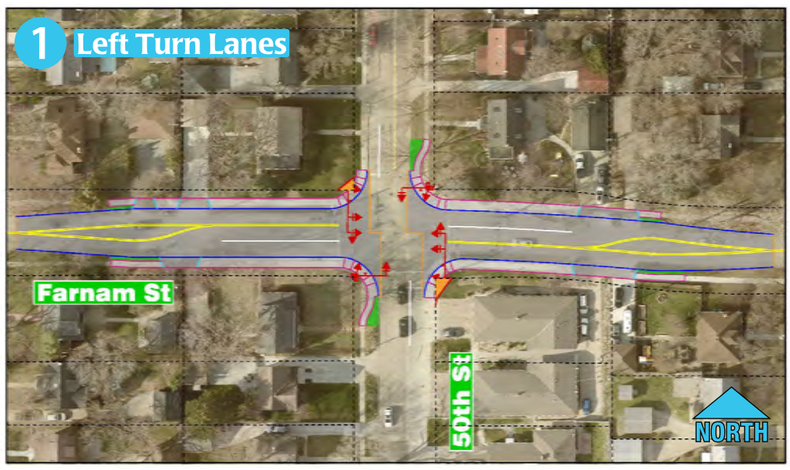
- Improve vehicle & Pedestrian Safety
- Enhanced Pedestrian Facilities
- Reduce Vehicle Speeds
- Eliminate Driver Confusion

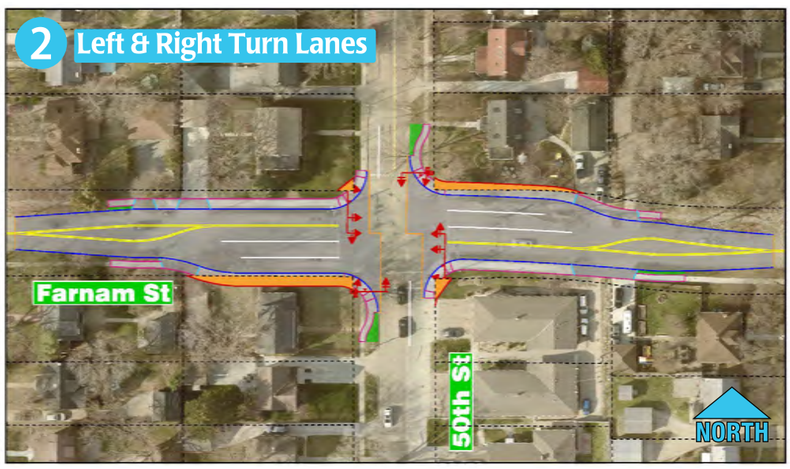
Current Daily Traffic
7,800 TO 9,500 VEHICLES

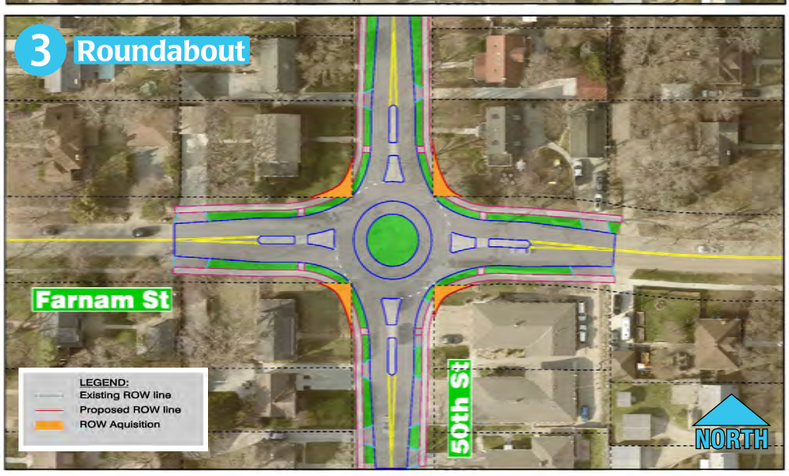
Projected 2040 Traffic
9,100 TO 11,000 VEHICLES

Estimated Project Cost
$2.0 TO $3.0 MILLION

50TH STREET INTERSECTION ALTERNATIVES





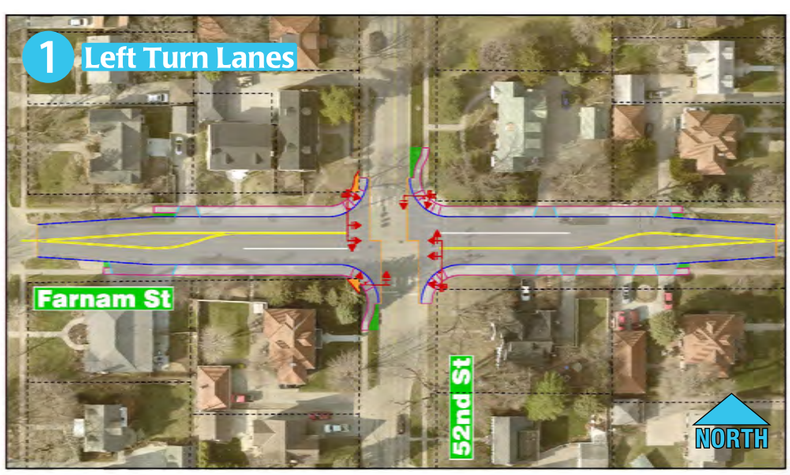


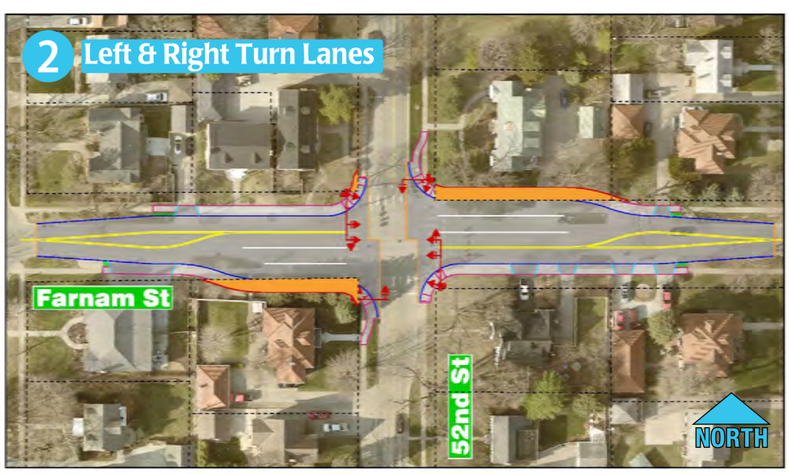
SCREENING CRITERIA SUMMARY

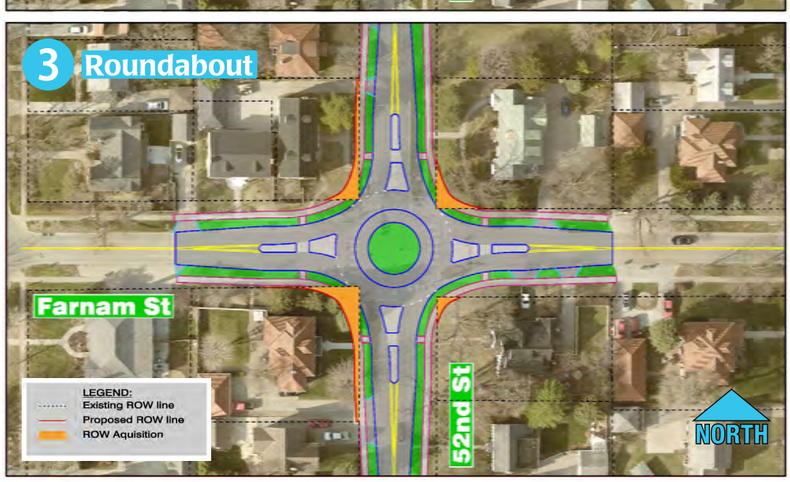
1. Acceptable operations, least amount of right-of-way impacts
2. Best traffic operations; least benefits for impacts; most costly
3. Best alternative for vehicle & pedestrian safety; access restrictions; least costly

PRELIMINARY PLAN
NOT FINAL - SUBJECT TO CHANGE

52ND STREET INTERSECTION ALTERNATIVES







SCREENING CRITERIA SUMMARY

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PRELIMINARY PLAN
NOT FINAL - SUBJECT TO CHANGE

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COMMENT MATRIX

Farnam Street Two-Way Conversion:: Public Comments

Topic	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	
on Corridor	3	2	2	1	2	0	0	0	3	13
off Corridor	22	0	5	10	9	0	0	29	9	84
Total Commented per Topic Category	25	2	7	11	11	0	0	29	12	97

Farnam Street Two-Way Conversion:: Public Comments (On Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Name	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes
	SH					homeowner								I am all for the two-way conversion, however I think there's less invasive ways than the proposals. Perhaps reprogram the traffic lights, etc. As a homeowner, we're so upset about our beautiful corner lot being destroyed. We've put blood, sweat and tears. Our red maple on the corner of 50th St is the neighborhood "gem". We also have a birch tree on the corner of our lot. Everything has been meticulously maintained.		
	SH					homeowner								Two-way all of the time. No left lane, 60 second Farnam lights. 30 second 50th and 52nd lights. IT'S THE CHEAPEST!	Phone: He brought up the waste in moving fiber that was just installed, tearing out traffic lights that were recently installed, shifting the project one direction or the other to avoid the fiber and fire hydrants and suggested new timing for the street light. He suggested to the City going to 2-way all-day 30 years ago. They have a very nice tree in their front yard that they do not want touched.	
	PIM					homeowner, commuter					I am very glad to see the move toward a permanent two-way traffic flow on Farnam becoming a reality! Of the three proposals for the 50th/52nd St. intersections, the roundabouts seem the best way forward. Midtown Omaha is experiencing a resurgence in walkability, with the new zoning plans and ORBT route alond Dodge and the numerous high-density deverlopments underway (and already finished). The two turn-lane options seem to only consider the present traffic load, but in the future I predict less need for vehicular infrastructure and more need for pedestrian safety. The two roundabouts are the future-oriented option					

Farnam Street Two-Way Conversion:: Public Comments (On Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Name	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes
						homeowner									If we must choose between the proposed opti ons at 52 nd and Farnam St, we choose Opti on 1 Left Turn Lanes. We would choose it because, based on your study, it would provide acceptable operati ons and the least amount ofright-of-way impacts. With that said, there are three issues that we see with Farnam St. 1. Confusion 2. Speeding 3. Running the Red Light Changing Farnam St to Two-Way, All Day, Every Day will no doubt address one of those issues, and that is	
						homeowner			We live on the corner of 54th and Farnam with a driveway on Farnam. Very much in favor of two-way all day conversion. Feel like this is a great opportunity to reclaim Farnam (or the 1.2 miles of it from Saddlecreek to Happy Hollow) as a residential street instead of a commuter thoroughfare. I like the circle option for 50th & 52nd St intersections because: it is the safest, least expensive, minimal impact to property owners, slows traffic, helps commuter traffic choose alternate routes, I think UNMC has eyes for a circle at 46th for their upcoming development. If that comes to pass, makes decision for 50th & 52nd pretty easy. Does anyone know what UNCM is							
						homeowner	He is in favor of the safest option and he seems to agree with the study that this would be a roundabout. Of the crashes that he sees, 9 out of 10 are related to speed and running red lights. He recognizes that a roundabout will slow down traffic and that if you take out signals, no one can run red lights any more. His two main concerns are backing out of his driveway. Apparently queuing at the intersection (I assume during PM peak) has blocked his driveway in the past and people aren't willing to wait to let them out. This has happened enough that on multiple occasions he has stood in the street so that his wife can back out onto							
							3	**2**	**2**	**1**	**2**	**0**	**0**		**3**	

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						commuter								I have received a card about the Farnam Street conversion & the information on it is incorrect. It states that I can get project information, documents & a pre-recorded presentation that will be available. As this is now April 19, 2022--there is NOTHING available for this project at the online website you list. How can I be able to make comments or ask questions if the info isn't there? The public meeting is April 25, 2022 which is 6 days away- since I will NOT be able to attend the "in person" meeting, I would like to see/hear/read about the project before the meeting. Otherwise, how will I know if I have questions about the plans? I am also very unhappy about the site of the "in person" meeting- your website has a large box at the bottom of the current incomplete information..that box states---Parking: Meeting attendees will		
						commuter	I feel that the ONLY SAFE WAY to operate this street section is continuously two-way!									
						interested party			Thank you for addressing this. Slowing down westbound traffic will just push people to Dodge, which is ok! People will adjust their routes. This will also make it easier to get to the Med Center from UNO between 4-6pm. Good luck!							
						homeowner, commuter				Prefer no-build option at first for both intersections, with change to two-way for 24 hours/day. Next best option is left turn lanes at 50th and 52nd. Pedestrians need the light to cross. Otherwise we could be waiting a long time during rush hour and school commute.						
						homeowner										
						homeowner										
						homeowner, commuter				Favor turning to two-way - 24 hour without any of the proposed changes to the intersection to see how it impacts traffic flow for 6 months to a year, using more current projections than 2019. Less confrontation from some in Public Works. Safety most important.				I would choose option #0 - no change in street format to see what happens. According to the chart it has good pedestrian safety which is important to our neighborhood. Then I would choose roundabout options, to promote slowing down of traffic along our corridor.		
						homeowner	VM: Excited and In favor of two-way all day with a focus on safety; his kids walk to school every day. Significant bend past Buffet's house; bad for icy days. Wife was hit (in car) at said intersection. Forcing people to use Dodge will slow down traffic which is good.Traffic on 52nd St - there are no traffic lights or stop signs from Farnam down to Leavenworth and that is a pretty serious arterial road (safety concerns). Recent major accident near Jackson St totaled both cars invovled. People drive way too fast on that stretch of road.								
						homeowner, commuter									I am a resident of Omaha in Dundee, and I support changing Farnam to two-way, all day, every day. The need for Farnam to be one-way during rush hour no longer exists, and it will be safer and more convenient for the community to make the street normal. Thank you for your attention!	

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						commuter, pedestrian					Pedestrian safety is most important to me. I'm not sure I agree with the study's assumption that roundabouts are best for pedestrian safety. For example, I find the "peanut" roundabout near Metcalf Park quite difficult and dangerous to naviate on foot. I'm sure roundabouts can be constructed to better protect pedestrians - I hope that will be the case on Farnam street. Slower car traffic, fewer accidents, and better pedestrian safety will be great improvements!					
														On behalf of the Dundee-Memorial Park Association, we ask that this letter be included in the official record for the public comments on the proposed changes to Farnam St. Dundee residents and the Dundee-Memorial Park Association have advocated for the end of the dangerous one-way traffic shifts on Farnam St. for decades. At the Association's monthly board meeting on May 2, 2022, the Dundee-Memorial Park Association Board considered all of the proposals presented by the Public Works Department for the conversion of Farnam St. to two-way traffic all day, every day. The Board voted unanimously to support a new Alternative #4 that returns Farnam St. to two-way traffic 24 hours a day, but also saves taxpayer money and eliminates the need to take property and remove mature trees. The specifics of	
						homeowner								As a resident along Farnam St, I am writing to express my support for two way traffic, all day. I would encourage the city to pursue a minimal infrastructure spend, given the adequacy of the existing infstructure during all other times of day.		
						interested party								I heartily support the idea of: Alternative 4! Two way traffic, all day, every day on Farnam Street, with no unnecessary $3 million infrastructure investment. And no loss of right of way for neighbors. I believe this alternative at least deserves a trial period of six months (as suggested by the Dundee-Memorial Park Neighborhood Association). Why disrupt traffic and spend millions before trying a sensible alternative?		
						homeowner, commuter								I support the DMPA's alternative #4: Two way traffic, all day, every day, with no unnecessary infrastrcuture investment and no loss of right of way for the neighborhood. The street is unsafe as it is.		

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner	I live at 4817 Douglas Street, the street just north of the portion of Farnam under consideration for conversion to two-waytraffic. The primary goal of the proposed modification is to improve vehicle and pedestrian safety. For this reason, theconstruction of traffic circles at the intersections with 50th and 52nd Street makes the most sense. The traffic study hasidentified this method of vehicular control as the safest of three proposed alternatives. The existing "roundabouts" in my part of Omaha. east of Elmwood Park and at the intersection of North 50th Street andSaddle Creek Road, have improved vehicular flow since their installation. Surely such traffic-calming intersections onFarnam would have a similar salutary effect.							
						homeowner								I am a longtime South Dundee resident, as well as a board member and the historian for the Dundee Memorial ParkAssociation.. Speaking for myself, I am opposed to roundabouts or additional turning lanes at 50th and 52n on Farnam. Farnam is 2-way 20 hours a day and can handle the traffic during peak times. . Also, the corridor passes through historic Dundee Place and Evanston-Happy Hollow Additions. Construction/expansion isn't the correct solution for our historic neighborhood. . Thank you for the information you've provided.		
						homeowner	We have been a homeowners on 53rd Street just three homes away from Farnam Street for 22 years. During this time,my husband Charles Kay and I raised our children from baby to young adult. When they were at Dundee Elementary weserved at PTA presidents and helped implement a program that began on the East coast called Walking School Bus inconjunction with Julie Harris from Activate Omaha. Our children often walked to school, rode their bikes and from veryearly ages it was clear that Farnam Street had too many accidents, too much speed, and confusion. When our kids were in middle school we again closely saw the intersection of 52nd and Farnam. Our kids waited for thebus there daily. Again, we witnessed more of the same-cars going too fast, the wrong way, and unfortunately accidents. It's been clear to those longtime residents for years that the issues of Farnam street are great. I am a runner as well, and I run							
						homeowner	I am writing you as a resident in Dundee, as well as a home owner/parent that lives on Farnam at 49th Ave. I applaud the work and the meeti ngs to get this done right. I am in favor of Farnam changing to be 2-way all day, and support the use of roundabouts at 52 and at50 th street. For the safety of our children, and to reduce the speeds along Farnam, I feel that theroundabouts will slow people down and make the area safer.							

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner, commuter									The goal from a neighborhood perspective is that the change to 2-way will divert traffic away from Farnam to Dodge and Leavenworth Streets, thereby negating the need to update the intersections for more traffic flow. There are precedents from the city for this goal including the simultaneous closures of eastbound traffic on Western Ave at Happy Hollow and westbound traffic on Cumming St. at 50th St. which was done approximately 14 years ago. I feel that the lane change should be made without intersection improvements at least for a trial period to see how the traffic flow reacts. My driveway is impacted by both options that include turning lanes at 52nd St. Both options remove the apron of my drive which may not look too invasive on a 2-D plan but I don't think grade changes could have been looked at closely in these designs. The apron is literally the only flat portion of my driveway. There is 6'-8' of elevation change in my drive	
						homeowner									I am interested in submitting a comment regarding the Farnam 2-way Conversion Study, however my comment was a bit too long to fit into your online form. I hope it is ok for me to submit it via email here. We have lived in Omaha for three years and have owned and lived in a residence between Farnam and Howard Streets for the past two years. My husband and I have lived in a number of large cities, including NYC, LA, Chicago and DC, so we certainly appreciate the city trying to proactively address traffic challenges. I recall thinking during my first visit to Omaha, in 2019, that the signage along Farnam in the Dundee neighborhood was extremely confusing (and a bit dangerous) and that a one-way street during limited hours of the day was completely out of place in a historic, residential neighborhood. Now that we have lived in the Dundee neighborhood for three years, I feel even more strongly that	
						homeowner, commuter	We have lived here less than 2 years and have seen 3 accidents at 49th & Farnam. It becomes a dangerous street during rush hour times. Out of town people are at risk at these times. So is everyone else traveling Farnam. It needs ot be two-way all the time. It's up to you to make this happen. Thank you.									

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner			I am a homeowner and thirty-plus year resident of the Dundee neighborhood. Ihave utilized Farnam for my daily commute downtown for work and my daily drivingroutine. I strongly support changing Farnam to two-way all day, every day with no majorinfrastructure changes. Commuting and driving patterns are changing. We have a new more-efficient bus system. We should encourage its use. The proposedstreet car will allow residents to live closer to a downtown job and provide an alternativeoption to living east of Saddlecreek in desirable neighborhoods that does not existtoday. Covid has -- likely forever -- changed work patterns with many workers nowworking from home or going in-person to an office on flexible hours, lightening the trafficload during a morning or evening rush hour. As Omaha expands its bike lane and bikepath system, more will take advantage of this mode of						
						pedestrian					I (Justin Zetterman) spoke with Gabriele on the phone. She is in favor of converting Farnam to 2-way, all-day. She feels the existing switching condition is unsafe and confusing. As a pedestrian (I don't believe she drives) she is in favor of roundabouts for safety and believes that they are the safest option for vehicles as well. She is originally from Europe and has seen the benefits of roundabouts and is comfortable with them. She believes that the Elmwood Park roundabout functions well.					
						homeowner								Farnam Street is a family neighborhood street with beautiful historic homes. The integrity and sanctity of the Dundee Neighborhood should be of most importance in this decision rather than how to ease traffic from Dodge Street. To ease traffic from Dodge Street there are so many other options than to run through the heart of our neighborhood on Farnam Street. The new planned route to ease traffic should be located on the same streets as the new UNMC developments and the massive new apartment complexes located on Dodge, Leavenworth and Saddle Creek Roads. The only reason why Dundee has been so popular thus far is because of the sanctity and integrity of the homeowners who value the history and preservation of a historic neighborhood. If the city chooses to continue to invade the neighborhood with sending increased traffic down Farnam Street		
						homeowner				I'm hoping the study will include a look a roundabouts, particularly at the intersections with 50th and 52nd. Myunderstanding is other cities (especially Carmel, Indiana) have had great success using these to support heavy traffic,while keeping streets safe. I appreciate the roundabouts near Elmwood Park and Metcalfe Park.						

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						commuter	I am unable to attend the public forum tonight, but would like to briefly state my opinion on this study. I commute to work on this street during the 'one-way only' times M-F every week. It has become significantly worse in the past few years. I will never leave the right lane whether it is morning or afternoon 'one-way' times. My reason for this is the number of cars I encounter driving the wrong directon during those times! Contributing then to the risk I see are the drivers who are driving in the correct directions during those times, but are speeding...a lot. Based on gauging my speed at the time, these drivers must often be pushing 50 mph, without regard to possible on coming drivers going the wrong direction. I do not live in this neighborhood, but I do feel the most important risk that should be considered is the amount of pedestrians out, especially during the afteroon commute. People walking with children, walking dogs, jogging, etc. The numbers are many								
						homeowner	I live less than a block away from 52nd and Farnam and would prefer a roundabout at this location and another one at 50th street. My family walks the neighborhood frequently, as do many other families with young children, and we would prefer crossing at a roundabout than across multiple lanes. Plus this option would prevent more high speed/red-light accidents that keep occurring here. I could care less if traffic in a neighborhood is slower in the PM, itâ€™s a neighborhood not an expressway. Thank you!								
						homeowner	Farnam is unsafe and chaotic, roundabouts are needed to control the flow and speed of traffic in the neighborhood. Furthermore lowering the traffic flow on Farnham helps to prevent the block between Dodge and Farnham from being essentially cut off from the rest of the neighborhood. I am strongly against anything that would add additional lanes of traffic and make the neighborhood less pedestrian friendly.								
						homeowner								I prefer roundabouts and do not add additional lanes. Thanks!		
						homeowner	Decades ago a former Farnam resident told me how grateful he was when Farnam became 1 way twice a day. Until then, he could not get out of his driveway during peak hours. What were letters to the editors comments on this subject before and after conversion in the 1950s? Something motivated the conversion then, will we reintroduce that/those problem(s) upon converting again to all day 2-way? Safety is key reason for changing current configurations. Safety should be key for solution (roundabouts). When will Farnam for the single block at 42nd street (old mid city bank) become 2 way?								
						homeowner								Let unmc build a round about at 46 and Farnam. Make Farnam from 46 St to Dodge St, 2 way all the time.		

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner								Of the three options presented for traffic on 50th and 52nd & Farnam street, the roundabout seems to be the best. Since there is not a lot of traffic going north and south on 50th and 52nd streets and there is a lot of speeding especially when traffic is one-way, I think a roundabout will provide for more fluid traffic flow and will slow down drivers. From the renderings, it looks to me that the left turn lane option will back traffic up.		
						homeowner	I live in the area and drive down Farnam a few times a week. Any time I drive down it during one way times, there is always at least one person who turns onto Farnam going the wrong way. It's also hilly, which adds to the danger. I've never seen enough traffic on it to warrant needing two lanes going one direction. It's also a residential street, it should not be trying to push as much traffic through as possible. Making Farnam 2 way all the time would make it safer and make the area easier to get around and more beautiful without having dozens of signs and electronic signals								
						homeowner								It is important to remember that this is a neighborhood, and traffic speeds should be consistent with a residential street. The one-way periods encourage higher speeds and also lead to confusion and dangerous outcomes. Farnam should be two-way all day. If cost is a concern, convert signalized intersections to 4-way stops. This will help reduce speed without affecting overall throughput on the street. Bonus: super cheap and easy to maintain		
						commuter				Roundabouts, signals, etc are NOT going to fix the issues with changing the direction of this street 2xday. I have driven this street for 30 years plus, and even though I know about the change, I still am terrified to get on this road as it never fails... someone is going the wrong way on it. It makes not sense and with so many people now working from home, is the traffic issue this was supposed to fix even an issue now? It is unsafe to have this not be just a "regular" road with 2-way traffic at all times. I feel for the people that live on this street. Now is the time to make this right, and make it 2-way ALL day					
						commuter	Please make this 2-way, all the time. I drive this stretch every day, including during rush hours, and there have been numerous times I've either almost been in a crash due to someone not following the traffic patterns as they exist today or have seen crashes from being confused or not obeying the traffic pattern. It's time to be 2-way, all the time.								
						homeowner	Think long term. Keep it SAFE!!! My daughter, grandchildren, and myself walk Farnam daily. Speeding is a Major Issue. Dundee is a jewel so do not destroy its integrity.								

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						commuter			Reading the WOWT story, I'm confused why "the left turns don't line up" or whatever was said. If the road works when it isn't two way (it does, I drive it) then why wouldn't taking the signs down work? As for capacity, STOP TRYING TO SEND COMMUTERS DOWN NEIGHBORHOOD STREETS. You will NEVER have the kind of walkable city streets with that crap. Keep the commuters on four lanes and off neighborhood streets where kids live.						
						interested party								In favor of converting Farnam to a full-time two-way street. The current configuration is dangerous. I've seen school buses, police vehicles, dump trucks, and various other vehicles driving the wrong way - and not just during the two-hour periods. The changes in Blackstone cutting Farnam from a four-lane one-way to a one-lane-each-way street complement the changes further west. Farnam isn't what it used to be - or it least it doesn't have to be what it is. I encourage the city to move forward without making major changes to see if traffic will naturally divert to other streets. But short of that support left-turn lanes at 52nd and 50th streets		
						homeowner								Thank you for suffering through the Apr 25 Stakeholders Meeting. As you saw, there are a lot of pent-up frustrations from the neighborhood being asked to carry such a traffic load. And now they're being asked to give up a little more, all for people who don't live in or support the locale. It's hard. You did a good job. My driveway faces into Farnam b/w 50th Ave and 50th St, so my access will be affected. But in the end, I think a roundabout will serve all neighbors and thru-drivers alike the best. It promises to slow traffic in general, keep it moving more evenly without the pulsing of traffic lights, and allow 50th St and 52nd St N-S traffic to flow evenly as well, without the awful waits for left-turners we have now. I understand roundabouts won't solve the traffic load problem entirely, but I vote that it shouldn't. This street shouldn't be the best choice for people who want to go fast. A little wait is just fine to calm down the traffic, which now races at ridiculous speeds. All this		
						commuter									I fully support making Farnam a two-way street full-time. I have often been driving on Farnam during the one-way hours and witnessed cars turning the wrong way onto it, almost causing an accident. Furthermore, it is a residential area! Making it one-way encourages cars to go faster and makes it unsafe for the residents. I cannot imagine what the original planners were thinking to funnel overflow from Dodge through a residential neighborhood. Quite frankly this should never have been allowed to happen, and we should fix this mistake as soon as possible.	

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner, pedestrian								The bottom line: Any of the three proposals would be a vast improvement to the current configuration, which is very hazardous, as the statistics shared at the public meeting indicated. Living on S 53rd between Dodge and Farnam and being an avid walker I frequently witness harrowing situations involving drivers coming from the wrong direction during periods of one-way traffic creating substantial risks to both drivers and pedestrians. The situation on Farnam is compounded by the lack of enforcement of posted speed limits and red-light running. Since that is unlikely to change the proposal to replace the 50th and 52nd street intersections with rotaries should be given very strong consideration. 1) Drivers in the area are familiar with the arrangement since there is one at the Happy Hollow entrance to Elmwood Park		
						interested party								Two way all day		
						pedestrian					I support a roundabout for 50th & Farnam - it is the safest for pedestrians as we have a lot of walking families, children coming home from Dundee School, and pet walkers who cross 50th and Farnam					
						homeowner								Hello, My name is Laura Campbell, and I've been a resident in Dundee for 13 years now. I live on the corner of 50th Avenue and Farnam, and so have witnessed, heard and came close to experiencing all the accidents that happen on the 50th Street corner. I'm advocating for construction of a roundabout at that location. The only reason I have: to stop the constant accidents. My husband and I are so accustomed to hearing accidents during the day we hear the bang, we save what we're working on, grab our phones, and head out to the corner to try to help. I've helped a screaming woman out of her van that lay sideways across our neighbors sidewalk. I've comforted crying mothers and her children that have their entire front grill bashed in, and brought them back to my house to get them water and a calm		
						commuter									Lifelong resident of Omaha, now 70. Have made wrong way driving on Farnam a habit for decades. With the reduction in downtown workers caused by pandemic and work from home for mutual and Joe with and others it no longer makes any sense.	
						homeowner								Please do away with one way at certain times! I like the round abouts. I think doing a round about at 50th would work but 52nd and Farnam seems to have a lot more traffic all day so it might be better to do left and right turn lanes at that intersection.		

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner	I attended both the stakeholder and public meetings about converting Farnam to two-ways all day. I heartily support making the conversion. Homeowners and neighbors have been asking the city for years to make this conversion. As safety is my primary concern, I'd like to see roundabouts constructed at both 52nd and 50th streets. If roundabouts will not be created, I would like to see the less invasive traffic signal change/construction to add left turn lanes only. Thank you for taking the time to meet with neighbors and present the information, which confirms our experiences that crashes occur more often during the one-way travel times, a fact that city officials have denied for years.								
						commuter, pedestrian								Farnam Street should be 2-way at all times. Switching directions multiple times a day can lead to a lot of confusion for drivers, which then makes it more dangerous for pedestrians and other drivers. When looking at Farnam, all modes of transportation should be considered, not just cars. Pedestrians and cyclists should have the ability to feel safe, no matter what time of day it is. When looking at redesigning this section of road, different slowing techniques should be considered, as well as clear signage for all travelers.		
						commuter								Just make 2 way with one roundabout. i am not concerned about slowing traffic, that is really the point.		
						homeowner				Very pleased to see this project coming to fruition. As an owner of a home on Farnam St. at the NW corner of 51st St, I would strongly favor the Option 3 Roundabout. Option 3 Roundabout would keep traffic flowing at controlled speeds within highly dense neighborhood with school crossings. While assisting in reducing and limiting speeding vehicles, it would reduce multi-vehicle collisions resulting in fewer serious injuries and deaths. The roundabouts would also enhance what this part of Dundee is, a neighborhood which includes many children and most likely more walkers than any neighborhood in Omaha. Accidents resulting in deaths and serious injury on this stretch of Farnam Street is the result of running red lights. Installing more or newer lights will not eliminate these accidents. Roundabouts will. For drivers wanting multi-lane thoroughfares, Dodge Street is within 1 block to the north, and Leavenworth is slightly further to						
						homeowner					Thank you for doing this study and inviting public comment! I live in Dundee and members of our neighborhood have been pushing to improve safety on Farnam and make it two way all day for many years. I support roundabouts, which are the lowest cost option and recommended for safety. Roundabouts would slow traffic the most and lead to a safer street for all. However, there may need to continue to be a few signaled crosswalks to support safe pedestrian crossings of the streets including school children, the blind, and others who may have challenges safely using a crosswalk as part of a roundabout without a signal.					

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						commuter			I've been driving Farnam Street to work and back mornings and evenings for thirty-some years. I see a car coming the wrong way mornings or evenings maybe once or twice a year. I have never seen a vehicle crash. Much ado about nothing.							
						homeowner	I was unable to attend the public meeting, but I'm very interested in this project. It can't happen soon enough. Of the three options presented, I have a strong preference for option 3. We need to prioritize safety, pedestrian and bike friendliness, and placemaking. Our goal should *not* be to get vehicles through the intersection as fast as possible.									
						commuter								No roundabouts. Those are nothing but created hazards.		
						homeowner				Thank you for soliciting feedback. I live in the neighborhood and I strongly support converting Farnam to 2-way all day. Most of the neighbors I have spoken with share this opinion. Above all, the current operations plan is dangerous - far more dangerous than it needs to be. In addition to feeling dangerous along Farnam, it feels dangerous on the numbered streets as we approach and look out for confused drivers. This traffic pattern also feels dangerous as we try to encourage our children to walk up to Dundee and visit the businesses and schools there. Access to the pedestrian tunnel is one of the reasons we love living in this neighborhood, making that access safer is a win for all. Second, the traffic pattern has done a lot to make the homes between Farnam and Dodge feel separated from those of us just south of Farnam. Stronger neighborhood connections are in all of our interests. I am in favor of the roundabouts. They work in other						
						homeowner								I attended the public meeting and appreciated the engagement and eagerness to answer questions. I am very happy to see Farnam moving to two way all day. My wife and I own the property on the SE corner of 50th & Farnam. I recognize that it's hard to project traffic volumes. In my ideal scenario the city would restripe the lanes, remove the signage about 2 way traffic and then measure traffic volumes after a few months to have the appropriate solution for the intersections. If that's not practical then I lean toward Option 1 or Option 3. A left turn lane seems like a preferable arrangement than the current right turn lanes in a similar amount of space. A roundabout will help with red light running as mentioned in the presentation. Though they are			

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						pedestrian					Thank you for presenting the results of the study last week. I'm writing in support of the roundabout options, which I think will best slow down traffic, especially where it interacts with pedestrians. I walk Farnam almost daily between 48th and 51st St and have seen far too many crashes and near-misses due to the speed of vehicles. The roundabouts are the best option for forcing vehicles to slow down.					
						homeowner								Roundabout: more thoughts: Thank you for already letting me get my two cents in. Here are two more. The permanent left turn lane option for 52 and 50 Ave isnâ€™t crazy. But it comes at great expense, both to the city and to the affected homeowners. Our properties end up a little smaller and a lot uglier. Yet for all that expense and woe, the left turn lane doesnâ€™t solve much. Traffic will still speed down the hill as it does now, racing often at twice the speed limit, often unimpeded for the entire stretch from Dodge to Saddle Creek. I confess Iâ€™ve done it myself a few times. itâ€™s irresistible. Pedestrians will have to scamper even farther to cross Farnam. Drivers trying to go north or south on 50th Street, already waiting multiple lights at peak times, will back up even farther		
						homeowner	We live two houses in from Farnam and canâ€™t count the number of car accidents we see. The most personal was in 2018 when my teenage daughter was driving into high school early and was used to traffic being one way after 7am. She failed to look East while crossing Farnam and was hit by a car and her car and the other driver car were both totaled. Thankfully neither had serious injuries but the confusion of this street for a new driver was the reason for the accident. There are cars racing up and down Farnam when the time changes and there is absolutely no reason justifiable to have this set up in the middle of a neighborhood.								
						homeowner								I am in strong support of the 2-way conversion of Farnam street, and am equally strongly supportive of the idea of adding a roundabout there!		

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner, commuter								I personally feel that a roundabout is the best option, because: 1. Cars drive well over the speed limit in this stretch of road from Saddle Creek to Dodge St. 2. It's through a neighborhood that is more walk friendly. 3. Pedestrians/Cyclist should be the number 1 priority not motorist who would be protected in their vehicle if they happen to hit a pedestrian. 4. Roundabouts are cheaper to build/maintain...no electricity is used as a reoccurring cost. 5. We live in a different world now due to COVID-19; must less people commute the 8-5 grind. People work from home. The traffic has been dispersed throughout the day, not just morning and evening rush hour. 6. Omaha takes way to long to do anything that should have already been done years ago. *If roundabouts are implemented please do something with 42nd & Farnam...I don't get why there isn't a single lane that goes eastbound at that intersection. That old bank has been		
						homeowner	This needs to be 2 way. Too many deaths, accidents, and near misses. Save lives. Make this 2 way all the time.									
						homeowner								Roundabouts are wonderful! Safe for drivers and pedestrians, appropriately slow traffic, WAY better than stoplights for moving traffic. I do hope that the traffic experts have the final say in converting Farnam to 2 way at all times and adding a roundabout at 50th Street. Thank you!		
						homeowner								Good afternoon, I live along Farnam, and my family is in favor or changing the street to be 2 way all day. We are also in favor of roundabouts for the road if converted. We experience near miss accidents weekly, and often have cards veer off of Farnam and into our verge and driveway. It makes for a very stressful and scary situation		
						homeowner				As someone that lives in the area, I strongly support switching Farnam to 2-way traffic without any chances but signage. The street works fine for 2-way as it is and thereâ€™s no need for turning lanes or roundabouts. I believe this is option 4. On the other hand, if you want to find a way to add turning lanes on 50th St at Dodge, that would be a good idea. Turning Howard Street into an actual road from 46th to 50th would also be a good idea, considering it is likely to see more traffic in the area with the new development coming between Saddle Creek and 46th. Besides how embarrassing it is to have such a ridiculous â€œroadâ€ right next to such a huge development for the area. Thanks!					

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner, pedestrian								I am definitely in favor of making Farnam Street 2-way all of the time. As a driver who uses Farnam Street a great deal of the time I have had numerous encounters with vehicles driving the wrong way during the designated one-way times. When walking I have witnessed accidents that have happened due to the confusion during the transition from 2-way to one-way. I attended the meeting at UNO and listened to the proposed alternatives. I wonder if it might be better to start with putting the roundabout at the intersection of 50th and Farnam first and hold off on making any changes to the 52nd Street intersection. The 50th Street intersection seemed to be a reasonable, safe and least costly alternative. Just taking this action may be enough to slow down Farnam Street traffic. Give this action time to determine if changes would need to be made at 52nd Street. If so, then I would suggest that adding the left turn lanes at 52nd would provide		
						homeowner								Hello, I'm writing in support of converting Farnam Street to two ways at all hours of the day, every day of the week. This change has been wanted and needed for a long time in the neighborhood. The current one-way during certain hours of the day rules have been dangerous to drivers and people in the neighborhood. Of the possible plans presented, I am most in support of the new alternative proposed by the neighborhood (no left turns onto 50th and 52nd during peak periods). This would avoid the city having to take property, save taxpayer money, and allow more time for the issue to be studied once the street is two-ways at all times. Please consider this alternative and waste no time in converting Farnam Street back to two-ways at all times. It is long overdue. Thank you, Trisha Howard 109 N. Happy Hollow Blvd.		
						homeowner								As a neighbor who lives half a block south of Farnam Street in the conversion area, I'd like to voice my support for putting in roundabouts at the intersections. This seems to be the best option that both allows traffic to continue to move while still getting cars to follow posted speed limits. Slowing down while still moving is the best for everyone.		

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner, commuter			I strongly support changing Farnam to two-way all day, every day with no major infrastructure changes. I am a homeowner and thirty-plus year resident of the Dundee neighborhood. I have utilized Farnam for my daily commute downtown for work and my daily driving routine. Commuting and driving patterns are changing. We have a new more-efficient bus system. We should encourage its use. The proposed street car will allow residents to live closer to a downtown job and provide an alternative option to living east of Saddlecreek in desirable neighborhoods that does not exist today. Covid has -- likely forever -- changed work patterns with many workers now working from home or going in-person to an office on flexible hours, lightening the traffic load during a morning or evening rush hour. As Omaha expands its bike lane						
						homeowner, pedestrian					I am in support of making Farnam street 2 - ways full time. Please focus on the safety of pedestrians and cyclists, not just the speed and efficiency of vehicles.					
						homeowner									The solution is simple and cost effective. NO NEED FOR TURN LANES AND ESPECIALLY NO NEED FOR STUPID ROUNDABOUTS. Just remove the signs that switch Farnam to one direction. Thatâ€™s it, Do not underestimate the power of the engaged citizenry in this neighborhood. I for one will lay my body down to stop roundabouts and unneeded turn lanes that require widening Farnam at the expense of trees and neighborsâ€™ property. Your proposed solutions are unnecessary and expensive and will make it difficult for rescue vehicles to access our neighborhood. Are you the same traffic engineer that proposed removing the traffic lights / signals at 51st and Farnam and 51st and Chicago near Dundee School? Did you not learn ANYTHING from that fiasco? STOP MESSING UP DUNDEE WITH YOUR IMPRACTICAL	
						homeowner	I attended the meeting at UNO and have reviewed the proposed changes. I have lived in the neighborhood for 20+ years and directly on Farnam for 7. I have 3 children under the age of 13 and due to the traffic issues on Farnam, they are not allowed to play in the front yard. While I am glad that the conversion is finally happening, I want to make sure that safety is the main concern when deciding what to do, not traffic flow. Roundabouts are my preference for a few reasons. The studies that were done clearly showed that these are the safest option for pedestrians. There are lots of people walking and biking along Farnam and they need to be able to do these things without fear of being hit by someone not paying attention. The bottom line is roundabouts slow people down. It will be an adjustment for everyone to get used to the roundabouts, but it will be good in the long run. And those people who can't adjust to the roundabouts can use a different route. Thank you for								

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						pedestrian					I live near this segment of Farnam and thus walk in the area. Due to the unsafe, high speed travel that the current design encourages, I am very glad to see this segment become 2-way. After reviewing the design, I am concerned about the roundabouts proposed near 50th & 52nd. While roundabouts are effective at moving cars, they can be challenging to navigate as a pedestrian. I ask that you please have a pedestrian-first mindset with this plan, allowing for better pedestrian visibility and use, even if the result is less efficient for people in cars. Similarly, I do not support the addition of new turn lanes as this makes the street harder to cross and takes public space away from people who are walking and gives it over to people in vehicles. It is clear that the current configuration of Farnam is not friendly to people outside of a vehicle. We have an opportunity					
						homeowner									Thank you for publicly stating, with data, that the 4x/day change in traffic direction on Farnam Street leads to more accidents than typical! The public presentation was well organized and documented, with staff who listened to and responded to my questions and concerns without talking down to me. I'm still not clear on why the conversion to both ways, all day, every day can not happen with the current infrastructure, at least on a trial basis, especially with the 46th Street roundabout coming soon with the UNMC re-development. Of the 3 designs presented, the roundabout series offers the best option, with less property acquisition as well as addressing other observations of residents of the 1 mile strip: speeding traffic and distracted drivers looking at their phones like they are on a freeway. As all 3 proposals show, the traffic signal at 51st Street must remain to support pedestrian and bicycle traffic using the	
						homeowner, pedestrian					The Dundee neighborhood is proud to be a highly pedestrian-friendly neighborhood. Farnam St. has always been the outlier in South Dundee. The data clearly shows that it needs to change. We shouldn't have had to wait this long for the city of Omaha to fix it. Whether turning lanes or roundabouts, I would like to leave that decision up to the engineers, but I have little faith that they have the neighborhood's best interest in mind. Personally, I would prefer roundabouts, but those will only work if traffic would stop for pedestrians (as seen in other major cities).					
										We need Farnam Street to be two-way, all day, every day. I support Alternative 4-- no wasteful $3 million unnecessary spending needed! Try it out and see how it goes. You can always add turn lanes at a later date if needed. But with the changes to peoples' work habits, and with people adjusting and switching to driving on Dodge or Leavenworth, Farnam Street will be just fine with no added lanes or roundabout.						

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner	To Justin and those reviewing this project,I have been a homeowner on 53rd Street just three homes away from Farnam Street for 22 years. During this time, my husband Charles Kay and I raised our children from baby to young adult. When they were at Dundee Elementary we served at PTA presidents and helped implement a program that began on the East coast called Walking School Bus in conjunction with Julie Harris from Activate Omaha. Our children often walked to school, rode their bikes and from very early ages it was clear that Farnam Street had too many accidents, too much speed, and confusion. When our kids were in middle school we again closely saw the intersection of 52nd and Farnam. Our kids waited for the bus there daily. Again, we witnessed more of the same- cars going too fast, the wrong way, and unfortunately accidents. Itâ€™s been clear to those longtime residents for years that the issues of Farnam street are great. I am a runner								
						homeowner	PART TWO: The archaic model of Farnam is ever more dangerous. Having attended the meeting recently, it was disappointing not to give public feedback amidst others who have lived alongside and seen the same. PLEASE consider the safest option of roundabouts. They are most affordable and the safest for pedestrians- we have many many young children in our area. Drivers will figure out how to use them. They are used in many cities US and Europe and are effective. I also encourage you to consider speed bumps or other methods to slow traffic down. Every day cars are speeding at high speeds unsafe.								
						homeowner				I am a resident of Dundee just off of Farnam. We've lived there for about 7 years. In that time I've had countless experiences in the morning and afternoon of cars coming the wrong way during the one-way only time of day. Fortunately I've never been in an accident but there have been many close calls for myself and many other residents of the neighborhood, and several accidents for many others. I would be in favor of any of the proposals to make Farnam two-way all day, but am partial to the roundabout proposal as I believe that would also have the effect of slowing down traffic in the neighborhood. Especially during the one-way only periods, cars travel at unsafe speeds for a neighborhood with many families and children who play near Farnam. I am hopeful that these changes would resolve both of those issues and look forward to hearing more about how this project develops.						

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner, pedestrian					I am in favor of the 2-way conversion on Farnam. I like either a roundabout or 4-way stop at 50th and 52nd & Farnam. Since roundabouts are not pedestrian friendly, I would like to see specific pedestrian safety plans that are in-line with Omaha's Vision Zero plan. An additional infrastructure improvement would be to include a 14-foot cycleway along Farnam on the south side of the street. This could connect 48th to the east and then through the UNMC Project Next - bridging Saddle Creek. Similar improvements to the sidewalk on Dodge, north of Happy Hollow would allow for an East-West cycling corridor which is needed.					
						homeowner	I live on the corner of S 52nd and Farnam and would like to see a round-about put in as the other options just wouldn't take care of how unsafe this road has become for our children to play outside or if our dogs got out of the fence somehow. The traffic makes it hard for me to get to work in the morning and the switches from one-way to two way are confusing for folks and dangerous.								
						homeowner				I am in support of the round-about option. This will add value to our home in the future, even if we have to initially sell the property to the city. I want to preserve this area as residential, and to do that we need to ensure we choose the option that is best for preserving the safety of those residents. We are not a cut-through for traffic to and from midtown!						
						homeowner, commuter									I am writing to oppose the changes the Public Works department is proposing to shift Farnam Street to full-time 2-way traffic. I have lived at this address for 33 years and use Farnam on a daily basis, both in a vehicle and as a pedestrian. The changes that Public Works claims are necessary are ridiculous. Roundabouts at 50th and 52nd will create a significant hazard to pedestrians and create access challenges for emergency vehicles. Further, maintenance is an issue, as the roundabout on Happy Hollow Blvd. at Elmwood Park is crumbling, presenting both safety issues an an eyesore. Widening the street through Eminent Domain to create turn lanes at 50th and 52nd also is extreme and unneeded. And prohibiting left hand turns from Farnam is beyond crazy, rendering many streets virtually inaccessible (when combined with the Dodge Street turn ban). These solutions are worse than the problem! I understand the push to convert	

Farnam Street Two-Way Conversion: Public Comments (Off Corridor)

Parcel ID	PIM or SH	Contact Name	Contact Address	Contact Phone	Contact Email	Site_Descr	Safety	Access	Traffic Flow (mobility)	Traffic Operations	Pedestrian	Drainage	Pavement	Suggestions	Other	Notes:
						homeowner	I fully support Farnam becoming two-way all day to improve the safety of those who live in the neighborhood. Improving bicycle and pedestrian facilities are other ways to help move traffic in Omaha's neighborhoods. Those who choose to live far away from their work should not get to speed through residential neighborhoods to save a few extra minutes on their commute at the sake of the safety of those who live there. As midtown Omaha becomes more dense, it will be even more important for the safety of people to be prioritized over the speed of vehicles in residential neighborhoods.									
							22	**0**	**5**	**10**	**9**	**0**	**0**	**29**	**9**	