# Orem City Small Roundabouts Feasibility and Design

## *Final Report*


*Prepared By:*

*Christopher K. Haskell, EIT*
*Zane Pulver*

*Student Mentor:*

*Daniel Jean, EIT*

*Faculty Advisor:*

*Dr. Mitsuru Saito, PhD, PE, F.ASCE, F.ITE*


*Prepared for:*

*Senior Design Project*
*Civil and Environmental Engineering*
*Brigham Young University*

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## General Information

### Project Sponsor

Taylor Forbush, P.E.

Email: tforbush@orem.org

Available Monday – Friday, 8-5pm

Keith Larsen, P.E.

Email: klarsen@orem.org

Available Monday – Friday, 8-5 pm

### Mentor

Daniel Jean, E.I.T. Graduate Research Assistant

Email: danykat08@gmail.com

# INTRODUCTION

The city of Orem is a growing community; the population has grown by more than 4,000 people over the last ten years making it the fifth largest city in Utah and houses the largest university in the state. Orem City encompasses an area of 18.3 square miles and contains a population of 90,749 as of the 2012 census. Thus the density of Orem consists of 4,826 people per square mile. Orem City is classified as an urbanized community according to the standards established by the American Association of State Highway and Transportation Officials (AASHTO).

The purpose of the Small Roundabouts and Feasibility Design project is to evaluate the feasibility of connecting roundabouts of three all-way stop intersections along the 800 West corridors in Orem, UT.

The city's goals from this project are:

- To reduce traffic delay
- To improve safety for pedestrians and bicyclists
- To assist in traffic flow
- To improve air quality by reducing unnecessary stops

Using the Federal Highway Administration's (FHWA) publication titled *Roundabouts: An Informational Guide* as a resource, the two types of roundabouts that will most likely be considered for the feasibility study is mini-roundabouts and urban compact roundabouts (FHWA 2010). The mini and single lane roundabouts are used for classified vehicles of SU-30 up to

WB-67. Along with the counts, an estimation of truck counts will be taken into account to specify the design vehicles for each potential roundabout.

It is first necessary to determine if roundabouts are feasible at each of the given intersections. This will be done through various means to determine if a roundabout can or should be constructed at these locations. Collection of traffic data is the first necessary action to consider in determining the feasibility of each roundabout. The traffic data collected will be used to analyze the level of service of planned roundabouts along with a demand versus capacity analysis for roundabout feasibility from a traffic operations standpoint.

Following the modeling and simulations of traffic for proposed roundabouts, the physical dimensions of each location will be observed. This will be conducted to determine if roundabouts will fit with the current land used by the city for the current intersections. If roundabouts are not practical for each location then a determination of land acquisitions will be conducted. In addition, roundabout sizes will be determined for each specific site along with the roundabout dimensions.

To be noted, during the process of the project it was informed that one of the sites will be taken off the project. Officials of Orem City informed the project team that Site D: 800 South and 800 West will be considered for another project and will no longer be a part of this project's scope.

# PROJECT SCOPE

## *Intersection Descriptions*

The project team visited each of the sites within the project to gain further understanding of the needs of each site. Sites A, B, and C are located on 800 West in Orem, UT. Figure 1 provides a vicinity map of the three sites.


**Figure 1: Vicinity Map of Sites A, B, and C**

Site A: 2000 North and 800 West

Site A is located at 2000 North and 800 West of Orem, UT. Site A is on the northern border of Orem City and Lindon City. The site consists of a four way stop and contains one lane per direction. The site contains both urban collector streets and urban local streets. In addition, marked crosswalks are provided. Figure 2 provides an aerial view of the site. Figure 3, Figure 4, and Figure 5 provides streets views of Site A.

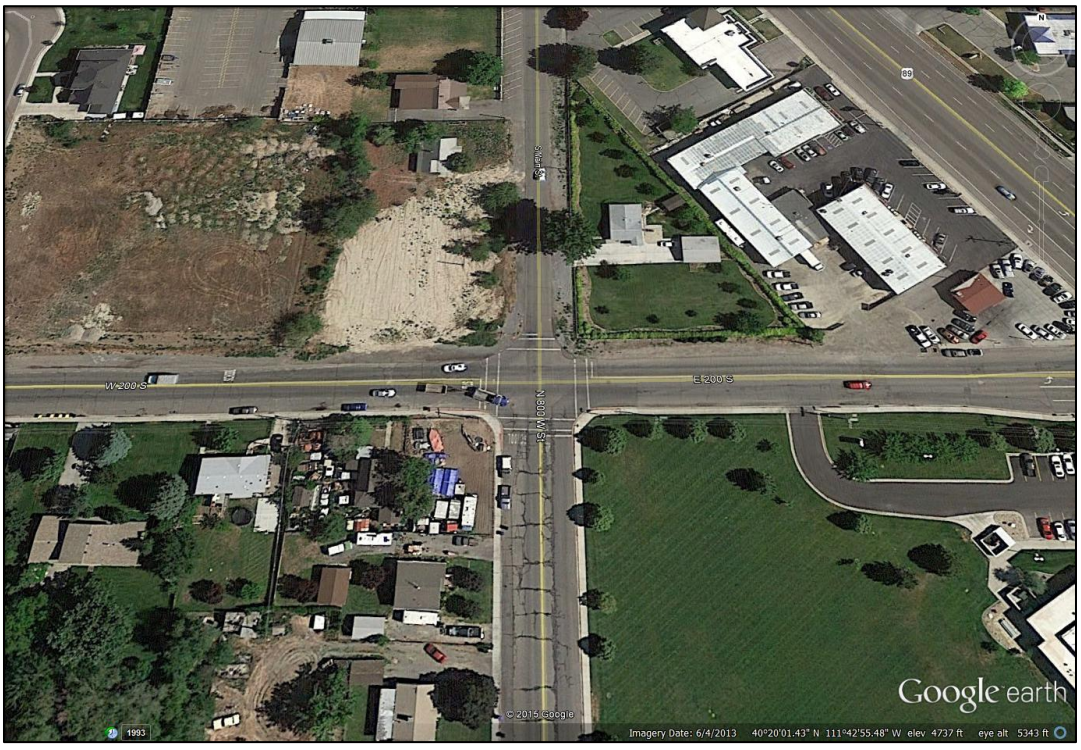



**Figure 2: Aerial View of Site A**


**Figure 3: Street view of Site A**


**Figure 4: Street view of Site A**


**Figure 5: Street view of Site A**

Site B: 1000 North and 800 West

Site B is located at 1000 North and 800 West in Orem, UT in a residential area of the city with Timpanogos Hospital located to the South East of the site. The site contains both urban collector streets and urban local streets. Site B is a four way stop intersection. Figure 6 provides an aerial view of the site. In addition, Figure 7, Figure 8, and Figure 9 provide street views of the site.


**Figure 6: Aerial View of Site B**


**Figure 7: Street view of Site B**


**Figure 8: Street view of Site B**


**Figure 9: Street view of Site B**

Site C:  400 South and 800 West

Site C is located at 400 South and 800 West in Orem, UT in a residential area about 0.6 miles from Utah Valley University (UVU).  This site consists of urban collector streets and contains two stop directions for north and south bound.  Figure 10 provides an aerial view of the site.  Figure 11, Figure 12, and Figure 13 provide street views of Site C.


**Figure 10:  Aerial View of Site C**


**Figure 11: Street view of Site C**


**Figure 12: Street view of Site C**


**Figure 13: Street view of Site C**

## *Operational Analysis*

### Traffic Observations

Traffic observations were necessary in determining the feasibility of roundabouts at the three sites. Traffic data was collected by the project team at all three sites during typical peak hours throughout the day. The counts were recorded from 7:00 AM to 9:30 AM, 11:30 AM to 1:00 PM, and 4:30 PM to 6:00 PM. Traffic studies were conducted mid-week to determine the typical turning movements at each site. The traffic studies were conducted using Jamar Dashboards provided by the Civil and Environmental Engineering Department at Brigham Young University (BYU). Project team members conducted the traffic observations on January

15th and January 20th of 2015. It was observed that the Peak Hour Volumes for Site A, Site B, and Site C were 578, 556, and 953, respectively. The longest queue for the current sites was no more than five passenger vehicles. Details of the traffic data can be found in Appendix A: Turning Movements of the report. In addition, it was observed that the design vehicle for each site was a B-40.

Growth Factors

With the three intersections being considered are in well-established residential areas, a growth factor of 1% was considered. This was determined by viewing the current land use near the sites. Each site is located in a residential area but is located near major areas such as schools and hospitals. The growth factor was left to the judgment of the design team and can be changed upon request or from data that would suggest a different growth factor.

Level of Service

The current level of service (LOS) is a level A at all intersections. The LOS was determined using Synchro models created with a growth factor of 1% and with a truck percentage of 5%. The LOS was also found after inserting a roundabout in Synchro and the results revealed no change in the level of service for the current conditions. A Synchro analysis was also performed using project volumes at 20 years. The LOS A remained for each site. All the results from the Synchro analysis can be found in Appendix B: Synchro Analysis. Further sensitivity analysis was performed to give greater detail into the Synchro analysis in the form of a Demand versus Capacity analysis which can be found in the following section.

Demand versus Capacity

In addition to the LOS for each of the sites, a demand versus capacity analysis was necessary to determine if small roundabouts would be feasible at each of the locations. This was done using a method performed by the National Cooperative Highway Research Program (NCHRP) and is represented in *Report 672 Roundabouts: An Informational Guide*. Each site was analyzed using this method and is outlined in this report.

The first step was to determine the demands upon the intersection for both current and projected volumes. The process between the current and projected demands were the same except projected volumes where increased to match a 20 year projected life of the intersection. The demands were determined using the turning movement counts collected by the capstone team earlier in the project and outlined in a prior subtopic of the report. Peak Hour Volumes were then established for each leg of the intersections in question. In addition, a 1% of heavy vehicles were estimated at each of the intersections. A heavy-vehicle adjustment factor was then determined. Equation 1 was used to determine the heavy-vehicle adjustment factor for each site (Fricker & Whitford, 2004):

**Equation 1: Heavy-vehicle adjustment factor**

$$f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$$

After the heavy-vehicle adjustment factor was established for each site it was then used to determine the passenger car equivalent flow rate for peak 15-minute period. Equation 2 was used in determining the flow rate for each leg of each intersection (Fricker & Whitford, 2004).

**Equation 2: Flow Rate for Peak 15-minute period**

$$v_p = \frac{V}{PHF * f_G * f_{HV}}$$

The demands where then established by calculating the sum of the movement flow rates that enter the roundabout. For the single lane roundabouts, all approach volumes were summed together. Equation 3 was used to determine the entry flow rates for the south leg and a similar process for the other legs (NCHRP, 2010):

**Equation 3: Entry flow rates**

$$v_{e,NB,pce} = v_{NBU,pce} + v_{NBL,pce} + v_{NBT,pce} + v_{NBR,pce}$$

The circulating flow was then calculated for each leg. The circulating volumes are the sum of all that will conflict with entering vehicles on the subject approach. Equation 4 provides the circulating flow for the south leg and a similar process for the other legs (NCHRP, 2010):

**Equation 4: Circulating flow rates**

$$v_{c,NB,pce} = v_{WBU,pce} + v_{SBL,pce} + v_{SBU,pce} + v_{EBT,pce} + v_{EBL,pce} + v_{EBU,pce}$$

The exiting flow was then calculated for each leg by summing all flow that exited the roundabout for a particular leg. The exiting volume was then calculated for the south leg and a similar process for the other legs using Equation 5 (NCHRP, 2010):

**Equation 5: Exiting flow rates**

$$v_{ex,pce,NB} = v_{NBU,pce} + v_{WBL,pce} + v_{SBT,pce} + v_{EBR,e,pce}$$

Once the demands were established for each site, the capacity of a single lane roundabout was determined for Site A, Site B, and Site C. The capacity of the entry lanes opposed to the circulating lanes is based on the conflicting flow. Equation 6 was used to determine the capacity of each leg (NCHRP, 2010):

**Equation 6: Entry capacity**

$$c_{e,pce} = 1130e^{(-1.0\ x\ 10^{-3})v_{c,pce}}$$

Once the demands and capacities where determined, a volume-to-capacity ratio was established in order to determine the feasibility of a roundabout at each site. When a ratio value of 1 or greater is estimated then the roundabout is in a state of failure or continual failure. For each site, the ratio was well under 1 and thus each roundabout would perform very well whether at the current traffic or for the projected traffic. Additional details of the demands versus capacity can be found in Appendix C: Demands and Capacity.

## *Physical Analysis*

### Current Dimensions

The project team used parcel data downloaded from the Utah AGRC and imported that parcel data into ArcMap. The cross dimensions were then measured in ArcMap to determine the maximum diameter roundabout that could be inserted into each individual intersection. Figure 14 shows the process used to obtain the different widths at the various intersections.

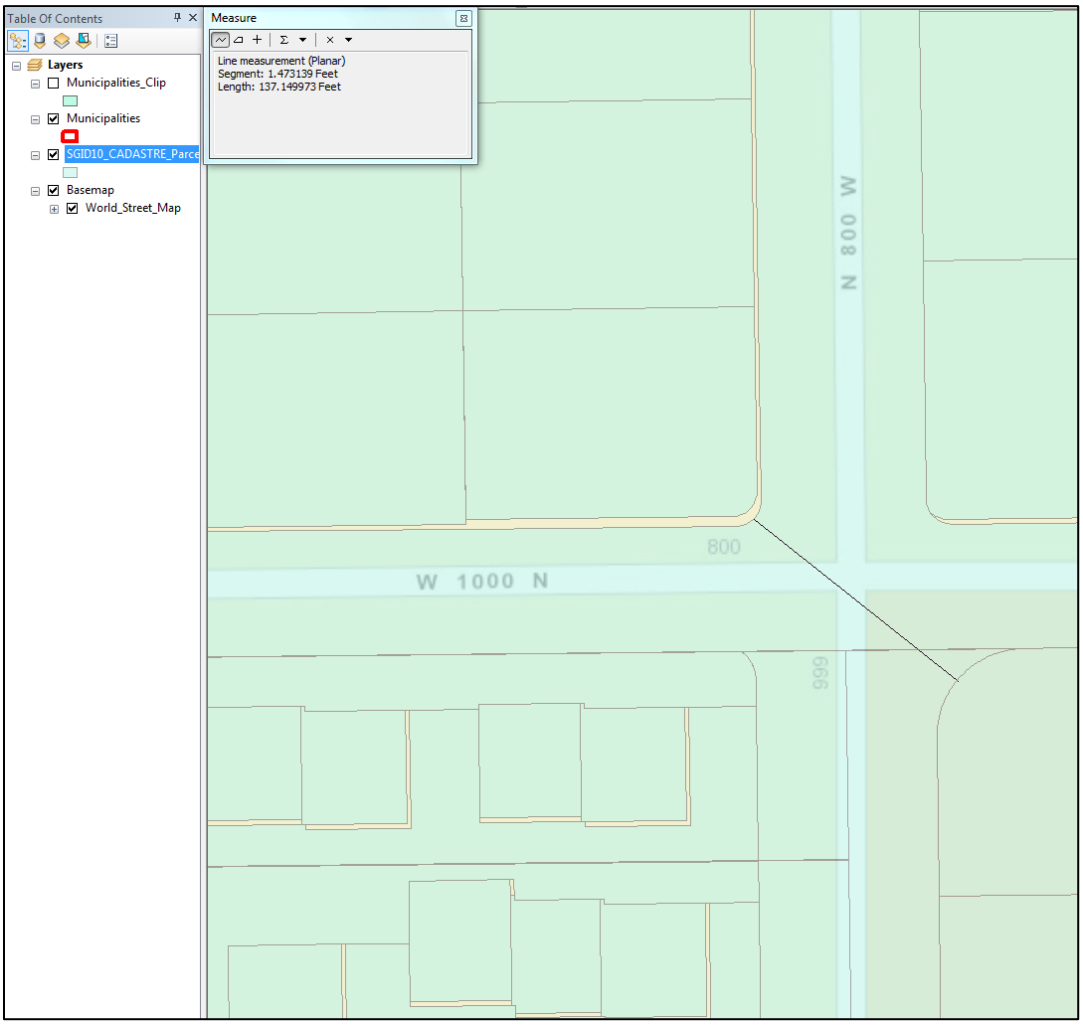



**Figure 14 Example Measurement of Cross Distances**

The diameter of each intersection along with road widths was determined. Table 1 outlines the measured distances at each location.

**Table 1 Table of measured cross diameters**

| | Direction | | Width of Intersection | | | |
|---|---|---|---|---|---|---|
| Cross Street on 800 W | NE/SW | NW/SE | North Leg | South Leg | East Leg | West Leg |
| 1000 N | 122 | 137 | 52 | 62 | 36 | 34 |
| 2000 N | 122 | 123 | 30 | 51 | 42 | 41 |
| 400 S | 124 | 148 | 44 | 45 | 50 | 48 |

Roundabout Demands

Before designs were established for each site, it was necessary to determine the type of roundabout that would be useful and the necessary parameters. After speaking with Orem City representatives and observations of each site it was determined that a single-lane roundabout would be used for Site A, Site B, and Site C.

The first parameter that was needed for a single-lane roundabout would be the diameter of the roundabout circle. With a design vehicle of a B-40 and the roundabout type as a single-lane roundabout it was determined that the range of diameters that could be used was from 90 ft. to 150 ft. Table 2 provides standard diameter ranges from the different types of roundabouts (NCHRP, 2010):

**Table 2: Standard diameter ranges for roundabout configurations**

| Roundabout Configuration | Typical Design Vehicle | Common Inscribed Circle Diameter Range* | |
|---|---|---|---|
| Mini-Roundabout | SU-30 (SU-9) | 45 to 90 ft | (14 to 27 m) |
| Single-Lane Roundabout | B-40 (B-12) | 90 to 150 ft | (27 to 46 m) |
| | WB-50 (WB-15) | 105 to 150 ft | (32 to 46 m) |
| | WB-67 (WB-20) | 130 to 180 ft | (40 to 55 m) |
| Multilane Roundabout (2 lanes) | WB-50 (WB-15) | 150 to 220 ft | (46 to 67 m) |
| | WB-67 (WB-20) | 165 to 220 ft | (50 to 67 m) |
| Multilane Roundabout (3 lanes) | WB-50 (WB-15) | 200 to 250 ft | (61 to 76 m) |
| | WB-67 (WB-20) | 220 to 300 ft | (67 to 91 m) |

The second parameter that was determined for the single-lane roundabouts was the angle between approach legs. The current intersections maintain an angle of 90°. The same angle was used for the roundabout parameters for each of the sites.

The third parameter that was established for a single-lane roundabout was the size of the splitter islands. A standard length of 50 ft. to 100 ft. is used for a single-lane roundabout (NCHRP, 2010). The splitter width at the crosswalk should be a minimum of 6 ft. to provide adequate space for pedestrians, which include wheelchairs, pushing a stroller, or walking a bike (NCHRP, 2010). In addition the typical length of the section of splitter-island that is nearest the intersection should be 20 ft.

The fourth parameter for a single-lane roundabout is the lane's entry width. The typical entry width range is from 14 ft. to 18 ft. and care should be taken in creating widths greater than 18 ft. due to drivers' perception of a wide lane being multiple-lanes.

The fifth parameter is the circulating roadway width. It is custom that for a single-lane roundabout the circulating roadway width should be at least the width of the entry lane and

should be no more than 120% of the maximum entry width. It is encouraged to not exceed 120% of maximum entry width for the effect of a roundabout would be greatly reduced due to the size of lanes.

The sixth parameter is the central island. The central island diameter is determined based off of the remaining space available after the circulating lanes and apron have been established. It is also encouraged to use a raised island instead of a depressed island.

Roundabout Designs

Using the current parameters that are available for each site along with the parameters necessary for a single-lane roundabout the designs for each site was created. The goal of the capstone team was to reduce the amount of land that would be necessary in purchasing. After evaluating each site and possible roundabouts, one design for each intersection was created that resulted in no property purchase but would require utility lines relocated. Table 3 and Table 4 provide the design dimensions for Site A. In addition, Figure 15 provides a design of the current intersection versus the new roundabout designs. Each design ends at the edge of the curb and does not extend into the sidewalk.

**Table 3: Site A design dimensions**

| Direction | Outer Diameter (ft) | Apron Width (ft) | Exit Road Width (ft) | Exit Radius (ft) | Exit Flare length (ft) | Width at departure (ft) | Entry Road width (ft) | Entry Radius (ft) | Entry Flare Length (ft) | Width at Approach (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| NB | 90 | 12 | 15 | 50 | 100 | 20 | 14 | 50 | 100 | 20 |
| EB | 90 | 12 | 15 | 50 | 100 | 20 | 14 | 50 | 100 | 20 |
| SB | 90 | 12 | 15 | 50 | 100 | 10 | 14 | 50 | 100 | 10 |
| WB | 90 | 12 | 15 | 50 | 100 | 20 | 14 | 50 | 100 | 20 |

**Table 4: Site A design dimensions**

| Direction | Construction Triangle Length (ft) | Construction Triangle Base (ft) | Splitter Island Crosswalk Length (ft) | Splitter Island Total Length (ft) | Splitter Island Base Length (ft) |
|---|---|---|---|---|---|
| NB | 100 | 20 | 10 | 60 | 20 |
| EB | 100 | 20 | 10 | 60 | 20 |
| SB | 100 | 20 | 10 | 60 | 20 |
| WB | 100 | 20 | 10 | 60 | 20 |

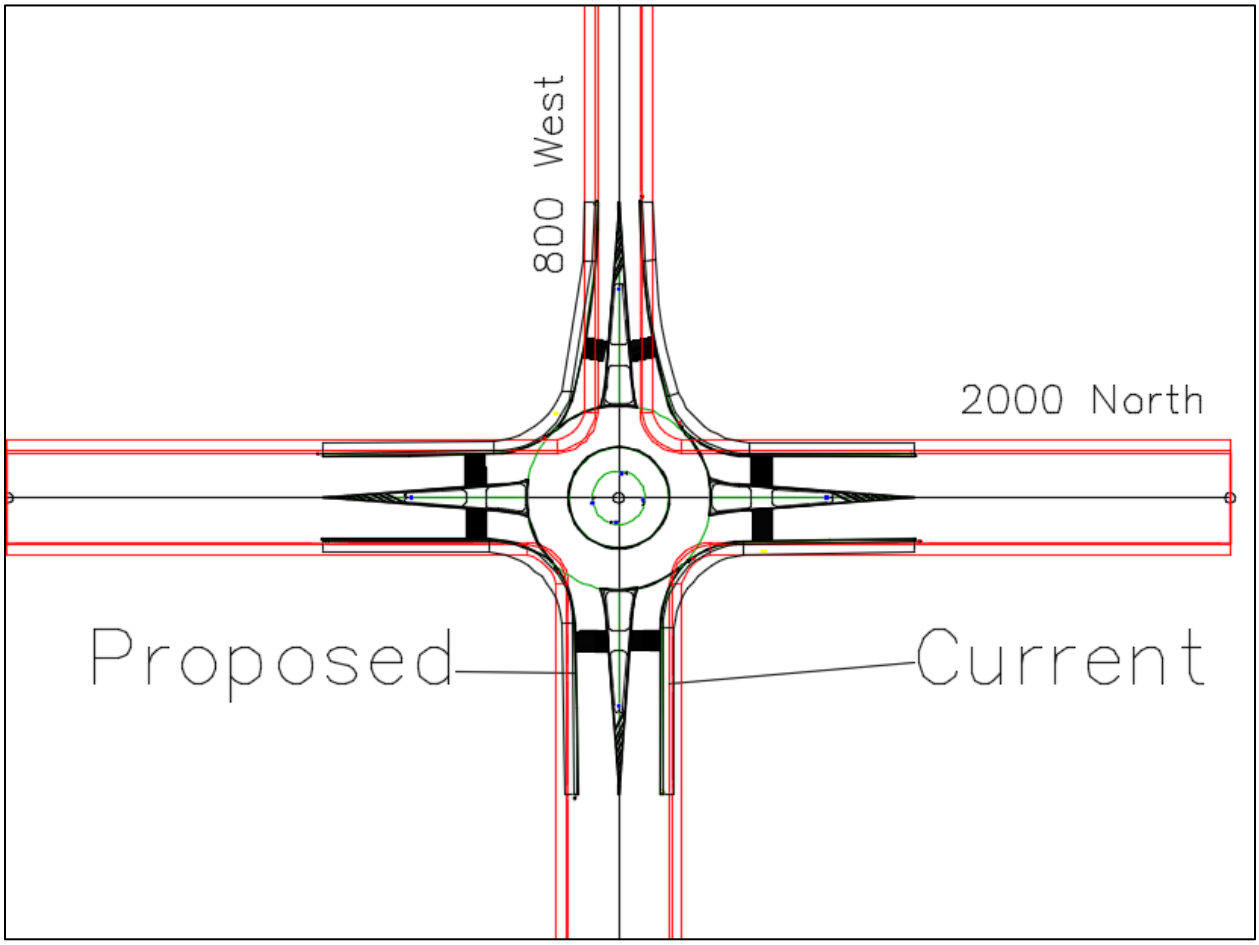



**Figure 15: Site A proposed design and current design**

Table 5 and Table 6 provide the design dimensions for Site B. In addition, Figure 16 provides a design of the current intersection versus the new roundabout designs. Each design ends at the edge of the curb and does not extend into the sidewalk.

**Table 5: Site B design dimensions**

| Direction | Outer Diameter (ft) | Apron Width (ft) | Exit Road Width (ft) | Exit Radius (ft) | Exit Flare length (ft) | Width at departure (ft) | Entry Road width (ft) | Entry Radius (ft) | Entry Flare Length (ft) | Width at Approach (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| NB | 90 | 12 | 15 | 50 | 100 | 17 | 14 | 50 | 100 | 17 |
| EB | 90 | 12 | 15 | 50 | 100 | 17 | 14 | 50 | 100 | 17 |
| SB | 90 | 12 | 15 | 50 | 100 | 17 | 14 | 50 | 100 | 17 |
| WB | 90 | 12 | 15 | 50 | 100 | 17 | 14 | 50 | 100 | 17 |

**Table 6: Site B design dimensions**

| Direction | Construction Triangle Length (ft) | Construction Triangle Base (ft) | Splitter Island Crosswalk Length (ft) | Splitter Island Total Length (ft) | Splitter Island Base Length (ft) |
|---|---|---|---|---|---|
| NB | 100 | 15 | 10 | 60 | 20 |
| EB | 100 | 15 | 10 | 60 | 20 |
| SB | 100 | 15 | 10 | 60 | 20 |
| WB | 100 | 15 | 10 | 60 | 20 |

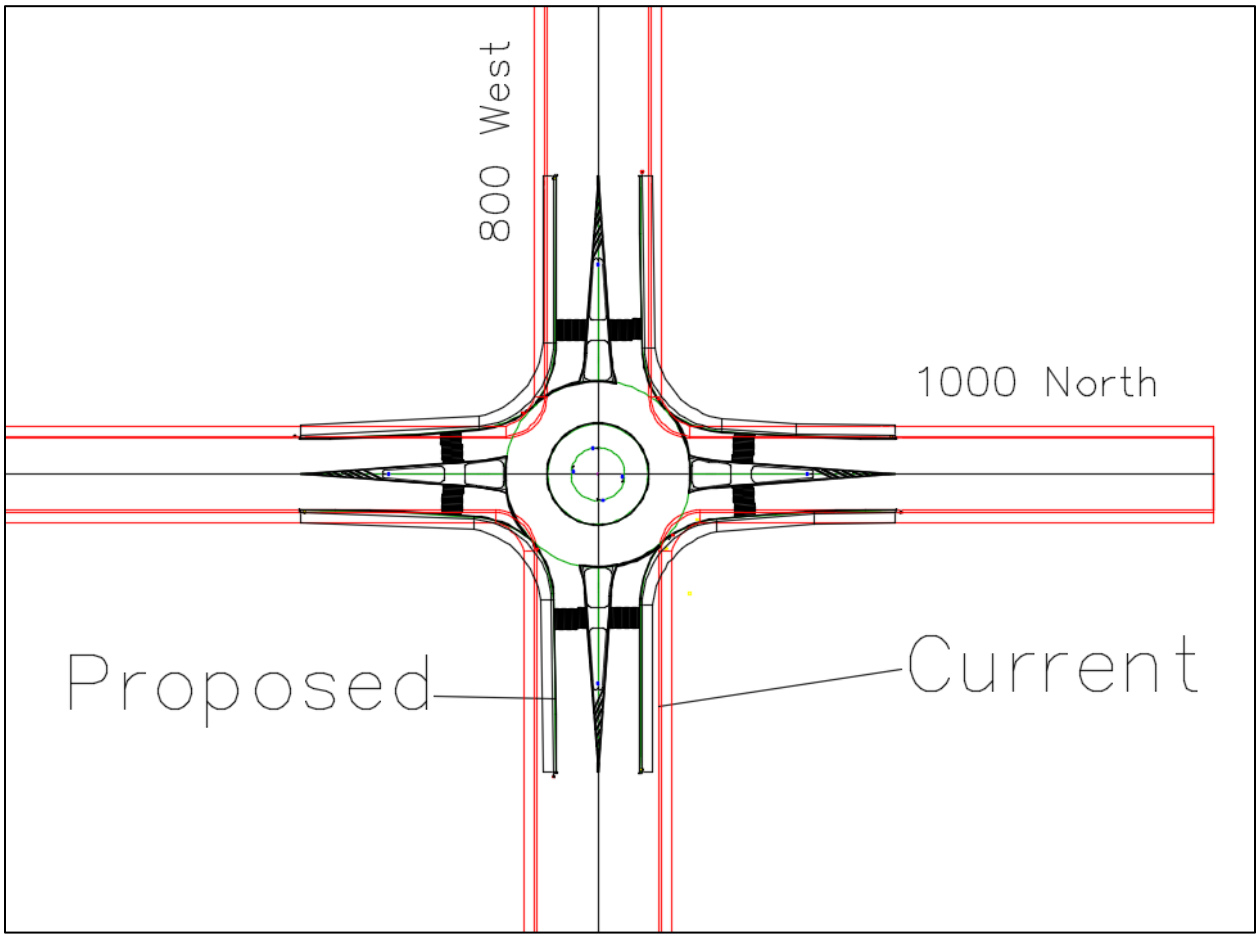



**Figure 16: Site B proposed design and current design**

Table 7 and Table 8 provide the design dimensions for Site C. In addition, Figure 17 provides a design of the current intersection versus the new roundabout designs. Each design ends at the edge of the curb and does not extend into the sidewalk.

**Table 7: Site C design dimensions**

| Direction | Outer Diameter (ft) | Apron Width (ft) | Exit Road Width (ft) | Exit Radius (ft) | Exit Flare length (ft) | Width at departure (ft) | Entry Road width (ft) | Entry Radius (ft) | Entry Flare Length (ft) | Width at Approach (ft) |
|---|---|---|---|---|---|---|---|---|---|---|
| NB | 90 | 12 | 15 | 50 | 100 | 20 | 14 | 50 | 100 | 20 |
| EB | 90 | 12 | 15 | 50 | 100 | 20 | 14 | 50 | 100 | 20 |
| SB | 90 | 12 | 15 | 50 | 100 | 20 | 14 | 50 | 100 | 20 |
| WB | 90 | 12 | 15 | 50 | 100 | 20 | 14 | 50 | 100 | 20 |

**Table 8: Site C design dimensions**

| Direction | Construction Triangle Length (ft) | Construction Triangle Base (ft) | Splitter Island Crosswalk Length (ft) | Splitter Island Total Length (ft) | Splitter Island Base Length (ft) |
|---|---|---|---|---|---|
| NB | 100 | 15 | 10 | 60 | 20 |
| EB | 100 | 15 | 10 | 60 | 20 |
| SB | 100 | 15 | 10 | 60 | 20 |
| WB | 100 | 15 | 10 | 60 | 20 |

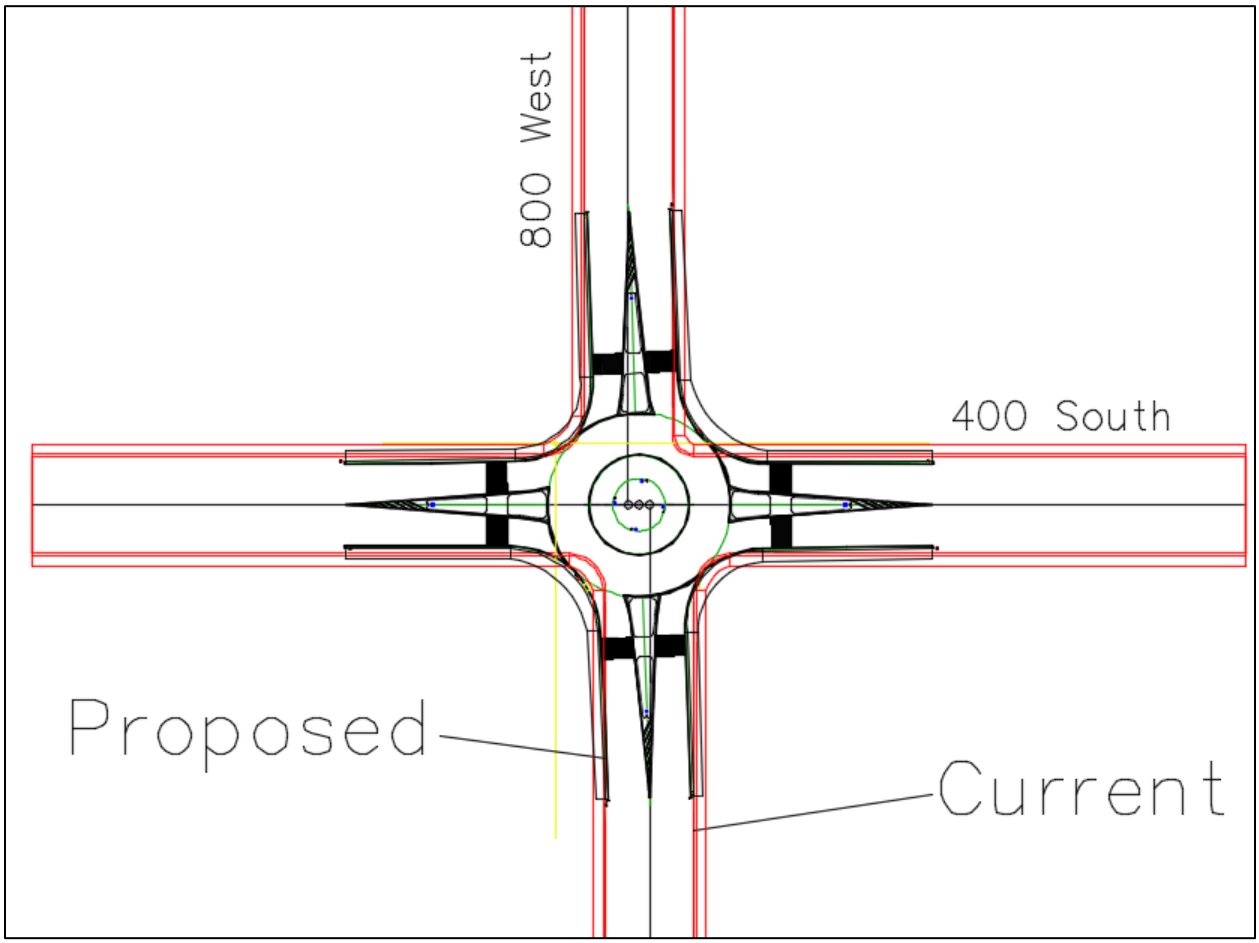



**Figure 17: Site C proposed design and current design**

In addition to the parameters outlined, a circulating road width was estimated to be 120% of the entry widths. The circulating widths were estimated to be 18 ft. It is discouraged to use a circulating width greater than 18 ft. due to driver perception.

*Pedestrian Interaction*

Crash Rates

Crash rates were requested by the project team but were not able to obtain them. The team acknowledges the importance in considering crash rates for projects of this type but were unable to perform the analysis due to lack of data. The design team encourages further investigation in regards to pedestrian interaction with roundabouts.

### *Cost*

To finalize the designs of the roundabouts, a simple cost estimate was determined for each site. The cost estimate for replacing asphalt at each intersection is outlined in Table 9.

**Table 9 Cost Estimation for Studied Intersections**

| Intersection | Square Footage | Asphalt Cost per ft 3" depth | Subbase Cost per ft 8" depth | Cost per Intersection |
|---|---|---|---|---|
| 800 W 400 S | 28,819.00 | 1.40 | 0.89 | 65,995.51 |
| 800 W 1000 N | 28,471.00 | 1.40 | 0.89 | 65,198.59 |
| 800 W 2000 N | 29,100.00 | 1.40 | 0.89 | 66,639.00 |
| | | | **Total Cost** | 197,833.10 |

The square footage was obtained by creating objects in Civil 3D and adding up all four legs of the intersection and finding the area of the roundabout itself. The square footage of the four legs and the roundabout were summed to obtain the total square footage of each individual intersection. Due to the circles involved in a roundabout, the estimated square footage is greater than the actual square footage required to build the new roundabouts. The cost of asphalt and sub base can also fluctuate and a more accurate estimate should be obtained from a contractor for exact cost.

# RECOMMENDATIONS

Upon completing the small roundabouts feasibility study and design, the design team recommends the installation of roundabouts at each site. Specific considerations must be advised for each intersection.

At Site A, the design team recommends that a single lane roundabout be used in place of the current four way stop. A single lane roundabout would maintain the quality of traffic operations at this site but would provide improved traffic conditions for a projected design year of 2035. It is encouraged to use a minimum dimensions for this site in order to reduce the costs of land purchase and building materials. In addition, the distance between Site A and the correlating intersection of State Street and 2000 North was considered. It was estimated that the distance between the two intersections would not cause a decrease in LOS for Site A.

At Site B, the design team recommends that a single lane roundabout be used in contrast to the other roundabout types. A single lane roundabout would provide an improved LOS for the design year of 2035 for this intersection. It is recommended by the design team that a minimum set of dimensions be used for this site. The use of larger dimensions as outlined previously will result in higher costs for the city.

Lastly, it is recommended that Site C be converted from a two way stop intersection to a single lane roundabout. A single lane roundabout would provide an improved LOS for the projected design year of 2035. The design team recommends the use of minimum dimensions to reduce the costs of land purchase and movement of utilities.

In summary, the replacement of the three intersections and the construction of three roundabouts are encouraged by the design team. Orem City desires to increase the flow of 800

West and it is determined that the single lane roundabouts at each site would improve the overall flow of the road.

# WORKS CITED

Fricker, J. D., & Whitford, R. K. (2004). *Fundamentals of Transportation Engineering: A multimodal systems approach.* Upper Saddle River, New Jersey, United States of America: Pearson Education, Inc.

NCHRP. (2010). *Report 672 Roundabouts: An Informational Guide.* Washington, D.C.: Transportation Research Board.

# APPENDIX A: TURNING MOVEMENTS

# INTERSECTION TURNING MOVEMENTS


**2000 North 800 West**

**Thursday, January 15, 2015**

**7:30 - 9:00: AM Count**

| TIME PERIOD | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEGIN | END | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | 15 MIN | SUM |
| 7:30 | 7:45 | 2 | 23 | 3 | 7 | 3 | 0 | 0 | 33 | 10 | 17 | 2 | 0 | 100 | 100 |
| 7:45 | 8:00 | 0 | 32 | 0 | 12 | 8 | 1 | 0 | 53 | 11 | 19 | 8 | 8 | 152 | 252 |
| 8:00 | 8:15 | 3 | 23 | 0 | 10 | 6 | 0 | 0 | 44 | 5 | 10 | 8 | 3 | 112 | 364 |
| 8:15 | 8:30 | 2 | 25 | 3 | 5 | 7 | 0 | 0 | 21 | 6 | 5 | 3 | 5 | 82 | 446 |
| 8:30 | 8:45 | 1 | 27 | 1 | 9 | 8 | 0 | 0 | 28 | 9 | 9 | 2 | 2 | 96 | 542 |
| 8:45 | 9:00 | 0 | 32 | 2 | 11 | 13 | 0 | 0 | 22 | 7 | 16 | 5 | 3 | 111 | 653 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM | 8 | 162 | 9 | 54 | 45 | 1 | 0 | 201 | 48 | 76 | 28 | 21 |
| PERCENT | 1% | 25% | 1% | 8% | 7% | 0% | 0% | 31% | 7% | 12% | 4% | 3% |
| TOTAL | 179 | | | 100 | | | 249 | | | 125 | | |

## Peak Hour Volume Statistics

800 West

Southbound

North Leg Volume 119

right 1 | 59 thru 24 | left 34

60

East Leg Volume 336

32 right

151 thru 183 Westbound

0 left

152

2000 North

left 7

Eastbound 116 thru 103

right 6

153

West Leg Volume 268

51 left | 21 thru 88 | 16 right

South Leg Volume 118

30

Northbound

| PEAK TRAFFIC VOLUME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | |
| LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | |
| 7 | 103 | 6 | 34 | 24 | 1 | 0 | 151 | 32 | 51 | 21 | 16 | |
| 116 | | | 59 | | | 183 | | | 88 | | | |
| Peak Hour | | 7:30 - 8:30 | Peak Volume | | | 446 | | Peak Hour Factor | | | 0.73 | |

# INTERSECTION TURNING MOVEMENTS


**2000 North 800 West**

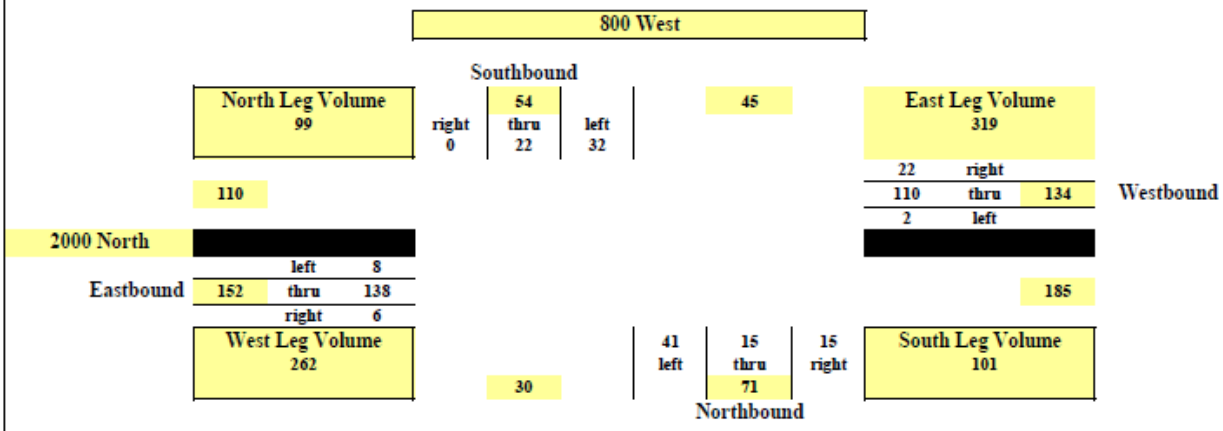
**Thursday, January 15, 2015**

**11:30 - 1:00: Noon Count**

| TIME PERIOD | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEGIN | END | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | 15 MIN | SUM |
| 11:30 | 11:45 | 2 | 22 | 4 | 2 | 3 | 0 | 0 | 23 | 6 | 12 | 4 | 1 | 79 | 79 |
| 11:45 | 12:00 | 3 | 41 | 0 | 4 | 6 | 1 | 1 | 18 | 6 | 8 | 4 | 5 | 97 | 176 |
| 12:00 | 12:15 | 2 | 35 | 2 | 12 | 8 | 0 | 0 | 24 | 7 | 6 | 6 | 6 | 108 | 284 |
| 12:15 | 12:30 | 2 | 26 | 1 | 6 | 6 | 0 | 0 | 23 | 4 | 6 | 3 | 2 | 79 | 363 |
| 12:30 | 12:45 | 3 | 37 | 0 | 8 | 5 | 0 | 1 | 28 | 9 | 22 | 3 | 6 | 122 | 485 |
| 12:45 | 1:00 | 1 | 40 | 3 | 6 | 3 | 0 | 1 | 35 | 2 | 7 | 3 | 1 | 102 | 587 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM | 13 | 201 | 10 | 38 | 31 | 1 | 3 | 151 | 34 | 61 | 23 | 21 |
| PERCENT | 2% | 34% | 2% | 6% | 5% | 0% | 1% | 26% | 6% | 10% | 4% | 4% |
| TOTAL | | 224 | | | 70 | | | 188 | | | 105 | |

## Peak Hour Volume Statistics




| PEAK TRAFFIC VOLUME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | |
| LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | |
| 8 | 138 | 6 | 32 | 22 | 0 | 2 | 110 | 22 | 41 | 15 | 15 | |
| | 152 | | | 54 | | | 134 | | | 71 | | |
| Peak Hour | | 12:00 - 1:00 | Peak Volume | | | 411 | | Peak Hour Factor | | | | 0.84 |

# INTERSECTION TURNING MOVEMENTS


**2000 North 800 West**

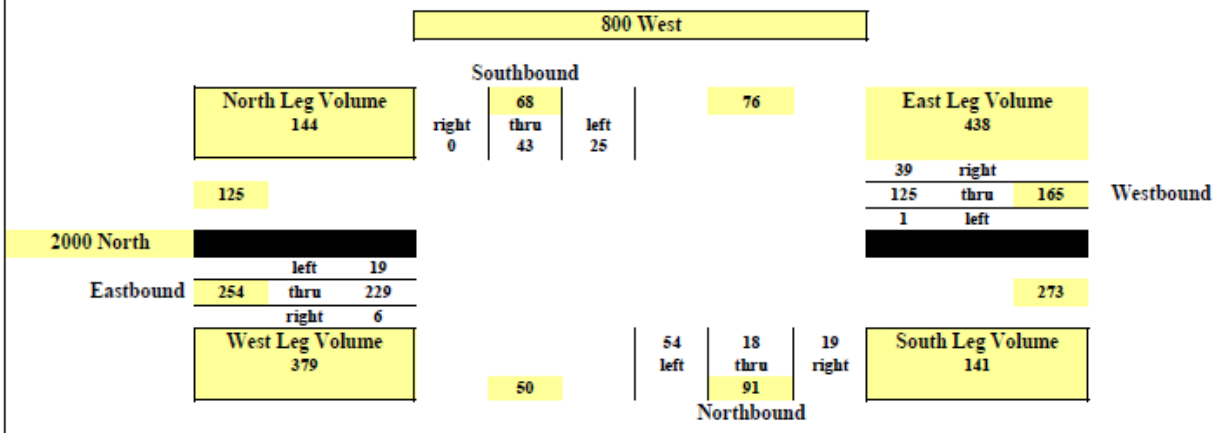
**Thursday, January 15, 2015**

**4:30 - 6:00: PM Count**

| TIME PERIOD | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEGIN | END | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | 15 MIN | SUM |
| 4:30 | 4:45 | 4 | 44 | 4 | 14 | 11 | 0 | 0 | 32 | 10 | 17 | 5 | 7 | 148 | 148 |
| 4:45 | 5:00 | 3 | 45 | 2 | 10 | 11 | 2 | 0 | 29 | 5 | 13 | 4 | 5 | 129 | 277 |
| 5:00 | 5:15 | 4 | 53 | 0 | 10 | 14 | 0 | 1 | 31 | 13 | 8 | 5 | 5 | 144 | 421 |
| 5:15 | 5:30 | 5 | 59 | 3 | 6 | 9 | 0 | 0 | 20 | 9 | 15 | 4 | 1 | 131 | 552 |
| 5:30 | 5:45 | 6 | 75 | 1 | 5 | 8 | 0 | 0 | 26 | 10 | 13 | 3 | 6 | 153 | 705 |
| 5:45 | 6:00 | 4 | 42 | 2 | 4 | 12 | 0 | 0 | 48 | 7 | 18 | 6 | 7 | 150 | 855 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM | 26 | 318 | 12 | 49 | 65 | 2 | 1 | 186 | 54 | 84 | 27 | 31 |
| PERCENT | 3% | 37% | 1% | 6% | 8% | 0% | 0% | 22% | 6% | 10% | 3% | 4% |
| TOTAL | | 356 | | | 116 | | | 241 | | | 142 | |

## Peak Hour Volume Statistics




| PEAK TRAFFIC VOLUME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | |
| LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | |
| 19 | 229 | 6 | 25 | 43 | 0 | 1 | 125 | 39 | 54 | 18 | 19 | |
| 254 | | | 68 | | | 165 | | | 91 | | | |
| Peak Hour | | 5:00 - 6:00 PM | Peak Volume | | | 578 | | Peak Hour Factor | | | 0.94 | |

# INTERSECTION TURNING MOVEMENTS

**1000 North 800 West**

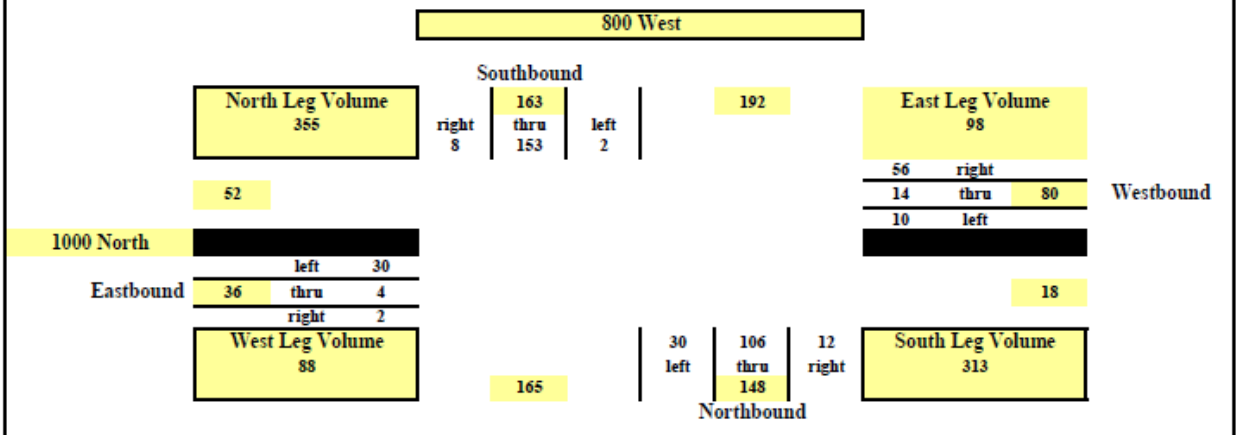
**Thursday, January 15, 2015**

**7:30 - 9:00: AM Count**

| TIME PERIOD | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEGIN | END | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | 15 MIN | SUM |
| 7:30 | 7:45 | 4 | 2 | 2 | 0 | 33 | 1 | 1 | 1 | 14 | 4 | 18 | 2 | 82 | 82 |
| 7:45 | 8:00 | 19 | 0 | 0 | 1 | 41 | 2 | 6 | 4 | 19 | 9 | 40 | 6 | 147 | 229 |
| 8:00 | 8:15 | 6 | 2 | 0 | 0 | 47 | 4 | 1 | 3 | 19 | 11 | 31 | 3 | 127 | 356 |
| 8:15 | 8:30 | 1 | 0 | 0 | 1 | 32 | 1 | 2 | 6 | 4 | 6 | 17 | 1 | 71 | 427 |
| 8:30 | 8:45 | 6 | 0 | 0 | 2 | 21 | 2 | 2 | 2 | 15 | 2 | 19 | 1 | 72 | 499 |
| 8:45 | 9:00 | 6 | 2 | 1 | 0 | 22 | 1 | 4 | 2 | 15 | 5 | 43 | 1 | 102 | 601 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM | 42 | 6 | 3 | 4 | 196 | 11 | 16 | 18 | 86 | 37 | 168 | 14 |
| PERCENT | 7% | 1% | 0% | 1% | 33% | 2% | 3% | 3% | 14% | 6% | 28% | 2% |
| TOTAL | 51 | | | 211 | | | 120 | | | 219 | | |

**Peak Hour Volume Statistics**




| PEAK TRAFFIC VOLUME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | |
| LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | |
| 30 | 4 | 2 | 2 | 153 | 8 | 10 | 14 | 56 | 30 | 106 | 12 | |
| | 36 | | | 163 | | | 80 | | | 148 | | |
| Peak Hour | | 7:30 - 8:30 AM | | Peak Volume | | 427 | | Peak Hour Factor | | | 0.72619 | |

# INTERSECTION TURNING MOVEMENTS

**1000 North 800 West**

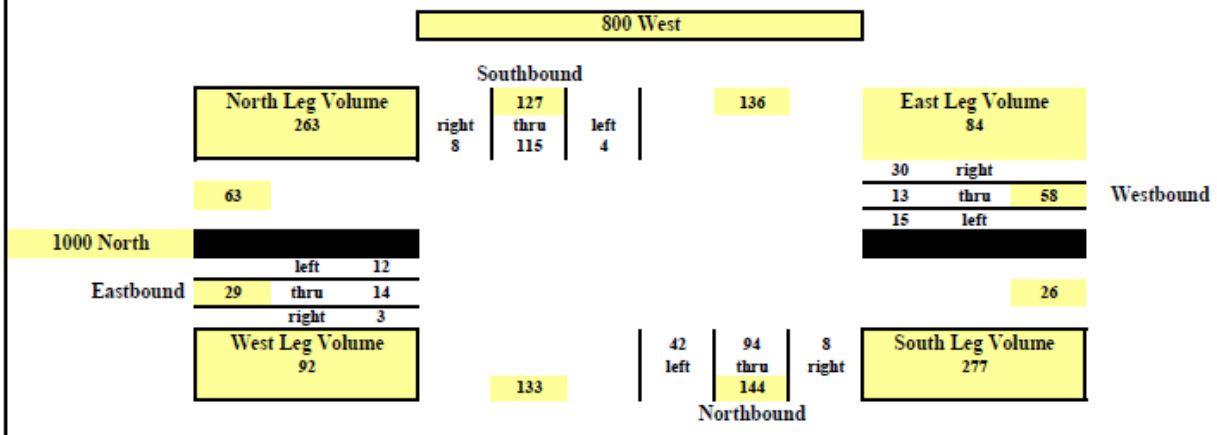
**Thursday, January 15, 2015**

**11:30 - 1:00: Noon Count**

| TIME PERIOD | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEGIN | END | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | 15 MIN | SUM |
| 11:30 | 11:45 | 3 | 2 | 1 | 1 | 12 | 1 | 1 | 0 | 3 | 7 | 22 | 2 | 55 | 55 |
| 11:45 | 12:00 | 5 | 2 | 0 | 2 | 25 | 0 | 2 | 2 | 4 | 7 | 21 | 3 | 73 | 128 |
| 12:00 | 12:15 | 3 | 5 | 0 | 2 | 36 | 1 | 4 | 4 | 7 | 17 | 24 | 0 | 103 | 231 |
| 12:15 | 12:30 | 3 | 1 | 0 | 1 | 20 | 3 | 3 | 5 | 6 | 10 | 30 | 5 | 87 | 318 |
| 12:30 | 12:45 | 3 | 7 | 2 | 1 | 28 | 4 | 4 | 1 | 10 | 6 | 21 | 2 | 89 | 407 |
| 12:45 | 1:00 | 3 | 1 | 1 | 0 | 31 | 0 | 4 | 3 | 7 | 9 | 19 | 1 | 79 | 486 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM | 20 | 18 | 4 | 7 | 152 | 9 | 18 | 15 | 37 | 56 | 137 | 13 |
| PERCENT | 4% | 4% | 1% | 1% | 31% | 2% | 4% | 3% | 8% | 12% | 28% | 3% |
| TOTAL | | 42 | | | 168 | | | 70 | | | 206 | |

## Peak Hour Volume Statistics




| PEAK TRAFFIC VOLUME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | |
| LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | |
| 12 | 14 | 3 | 4 | 115 | 8 | 15 | 13 | 30 | 42 | 94 | 8 | |
| | 29 | | | 127 | | | 58 | | | 144 | | |
| Peak Hour | | 12:00 - 1:00 PM | | Peak Volume | | 358 | | Peak Hour Factor | | | | 0.86893 |

# INTERSECTION TURNING MOVEMENTS


**1000 North 800 West**

**Thursday, January 15, 2015**

**4:30 - 6:00: PM Count**

| TIME PERIOD | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEGIN | END | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | 15 MIN | SUM |
| 4:30 | 4:45 | 3 | 4 | 2 | 0 | 34 | 3 | 4 | 4 | 15 | 19 | 35 | 6 | 129 | 129 |
| 4:45 | 5:00 | 2 | 7 | 3 | 1 | 28 | 1 | 2 | 6 | 7 | 17 | 42 | 2 | 118 | 247 |
| 5:00 | 5:15 | 4 | 8 | 1 | 1 | 31 | 1 | 5 | 7 | 7 | 15 | 52 | 2 | 134 | 381 |
| 5:15 | 5:30 | 7 | 11 | 0 | 0 | 38 | 2 | 0 | 2 | 9 | 25 | 45 | 6 | 145 | 526 |
| 5:30 | 5:45 | 2 | 6 | 0 | 2 | 47 | 2 | 1 | 5 | 11 | 22 | 43 | 3 | 144 | 670 |
| 5:45 | 6:00 | 5 | 5 | 0 | 2 | 38 | 2 | 5 | 9 | 9 | 11 | 39 | 8 | 133 | 803 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM | 23 | 41 | 6 | 6 | 216 | 11 | 17 | 33 | 58 | 109 | 256 | 27 |
| PERCENT | 3% | 5% | 1% | 1% | 27% | 1% | 2% | 4% | 7% | 14% | 32% | 3% |
| TOTAL | | 70 | | | 233 | | | 108 | | | 392 | |

**Peak Hour Volume Statistics**

800 West

Southbound

North Leg Volume 399

right 7 | thru 166 | left 5

233

East Leg Volume 124

36 right

23 thru 70

11 left

Westbound

103

1000 North

Eastbound

left 18

49 thru 30

right 1

54

West Leg Volume 152

166

73 left | 179 thru | 19 right

271

South Leg Volume 437

Northbound

| PEAK TRAFFIC VOLUME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | |
| LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | |
| 18 | 30 | 1 | 5 | 154 | 7 | 11 | 23 | 36 | 73 | 179 | 19 | |
| | 49 | | | 166 | | | 70 | | | 271 | | |
| Peak Hour | | 5:00 - 6:00 PM | Peak Volume | | | 556 | | Peak Hour Factor | | | 0.95862 | |

# INTERSECTION TURNING MOVEMENTS


**400 South 800 West**

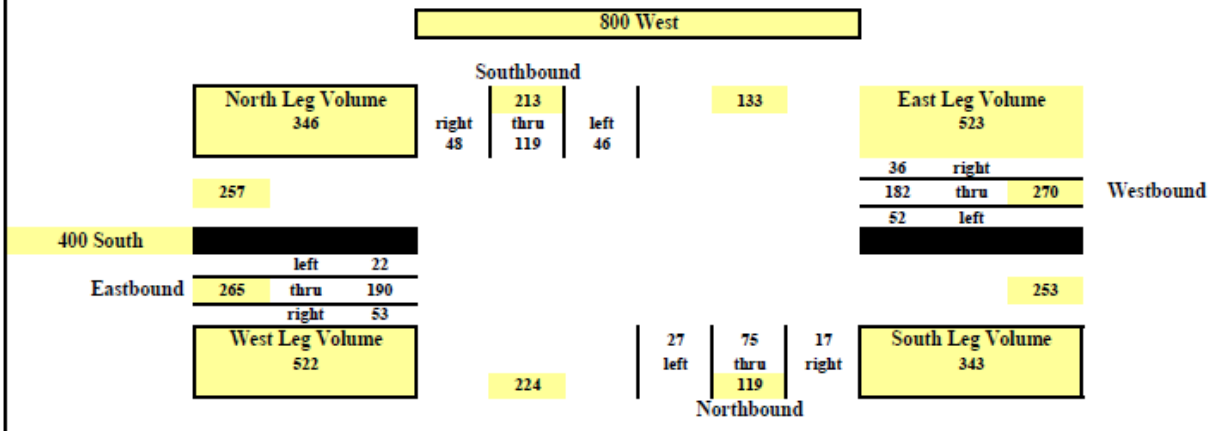
**Tuesday, January 20, 2015**

**7:30 - 9:00: AM Count**

| TIME PERIOD | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEGIN | END | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | 15 MIN | SUM |
| 7:30 | 7:45 | 2 | 47 | 34 | 15 | 20 | 11 | 6 | 34 | 9 | 10 | 26 | 3 | 217 | 217 |
| 7:45 | 8:00 | 4 | 51 | 12 | 14 | 26 | 15 | 23 | 47 | 9 | 7 | 18 | 3 | 229 | 446 |
| 8:00 | 8:15 | 4 | 54 | 4 | 10 | 32 | 8 | 13 | 57 | 13 | 5 | 19 | 7 | 226 | 672 |
| 8:15 | 8:30 | 12 | 38 | 3 | 7 | 41 | 14 | 10 | 44 | 5 | 5 | 12 | 4 | 195 | 867 |
| 8:30 | 8:45 | 3 | 28 | 2 | 5 | 19 | 9 | 10 | 30 | 6 | 4 | 6 | 2 | 124 | 991 |
| 8:45 | 9:00 | 2 | 43 | 7 | 5 | 16 | 7 | 10 | 39 | 3 | 6 | 6 | 4 | 148 | 1139 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM | 27 | 261 | 62 | 56 | 154 | 64 | 72 | 251 | 45 | 37 | 87 | 23 |
| PERCENT | 2% | 23% | 5% | 5% | 14% | 6% | 6% | 22% | 4% | 3% | 8% | 2% |
| TOTAL | | 350 | | | 274 | | | 368 | | | 147 | |

**Peak Hour Volume Statistics**




| PEAK TRAFFIC VOLUME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | |
| LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | |
| 22 | 190 | 53 | 46 | 119 | 48 | 52 | 182 | 36 | 27 | 75 | 17 | |
| | 265 | | | 213 | | | 270 | | | 119 | | |
| Peak Hour | | 7:30 - 8:30 AM | Peak Volume | | | 867 | | Peak Hour Factor | | | 0.94651 | |

# INTERSECTION TURNING MOVEMENTS

## 400 South 800 West

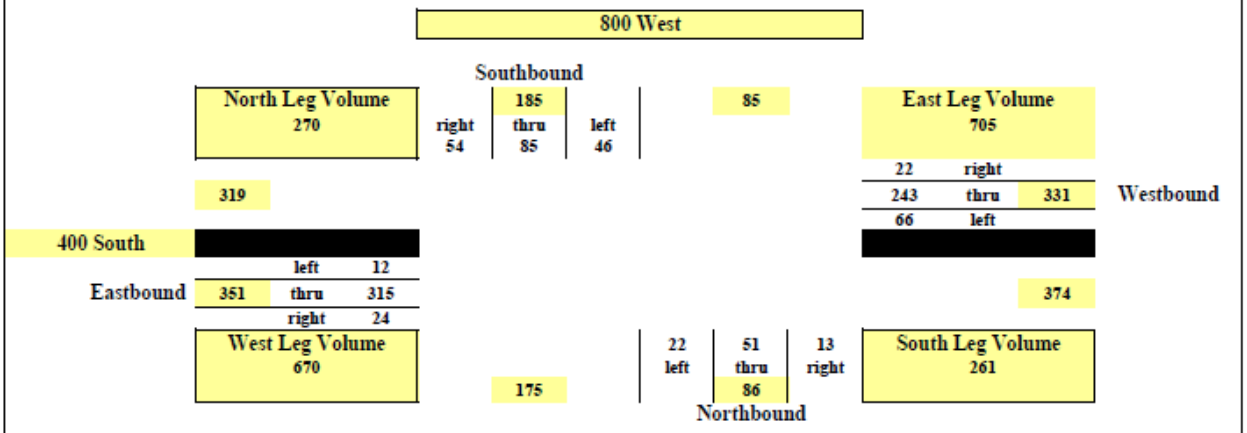
## Tuesday, January 20, 2015

## 4:30 - 6:00: PM Count

| TIME PERIOD | | EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BEGIN | END | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | 15 MIN | SUM |
| 4:30 | 4:45 | 6 | 70 | 5 | 10 | 13 | 10 | 3 | 40 | 2 | 4 | 11 | 0 | 174 | 174 |
| 4:45 | 5:00 | 2 | 58 | 6 | 16 | 20 | 16 | 21 | 56 | 2 | 6 | 10 | 5 | 218 | 392 |
| 5:00 | 5:15 | 4 | 84 | 5 | 12 | 24 | 9 | 8 | 60 | 2 | 3 | 16 | 4 | 231 | 623 |
| 5:15 | 5:30 | 4 | 92 | 7 | 7 | 21 | 14 | 22 | 64 | 6 | 9 | 15 | 2 | 263 | 886 |
| 5:30 | 5:45 | 2 | 81 | 6 | 11 | 20 | 15 | 15 | 63 | 12 | 4 | 10 | 2 | 241 | 1127 |
| 5:45 | 6:00 | 5 | 67 | 6 | 13 | 20 | 13 | 13 | 48 | 1 | 4 | 10 | 6 | 206 | 1333 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUM | 23 | 452 | 35 | 69 | 118 | 77 | 82 | 331 | 25 | 30 | 72 | 19 | | | |
| PERCENT | 2% | 34% | 3% | 5% | 9% | 6% | 6% | 25% | 2% | 2% | 5% | 1% | | | |
| TOTAL | | 510 | | | 264 | | | 438 | | | 121 | | | | |

## Peak Hour Volume Statistics




| PEAK TRAFFIC VOLUME | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EASTBOUND | | | SOUTHBOUND | | | WESTBOUND | | | NORTHBOUND | | | |
| LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | LEFT | THRU | RIGHT | |
| 12 | 315 | 24 | 46 | 85 | 54 | 66 | 243 | 22 | 22 | 51 | 13 | |
| | 351 | | | 185 | | | 331 | | | 86 | | |
| Peak Hour | | 4:45 - 5:45 PM | Peak Volume | | | 953 | | Peak Hour Factor | | | 0.90589 | |

# APPENDIX B: SYNCHRO ANALYSIS

Lanes, Volumes, Timings
1: 800 W & 400 S 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 22 | 190 | 53 | 52 | 182 | 36 | 27 | 75 | 17 | 46 | 119 | 48 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 170 | | 0 | 180 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.973 | | | 0.982 | | | 0.981 | | | 0.969 | |
| Flt Protected | | 0.996 | | | 0.990 | | | 0.989 | | | 0.989 | |
| Satd. Flow (prot) | 0 | 1805 | 0 | 0 | 1811 | 0 | 0 | 1807 | 0 | 0 | 1785 | 0 |
| Flt Permitted | | 0.996 | | | 0.990 | | | 0.989 | | | 0.989 | |
| Satd. Flow (perm) | 0 | 1805 | 0 | 0 | 1811 | 0 | 0 | 1807 | 0 | 0 | 1785 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 354 | | | 277 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 8.0 | | | 6.3 | | | 6.1 | |
| 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 |
| Adj. Flow (vph) | 23 | 200 | 56 | 55 | 192 | 38 | 28 | 79 | 18 | 48 | 125 | 51 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 279 | 0 | 0 | 285 | 0 | 0 | 125 | 0 | 0 | 224 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Yield | | | Yield | | | Yield | | | Yield | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Roundabout | | | |
| Intersection Capacity Utilization | 48.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

AM Peak with Roundabout

Lanes, Volumes, Timings
1: 800 W & 400 S 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 22 | 190 | 53 | 52 | 182 | 36 | 27 | 75 | 17 | 46 | 119 | 48 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 170 | | 0 | 180 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.967 | | | 0.975 | | | 0.981 | | | 0.969 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.989 | | | 0.989 | |
| Satd. Flow (prot) | 1770 | 1801 | 0 | 1770 | 1816 | 0 | 0 | 1807 | 0 | 0 | 1785 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | | 0.989 | | | 0.989 | |
| Satd. Flow (perm) | 1770 | 1801 | 0 | 1770 | 1816 | 0 | 0 | 1807 | 0 | 0 | 1785 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 354 | | | 277 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 8.0 | | | 6.3 | | | 6.1 | |
| 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 |
| Adj. Flow (vph) | 23 | 200 | 56 | 55 | 192 | 38 | 28 | 79 | 18 | 48 | 125 | 51 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 23 | 256 | 0 | 55 | 230 | 0 | 0 | 125 | 0 | 0 | 224 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 12 | | | 12 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 42.0% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Existing AM Peak

Lanes, Volumes, Timings
1: 800 W & 400 S 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 12 | 315 | 24 | 66 | 243 | 22 | 22 | 51 | 13 | 46 | 85 | 54 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 170 | | 0 | 180 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.991 | | | 0.991 | | | 0.980 | | | 0.961 | |
| Flt Protected | | 0.998 | | | 0.990 | | | 0.987 | | | 0.988 | |
| Satd. Flow (prot) | 0 | 1842 | 0 | 0 | 1828 | 0 | 0 | 1802 | 0 | 0 | 1769 | 0 |
| Flt Permitted | | 0.998 | | | 0.990 | | | 0.987 | | | 0.988 | |
| Satd. Flow (perm) | 0 | 1842 | 0 | 0 | 1828 | 0 | 0 | 1802 | 0 | 0 | 1769 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 354 | | | 277 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 8.0 | | | 6.3 | | | 6.1 | |
| 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 |
| Adj. Flow (vph) | 13 | 346 | 26 | 73 | 267 | 24 | 24 | 56 | 14 | 51 | 93 | 59 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 385 | 0 | 0 | 364 | 0 | 0 | 94 | 0 | 0 | 203 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Yield | | | Yield | | | Yield | | | Yield | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Roundabout | | | |
| Intersection Capacity Utilization 60.1% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

PM Peak with Roundabout

Lanes, Volumes, Timings
1: 800 W & 400 S 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 12 | 315 | 24 | 66 | 243 | 22 | 22 | 51 | 13 | 46 | 85 | 54 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 170 | | 0 | 180 | | 0 | 0 | | 0 | 0 | | 0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.990 | | | 0.988 | | | 0.980 | | | 0.961 | |
| Flt Protected | 0.950 | | | 0.950 | | | | 0.987 | | | 0.988 | |
| Satd. Flow (prot) | 1770 | 1844 | 0 | 1770 | 1840 | 0 | 0 | 1802 | 0 | 0 | 1769 | 0 |
| Flt Permitted | 0.950 | | | 0.950 | | | | 0.987 | | | 0.988 | |
| Satd. Flow (perm) | 1770 | 1844 | 0 | 1770 | 1840 | 0 | 0 | 1802 | 0 | 0 | 1769 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 354 | | | 277 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 8.0 | | | 6.3 | | | 6.1 | |
| 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 |
| Adj. Flow (vph) | 13 | 346 | 26 | 73 | 267 | 24 | 24 | 56 | 14 | 51 | 93 | 59 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 13 | 372 | 0 | 73 | 291 | 0 | 0 | 94 | 0 | 0 | 203 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 12 | | | 12 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 45.3% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Existing PM Peak

Lanes, Volumes, Timings
1: 800 W & 1000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 30 | 4 | 2 | 10 | 14 | 56 | 30 | 106 | 12 | 2 | 153 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | | 0 | 0 | | 0 | 185 | | 300 | 180 | | 300 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.992 | | | 0.905 | | | 0.989 | | | 0.993 | |
| Flt Protected | | 0.960 | | | 0.994 | | | 0.990 | | | 0.999 | |
| Satd. Flow (prot) | 0 | 1774 | 0 | 0 | 1676 | 0 | 0 | 1824 | 0 | 0 | 1848 | 0 |
| Flt Permitted | | 0.960 | | | 0.994 | | | 0.990 | | | 0.999 | |
| Satd. Flow (perm) | 0 | 1774 | 0 | 0 | 1676 | 0 | 0 | 1824 | 0 | 0 | 1848 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 255 | | | 315 | | | 267 | | | 250 | |
| Travel Time (s) | | 5.8 | | | 7.2 | | | 6.1 | | | 5.7 | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Adj. Flow (vph) | 41 | 5 | 3 | 14 | 19 | 77 | 41 | 145 | 16 | 3 | 210 | 11 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 49 | 0 | 0 | 110 | 0 | 0 | 202 | 0 | 0 | 224 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Yield | | | Yield | | | Yield | | | Yield | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Roundabout | | | |
| Intersection Capacity Utilization 35.3% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

AM Peak with Roundabout

Lanes, Volumes, Timings
1: 800 W & 1000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 30 | 4 | 2 | 10 | 14 | 56 | 30 | 106 | 12 | 2 | 153 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | | 0 | 0 | | 0 | 185 | | 300 | 180 | | 300 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.992 | | | 0.905 | | | | 0.850 | | | 0.850 |
| Flt Protected | | 0.960 | | | 0.994 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1774 | 0 | 0 | 1676 | 0 | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | | 0.960 | | | 0.994 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1774 | 0 | 0 | 1676 | 0 | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 255 | | | 315 | | | 267 | | | 250 | |
| Travel Time (s) | | 5.8 | | | 7.2 | | | 6.1 | | | 5.7 | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Adj. Flow (vph) | 41 | 5 | 3 | 14 | 19 | 77 | 41 | 145 | 16 | 3 | 210 | 11 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 49 | 0 | 0 | 110 | 0 | 41 | 145 | 16 | 3 | 210 | 11 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 12 | | | 12 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 30.0% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Existing AM Peak

Lanes, Volumes, Timings
1: 800 W & 1000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 12 | 14 | 3 | 15 | 13 | 30 | 42 | 94 | 8 | 4 | 115 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | | 0 | 0 | | 0 | 185 | | 300 | 180 | | 300 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.988 | | | 0.930 | | | 0.993 | | | 0.992 | |
| Flt Protected | | 0.979 | | | 0.987 | | | 0.986 | | | 0.998 | |
| Satd. Flow (prot) | 0 | 1802 | 0 | 0 | 1710 | 0 | 0 | 1824 | 0 | 0 | 1844 | 0 |
| Flt Permitted | | 0.979 | | | 0.987 | | | 0.986 | | | 0.998 | |
| Satd. Flow (perm) | 0 | 1802 | 0 | 0 | 1710 | 0 | 0 | 1824 | 0 | 0 | 1844 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 255 | | | 315 | | | 267 | | | 250 | |
| Travel Time (s) | | 5.8 | | | 7.2 | | | 6.1 | | | 5.7 | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 14 | 16 | 3 | 17 | 15 | 34 | 48 | 108 | 9 | 5 | 132 | 9 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 33 | 0 | 0 | 66 | 0 | 0 | 165 | 0 | 0 | 146 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Yield | | | Yield | | | Yield | | | Yield | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Roundabout | | | |
| Intersection Capacity Utilization 28.3% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

MID Peak with Roundabout

Lanes, Volumes, Timings
1: 800 W & 1000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 12 | 14 | 3 | 15 | 13 | 30 | 42 | 94 | 8 | 4 | 115 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | | 0 | 0 | | 0 | 185 | | 300 | 180 | | 300 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.988 | | | 0.930 | | | | 0.850 | | | 0.850 |
| Flt Protected | | 0.979 | | | 0.987 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1802 | 0 | 0 | 1710 | 0 | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | | 0.979 | | | 0.987 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1802 | 0 | 0 | 1710 | 0 | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 255 | | | 315 | | | 267 | | | 250 | |
| Travel Time (s) | | 5.8 | | | 7.2 | | | 6.1 | | | 5.7 | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 14 | 16 | 3 | 17 | 15 | 34 | 48 | 108 | 9 | 5 | 132 | 9 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 33 | 0 | 0 | 66 | 0 | 48 | 108 | 9 | 5 | 132 | 9 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 12 | | | 12 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 20.0% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Existing MID Peak

Lanes, Volumes, Timings
1: 800 W & 1000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 18 | 30 | 1 | 11 | 23 | 36 | 73 | 179 | 19 | 5 | 154 | 7 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | | 0 | 0 | | 0 | 185 | | 300 | 180 | | 300 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.997 | | | 0.930 | | | 0.990 | | | 0.995 | |
| Flt Protected | | 0.982 | | | 0.993 | | | 0.987 | | | 0.999 | |
| Satd. Flow (prot) | 0 | 1824 | 0 | 0 | 1720 | 0 | 0 | 1820 | 0 | 0 | 1852 | 0 |
| Flt Permitted | | 0.982 | | | 0.993 | | | 0.987 | | | 0.999 | |
| Satd. Flow (perm) | 0 | 1824 | 0 | 0 | 1720 | 0 | 0 | 1820 | 0 | 0 | 1852 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 255 | | | 315 | | | 267 | | | 250 | |
| Travel Time (s) | | 5.8 | | | 7.2 | | | 6.1 | | | 5.7 | |
| 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 |
| Adj. Flow (vph) | 19 | 31 | 1 | 11 | 24 | 38 | 76 | 186 | 20 | 5 | 160 | 7 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 51 | 0 | 0 | 73 | 0 | 0 | 282 | 0 | 0 | 172 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Yield | | | Yield | | | Yield | | | Yield | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Roundabout | | | |
| Intersection Capacity Utilization 38.7% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

PM Peak with Roundabout

Lanes, Volumes, Timings
1: 800 W & 1000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 18 | 30 | 1 | 11 | 23 | 36 | 73 | 179 | 19 | 5 | 154 | 7 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (ft) | 0 | | 0 | 0 | | 0 | 185 | | 300 | 180 | | 300 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 1 | 1 | | 1 |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | | 25 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.997 | | | 0.930 | | | | 0.850 | | | 0.850 |
| Flt Protected | | 0.982 | | | 0.993 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1824 | 0 | 0 | 1720 | 0 | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | | 0.982 | | | 0.993 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1824 | 0 | 0 | 1720 | 0 | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 255 | | | 315 | | | 267 | | | 250 | |
| Travel Time (s) | | 5.8 | | | 7.2 | | | 6.1 | | | 5.7 | |
| 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 |
| Adj. Flow (vph) | 19 | 31 | 1 | 11 | 24 | 38 | 76 | 186 | 20 | 5 | 160 | 7 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 51 | 0 | 0 | 73 | 0 | 76 | 186 | 20 | 5 | 160 | 7 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 12 | | | 12 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 28.0% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Existing PM Peak

Lanes, Volumes, Timings
1: 800 W & 2000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 7 | 103 | 6 | 0 | 151 | 32 | 51 | 21 | 16 | 34 | 24 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.993 | | | 0.976 | | | 0.975 | | | 0.998 | |
| Flt Protected | | 0.997 | | | | | | 0.972 | | | 0.972 | |
| Satd. Flow (prot) | 0 | 1844 | 0 | 0 | 1818 | 0 | 0 | 1765 | 0 | 0 | 1807 | 0 |
| Flt Permitted | | 0.997 | | | | | | 0.972 | | | 0.972 | |
| Satd. Flow (perm) | 0 | 1844 | 0 | 0 | 1818 | 0 | 0 | 1765 | 0 | 0 | 1807 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 343 | | | 250 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 7.8 | | | 5.7 | | | 6.1 | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Adj. Flow (vph) | 10 | 141 | 8 | 0 | 207 | 44 | 70 | 29 | 22 | 47 | 33 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 159 | 0 | 0 | 251 | 0 | 0 | 121 | 0 | 0 | 81 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Yield | | | Yield | | | Yield | | | Yield | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Roundabout | | | |
| Intersection Capacity Utilization 24.2% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

AM Peak with Roundabout

Lanes, Volumes, Timings
1: 800 W & 2000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 7 | 103 | 6 | 0 | 151 | 32 | 51 | 21 | 16 | 34 | 24 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.993 | | | 0.976 | | | 0.975 | | | 0.998 | |
| Flt Protected | | 0.997 | | | | | | 0.972 | | | 0.972 | |
| Satd. Flow (prot) | 0 | 1844 | 0 | 0 | 1818 | 0 | 0 | 1765 | 0 | 0 | 1807 | 0 |
| Flt Permitted | | 0.997 | | | | | | 0.972 | | | 0.972 | |
| Satd. Flow (perm) | 0 | 1844 | 0 | 0 | 1818 | 0 | 0 | 1765 | 0 | 0 | 1807 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 343 | | | 250 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 7.8 | | | 5.7 | | | 6.1 | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Adj. Flow (vph) | 10 | 141 | 8 | 0 | 207 | 44 | 70 | 29 | 22 | 47 | 33 | 1 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 159 | 0 | 0 | 251 | 0 | 0 | 121 | 0 | 0 | 81 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 24.2% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Existing AM Peak

Lanes, Volumes, Timings
1: 800 W & 2000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 8 | 138 | 6 | 2 | 110 | 22 | 41 | 15 | 15 | 32 | 22 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.995 | | | 0.978 | | | 0.971 | | | | |
| Flt Protected | | 0.997 | | | 0.999 | | | 0.972 | | | 0.971 | |
| Satd. Flow (prot) | 0 | 1848 | 0 | 0 | 1820 | 0 | 0 | 1758 | 0 | 0 | 1809 | 0 |
| Flt Permitted | | 0.997 | | | 0.999 | | | 0.972 | | | 0.971 | |
| Satd. Flow (perm) | 0 | 1848 | 0 | 0 | 1820 | 0 | 0 | 1758 | 0 | 0 | 1809 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 343 | | | 250 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 7.8 | | | 5.7 | | | 6.1 | |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Adj. Flow (vph) | 10 | 164 | 7 | 2 | 131 | 26 | 49 | 18 | 18 | 38 | 26 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 181 | 0 | 0 | 159 | 0 | 0 | 85 | 0 | 0 | 64 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Yield | | | Yield | | | Yield | | | Yield | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Roundabout | | | |
| Intersection Capacity Utilization 23.7% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

MID Peak with Roundabout

Lanes, Volumes, Timings
1: 800 W & 2000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 8 | 138 | 6 | 2 | 110 | 22 | 41 | 15 | 15 | 32 | 22 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.995 | | | 0.978 | | | 0.971 | | | | |
| Flt Protected | | 0.997 | | | 0.999 | | | 0.972 | | | 0.971 | |
| Satd. Flow (prot) | 0 | 1848 | 0 | 0 | 1820 | 0 | 0 | 1758 | 0 | 0 | 1809 | 0 |
| Flt Permitted | | 0.997 | | | 0.999 | | | 0.972 | | | 0.971 | |
| Satd. Flow (perm) | 0 | 1848 | 0 | 0 | 1820 | 0 | 0 | 1758 | 0 | 0 | 1809 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 343 | | | 250 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 7.8 | | | 5.7 | | | 6.1 | |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Adj. Flow (vph) | 10 | 164 | 7 | 2 | 131 | 26 | 49 | 18 | 18 | 38 | 26 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 181 | 0 | 0 | 159 | 0 | 0 | 85 | 0 | 0 | 64 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 23.7% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Existing MID Peak

Lanes, Volumes, Timings
1: 800 W & 2000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 19 | 229 | 6 | 1 | 125 | 39 | 54 | 18 | 19 | 25 | 43 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.997 | | | 0.968 | | | 0.972 | | | | |
| Flt Protected | | 0.996 | | | | | | 0.971 | | | 0.982 | |
| Satd. Flow (prot) | 0 | 1850 | 0 | 0 | 1803 | 0 | 0 | 1758 | 0 | 0 | 1829 | 0 |
| Flt Permitted | | 0.996 | | | | | | 0.971 | | | 0.982 | |
| Satd. Flow (perm) | 0 | 1850 | 0 | 0 | 1803 | 0 | 0 | 1758 | 0 | 0 | 1829 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 343 | | | 250 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 7.8 | | | 5.7 | | | 6.1 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 20 | 244 | 6 | 1 | 133 | 41 | 57 | 19 | 20 | 27 | 46 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 270 | 0 | 0 | 175 | 0 | 0 | 96 | 0 | 0 | 73 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Yield | | | Yield | | | Yield | | | Yield | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Roundabout | | | |
| Intersection Capacity Utilization 40.8% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

PM Peak with Roundabout

Lanes, Volumes, Timings
1: 800 W & 2000 N 1/31/2015

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 19 | 229 | 6 | 1 | 125 | 39 | 54 | 18 | 19 | 25 | 43 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.997 | | | 0.968 | | | 0.972 | | | | |
| Flt Protected | | 0.996 | | | | | | 0.971 | | | 0.982 | |
| Satd. Flow (prot) | 0 | 1850 | 0 | 0 | 1803 | 0 | 0 | 1758 | 0 | 0 | 1829 | 0 |
| Flt Permitted | | 0.996 | | | | | | 0.971 | | | 0.982 | |
| Satd. Flow (perm) | 0 | 1850 | 0 | 0 | 1803 | 0 | 0 | 1758 | 0 | 0 | 1829 | 0 |
| Link Speed (mph) | | 30 | | | 30 | | | 30 | | | 30 | |
| Link Distance (ft) | | 273 | | | 343 | | | 250 | | | 270 | |
| Travel Time (s) | | 6.2 | | | 7.8 | | | 5.7 | | | 6.1 | |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 20 | 244 | 6 | 1 | 133 | 41 | 57 | 19 | 20 | 27 | 46 | 0 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 270 | 0 | 0 | 175 | 0 | 0 | 96 | 0 | 0 | 73 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Link Offset(ft) | | 0 | | | 0 | | | 0 | | | 0 | |
| Crosswalk Width(ft) | | 16 | | | 16 | | | 16 | | | 16 | |
| Two way Left Turn Lane | | | | | | | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (mph) | 15 | | 9 | 15 | | 9 | 15 | | 9 | 15 | | 9 |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 40.8% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

Existing PM Peak

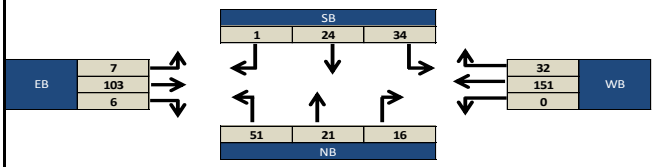
# APPENDIX C: DEMANDS AND CAPACITY

| | |
|---|---|
| Location: | 2000 North 800 West |
| Date: | 15-Jan-15 |
| Time Frame: | AM Count |
| PHF: | 0.73 |
| Heavy Vehicle %: | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | 21 | 16 | 7 | 103 | 6 | 34 | 24 | 1 | 0 | 151 | 32 | 0.73 |



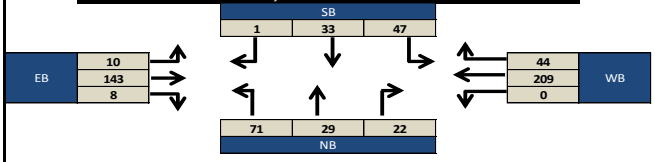

Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

Adjusted Volumes

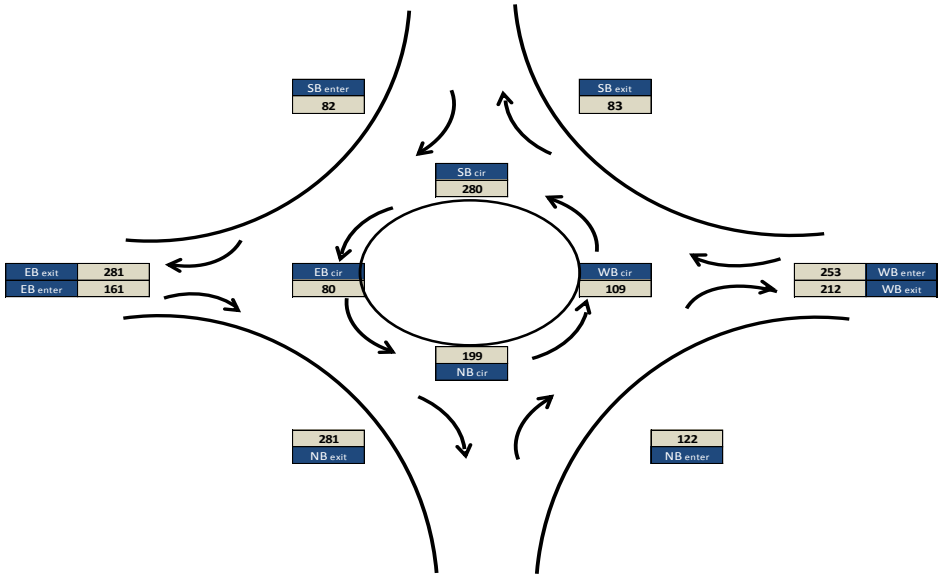
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 71 | 29 | 22 | 10 | 143 | 8 | 47 | 33 | 1 | 0 | 209 | 44 |

Adjusted Peak Volumes




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 122 | 161 | 82 | 253 | 199 | 80 | 280 | 109 | 42 | 281 | 83 | 212 |




## Capacity

Entry Capacity

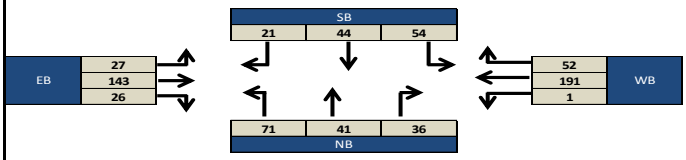
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 122 | 161 | 82 | 253 |
| Capacity | 1043 | 854 | 1013 | 926 |
| Ratio | 0.12 | 0.19 | 0.08 | 0.27 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 2000 North 800 West |
| **Date:** | 20 Year Projected |
| **Time Frame:** | AM Count |
| **PHF:** | 0.73 |
| **Heavy Vehicle %:** | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71 | 41 | 36 | 27 | 143 | 26 | 54 | 44 | 21 | 1 | 191 | 52 | 0.73 |



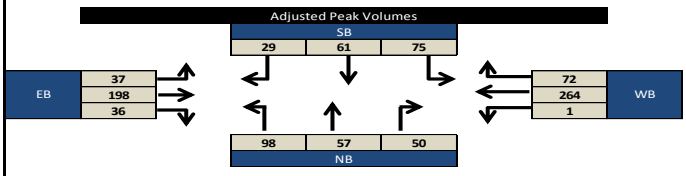

Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

Adjusted Volumes

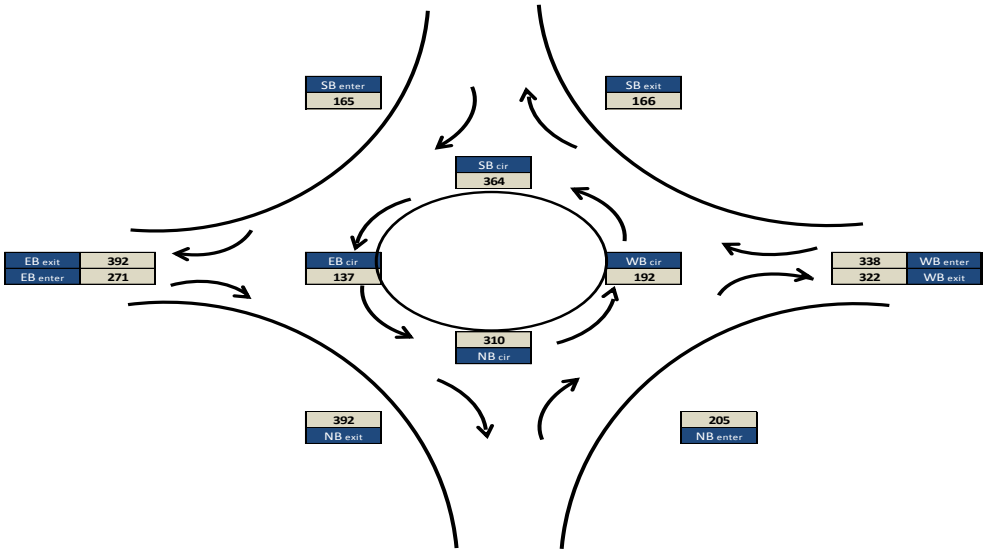
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 98 | 57 | 50 | 37 | 198 | 36 | 75 | 61 | 29 | 1 | 264 | 72 |

Adjusted Peak Volumes




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 205 | 271 | 165 | 338 | 310 | 137 | 364 | 192 | 98 | 392 | 166 | 322 |




## Capacity

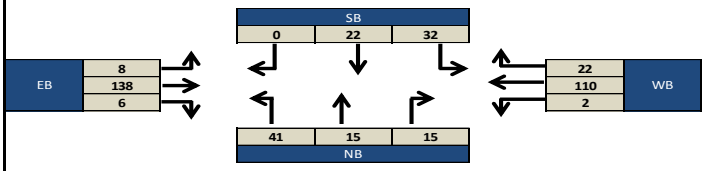
Entry Capacity

| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 205 | 271 | 165 | 338 |
| Capacity | 985 | 785 | 932 | 829 |
| Ratio | 0.21 | 0.35 | 0.18 | 0.41 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 2000 North 800 West |
| **Date:** | 15-Jan-15 |
| **Time Frame:** | Noon Count |
| **PHF:** | 0.84 |
| **Heavy Vehicle %:** | 1% |

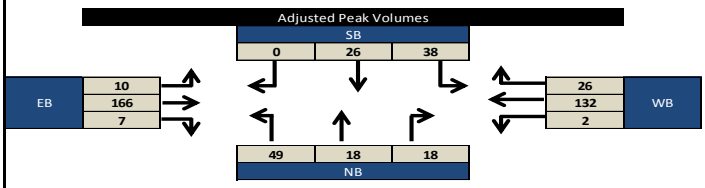
## Demand

| Peak Volumes | | | | | | | | | | | | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
| 41 | 15 | 15 | 8 | 138 | 6 | 32 | 22 | 0 | 2 | 110 | 22 | 0.84 |



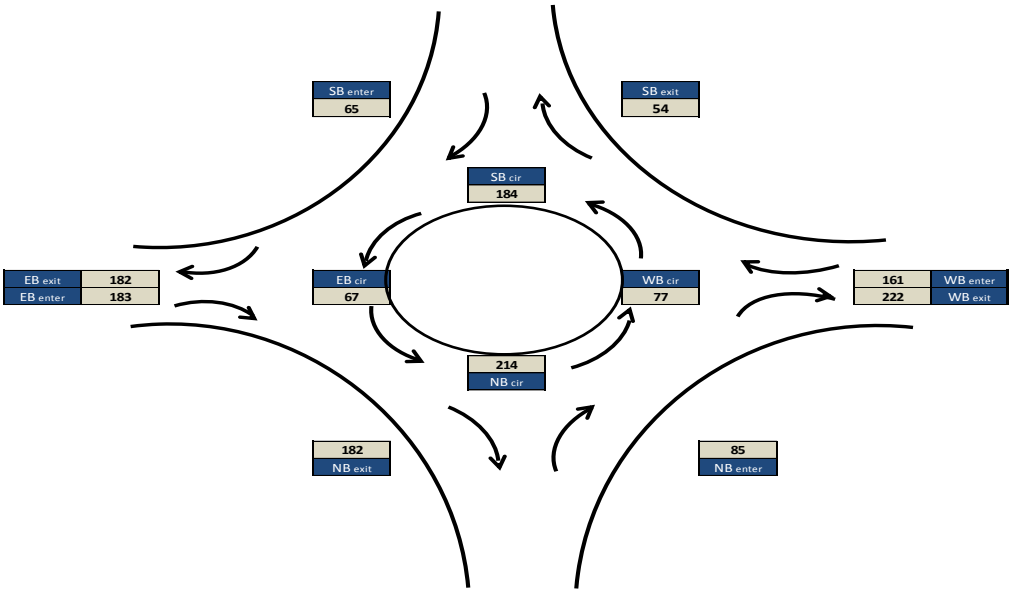

| Heavy Vehicle | | |
|---|---|---|
| $P_T$ | $E_T$ | $f_{HV}$ |
| 1% | 2 | 0.99 |

| Adjusted Volumes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
| 49 | 18 | 18 | 10 | 166 | 7 | 38 | 26 | 0 | 2 | 132 | 26 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 85 | 183 | 65 | 161 | 214 | 67 | 184 | 77 | 36 | 182 | 54 | 222 |




## Capacity

Entry Capacity

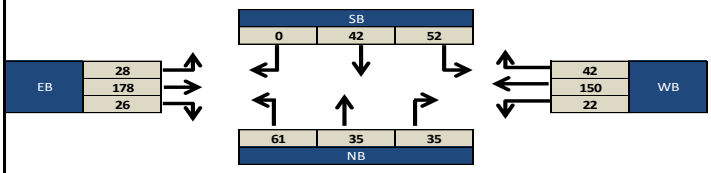
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 85 | 183 | 65 | 161 |
| Capacity | 1056 | 940 | 1046 | 912 |
| Ratio | 0.08 | 0.19 | 0.06 | 0.18 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| Location: | 2000 North 800 West |
| Date: | 15-Jan-15 |
| Time Frame: | Noon Count |
| PHF: | 0.84 |
| Heavy Vehicle %: | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 61 | 35 | 35 | 28 | 178 | 26 | 52 | 42 | 0 | 22 | 150 | 42 | 0.84 |

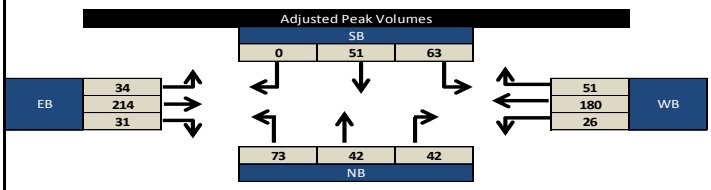



Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

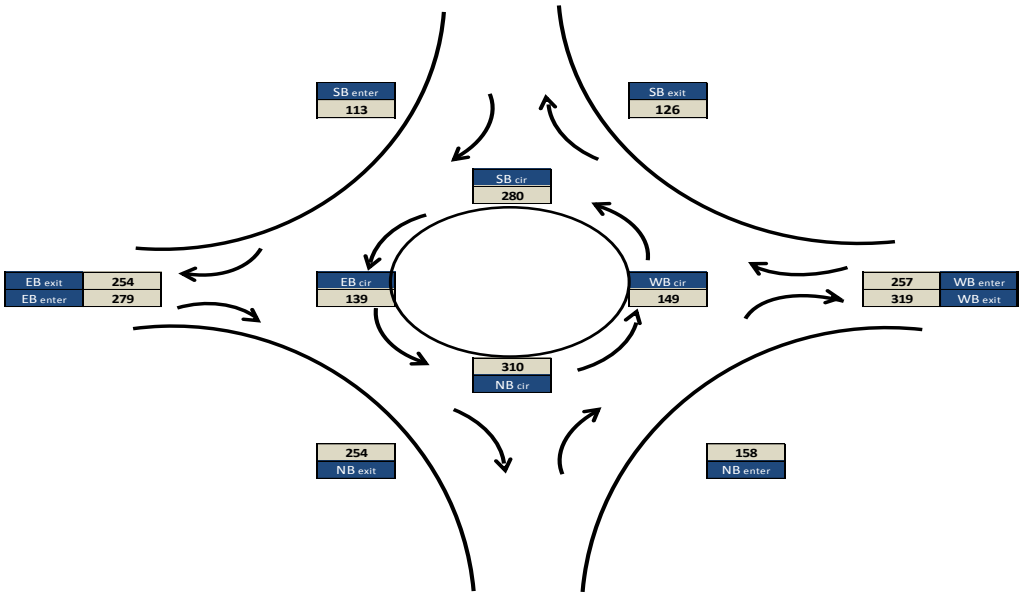
Adjusted Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 73 | 42 | 42 | 34 | 214 | 31 | 63 | 51 | 0 | 26 | 180 | 51 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 158 | 279 | 113 | 257 | 310 | 139 | 280 | 149 | 108 | 254 | 126 | 319 |




## Capacity

Entry Capacity

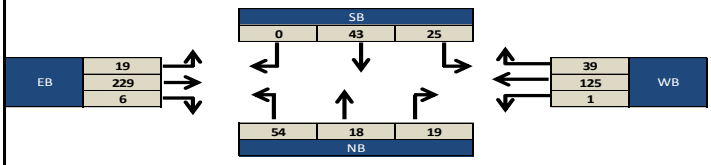
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 158 | 279 | 113 | 257 |
| Capacity | 983 | 854 | 973 | 829 |
| Ratio | 0.16 | 0.33 | 0.12 | 0.31 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 2000 North 800 West |
| **Date:** | 15-Jan-15 |
| **Time Frame:** | PM Count |
| **PHF:** | 0.94 |
| **Heavy Vehicle %:** | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | 18 | 19 | 19 | 229 | 6 | 25 | 43 | 0 | 1 | 125 | 39 | 0.94 |



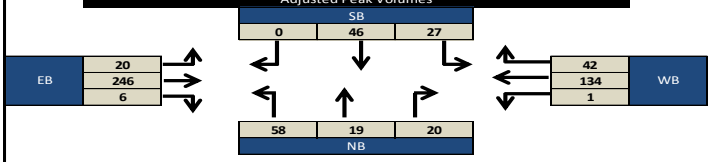

Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

Adjusted Volumes

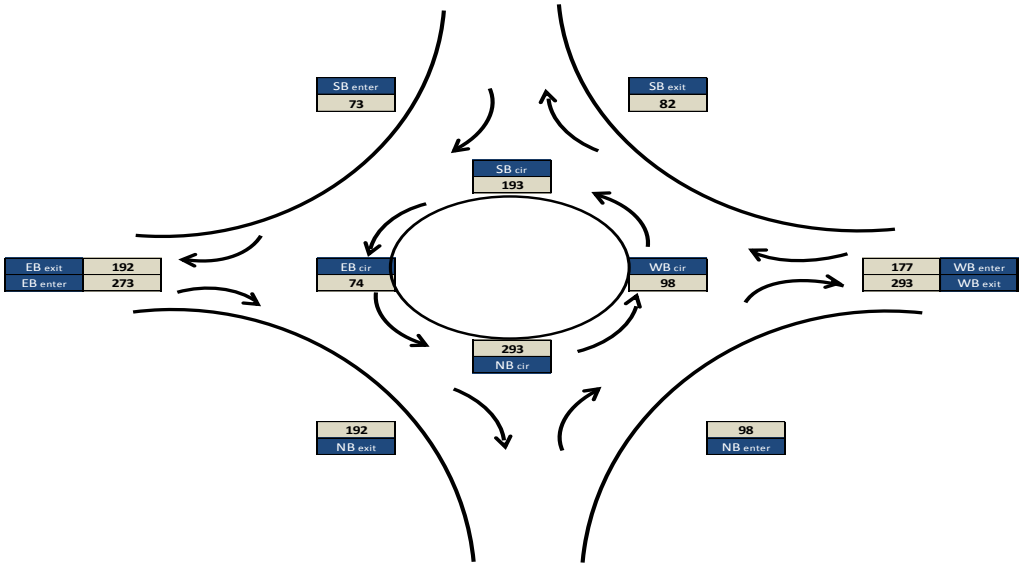
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 58 | 19 | 20 | 20 | 246 | 6 | 27 | 46 | 0 | 1 | 134 | 42 |

Adjusted Peak Volumes




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 98 | 273 | 73 | 177 | 293 | 74 | 193 | 98 | 54 | 192 | 82 | 293 |




## Capacity

Entry Capacity

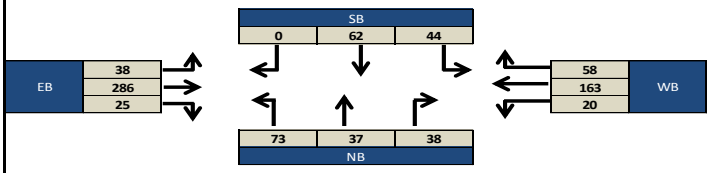
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 98 | 273 | 73 | 177 |
| Capacity | 1049 | 931 | 1025 | 843 |
| Ratio | 0.09 | 0.29 | 0.07 | 0.21 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 2000 North 800 West |
| **Date:** | 20 Year Projected |
| **Time Frame:** | PM Count |
| **PHF:** | 0.94 |
| **Heavy Vehicle %:** | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73 | 37 | 38 | 38 | 286 | 25 | 44 | 62 | 0 | 20 | 163 | 58 | 0.94 |

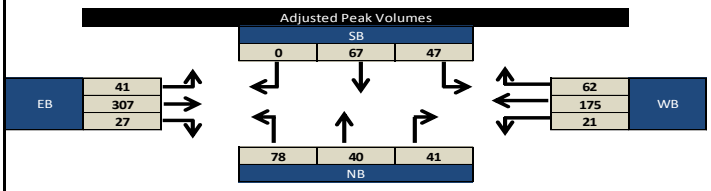



Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

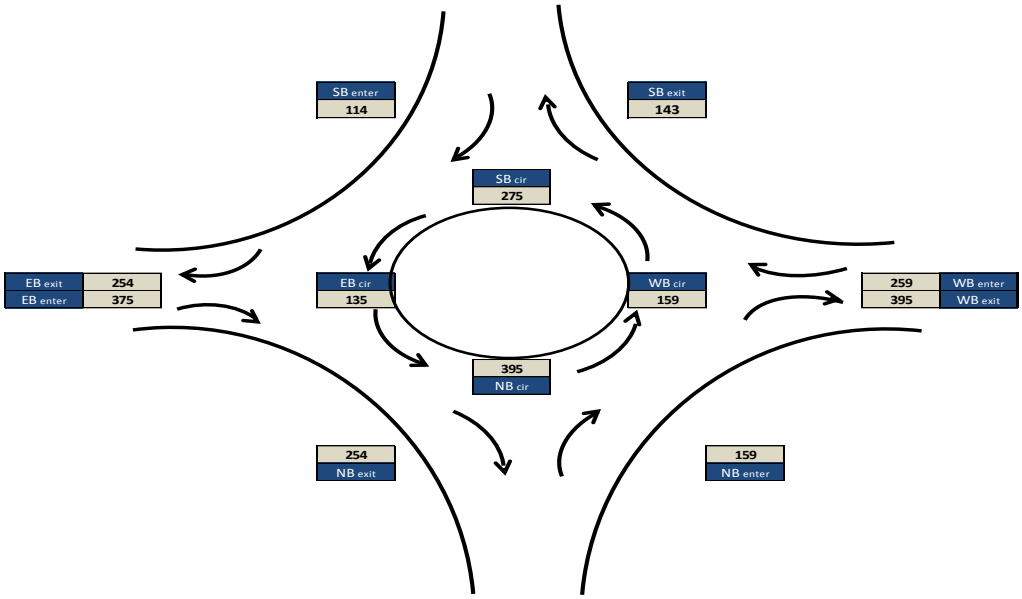
Adjusted Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 78 | 40 | 41 | 41 | 307 | 27 | 47 | 67 | 0 | 21 | 175 | 62 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 159 | 375 | 114 | 259 | 395 | 135 | 275 | 159 | 115 | 254 | 143 | 395 |




## Capacity

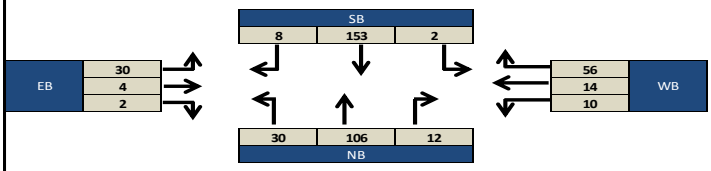
Entry Capacity

| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 159 | 375 | 114 | 259 |
| Capacity | 987 | 858 | 964 | 761 |
| Ratio | 0.16 | 0.44 | 0.12 | 0.34 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| Location: | 1000 North 800 West |
| Date: | 15-Jan-15 |
| Time Frame: | AM Count |
| PHF: | 0.73 |
| Heavy Vehicle %: | 1% |

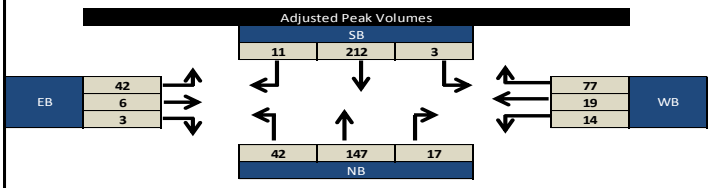
## Demand

| Peak Volumes | | | | | | | | | | | | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
| 30 | 106 | 12 | 30 | 4 | 2 | 2 | 153 | 8 | 10 | 14 | 56 | 0.73 |



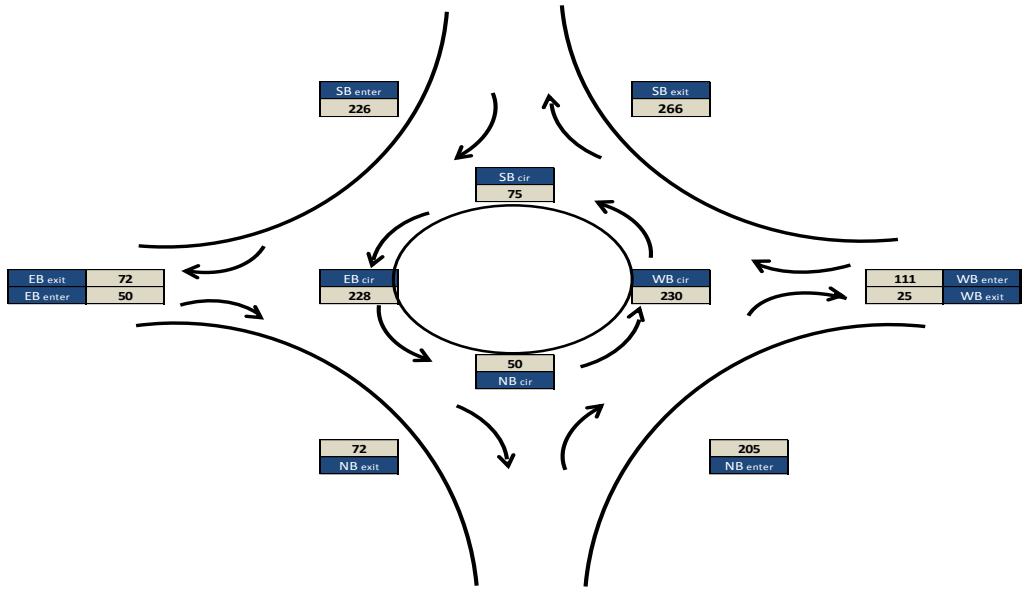

| Heavy Vehicle | | |
|---|---|---|
| $P_T$ | $E_T$ | $f_{HV}$ |
| 1% | 2 | 0.99 |

| Adjusted Volumes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
| 42 | 147 | 17 | 42 | 6 | 3 | 3 | 212 | 11 | 14 | 19 | 77 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 205 | 50 | 226 | 111 | 50 | 228 | 75 | 230 | 228 | 72 | 266 | 25 |




## Capacity

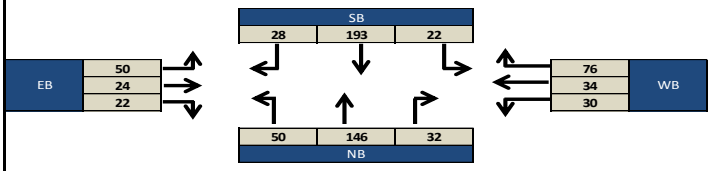
Entry Capacity

| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 205 | 50 | 226 | 111 |
| Capacity | 899 | 1049 | 898 | 1075 |
| Ratio | 0.23 | 0.05 | 0.25 | 0.10 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 1000 North 800 West |
| **Date:** | Projected |
| **Time Frame:** | AM Count |
| **PHF:** | 0.73 |
| **Heavy Vehicle %:** | 1% |

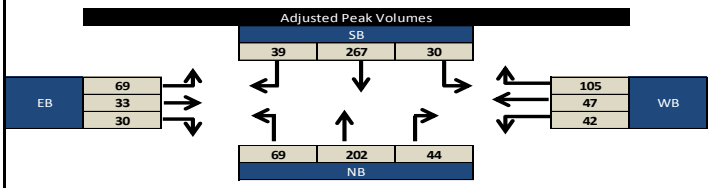
## Demand

| Peak Volumes | | | | | | | | | | | | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
| 50 | 146 | 32 | 50 | 24 | 22 | 22 | 193 | 28 | 30 | 34 | 76 | 0.73 |



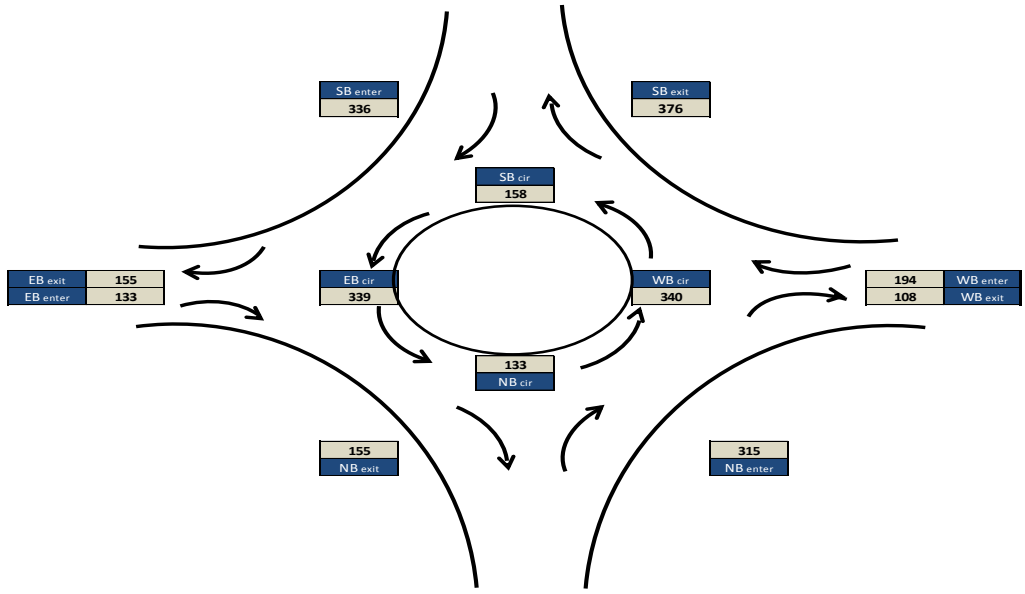

| Heavy Vehicle | | |
|---|---|---|
| $P_T$ | $E_T$ | $f_{HV}$ |
| 1% | 2 | 0.99 |

| Adjusted Volumes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
| 69 | 202 | 44 | 69 | 33 | 30 | 30 | 267 | 39 | 42 | 47 | 105 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 315 | 133 | 336 | 194 | 133 | 339 | 158 | 340 | 339 | 155 | 376 | 108 |




## Capacity

Entry Capacity

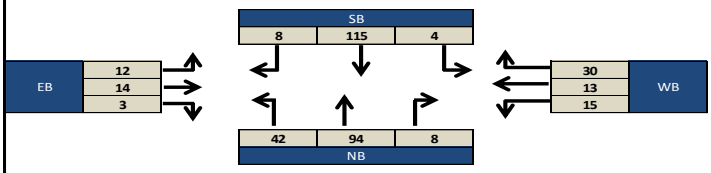
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 315 | 133 | 336 | 194 |
| Capacity | 805 | 965 | 804 | 989 |
| Ratio | 0.39 | 0.14 | 0.42 | 0.20 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| Location: | 1000 North 800 West |
| Date: | 15-Jan-15 |
| Time Frame: | Noon Count |
| PHF: | 0.87 |
| Heavy Vehicle %: | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | 94 | 8 | 12 | 14 | 3 | 4 | 115 | 8 | 15 | 13 | 30 | 0.87 |

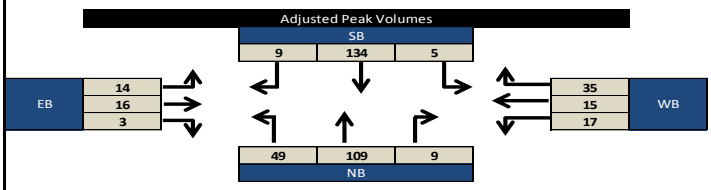



Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

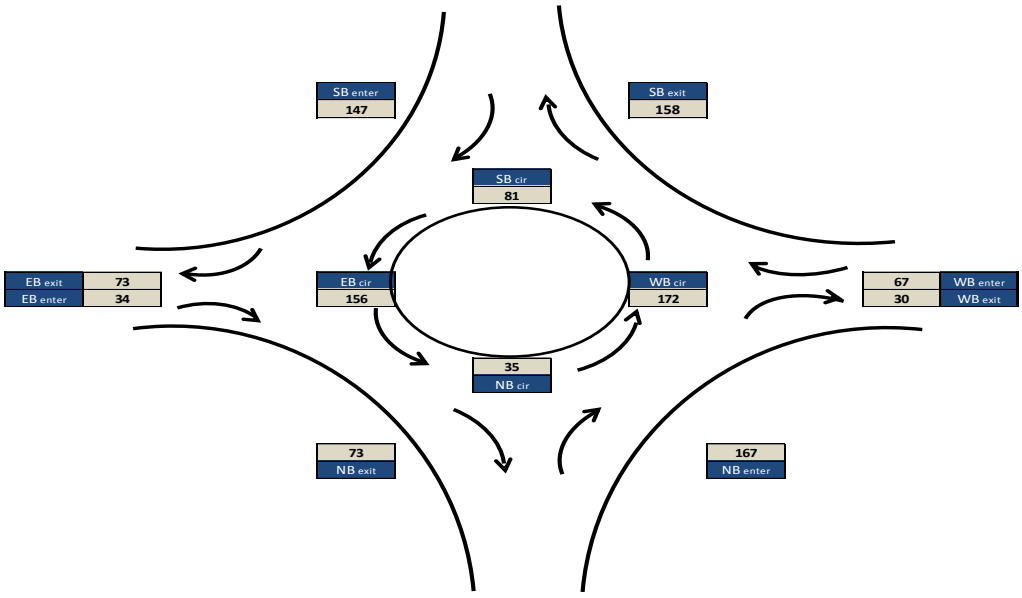
Adjusted Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 109 | 9 | 14 | 16 | 3 | 5 | 134 | 9 | 17 | 15 | 35 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 167 | 34 | 147 | 67 | 35 | 156 | 81 | 172 | 154 | 73 | 158 | 30 |




## Capacity

Entry Capacity

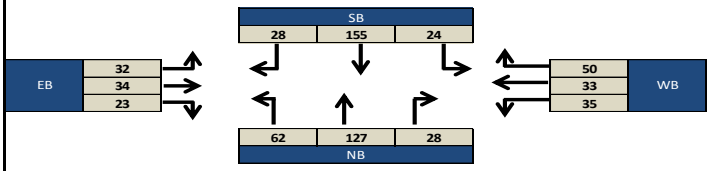
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 167 | 34 | 147 | 67 |
| Capacity | 967 | 1042 | 952 | 1091 |
| Ratio | 0.17 | 0.03 | 0.15 | 0.06 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| Location: | 1000 North 800 West |
| Date: | 20 Year Projected |
| Time Frame: | Noon Count |
| PHF: | 0.87 |
| Heavy Vehicle %: | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 62 | 127 | 28 | 32 | 34 | 23 | 24 | 155 | 28 | 35 | 33 | 50 | 0.87 |

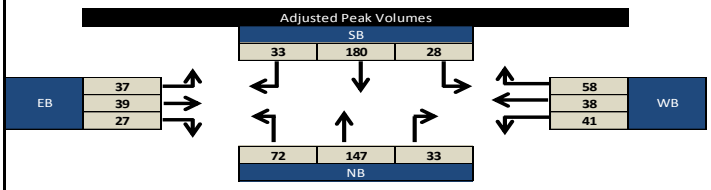



Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

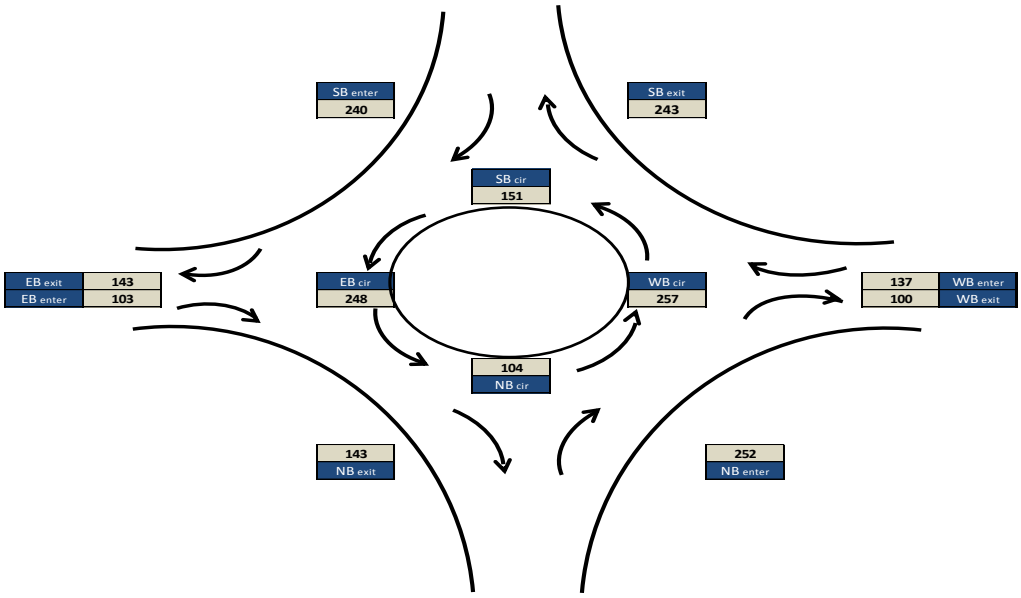
Adjusted Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 72 | 147 | 33 | 37 | 39 | 27 | 28 | 180 | 33 | 41 | 38 | 58 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 252 | 103 | 240 | 137 | 104 | 248 | 151 | 257 | 247 | 143 | 243 | 100 |




## Capacity

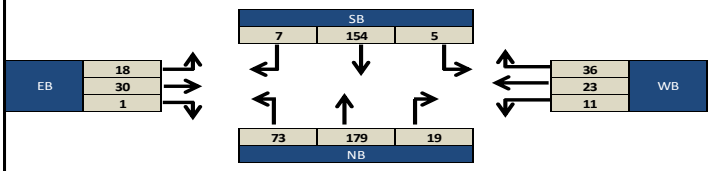
Entry Capacity

| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 252 | 103 | 240 | 137 |
| Capacity | 881 | 972 | 874 | 1018 |
| Ratio | 0.29 | 0.11 | 0.27 | 0.13 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 1000 North 800 West |
| **Date:** | 15-Jan-15 |
| **Time Frame:** | PM Count |
| **PHF:** | 0.96 |
| **Heavy Vehicle %:** | 1% |

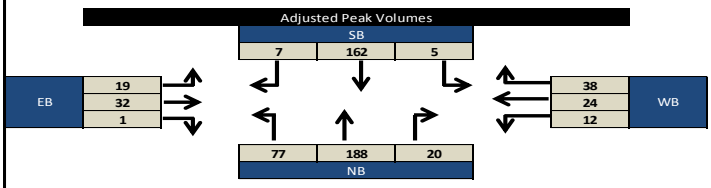
## Demand

| Peak Volumes | | | | | | | | | | | | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
| 73 | 179 | 19 | 18 | 30 | 1 | 5 | 154 | 7 | 11 | 23 | 36 | 0.96 |



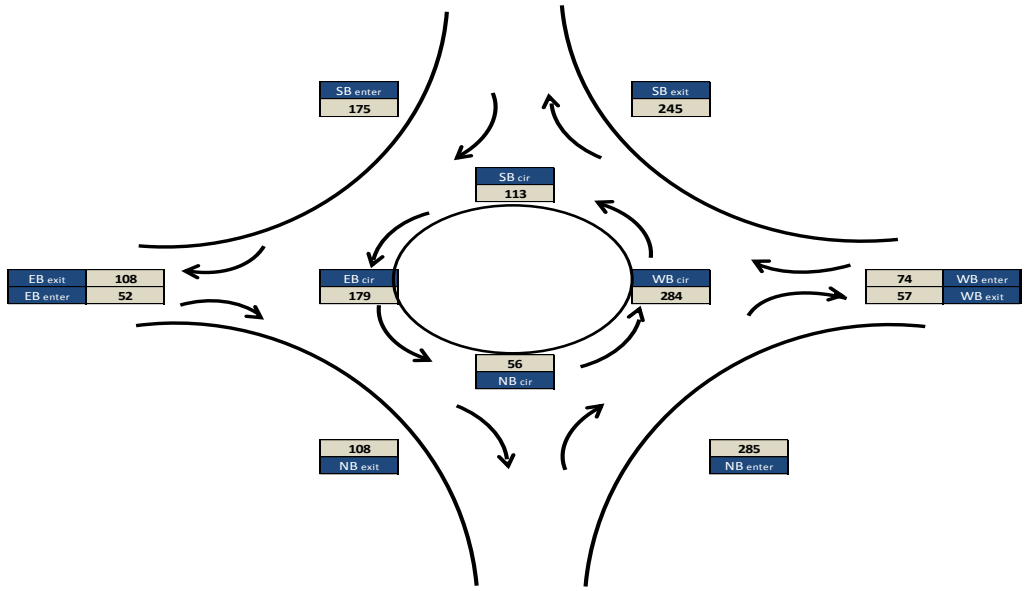

| Heavy Vehicle | | |
|---|---|---|
| $P_T$ | $E_T$ | $f_{HV}$ |
| 1% | 2 | 0.99 |

| Adjusted Volumes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
| 77 | 188 | 20 | 19 | 32 | 1 | 5 | 162 | 7 | 12 | 24 | 38 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 285 | 52 | 175 | 74 | 56 | 179 | 113 | 284 | 175 | 108 | 245 | 57 |




## Capacity

Entry Capacity

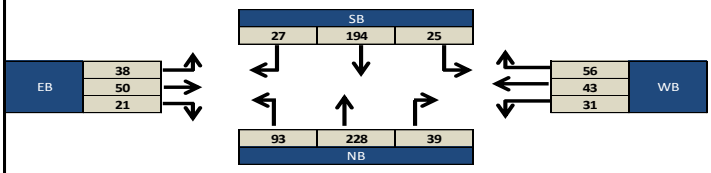
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 285 | 52 | 175 | 74 |
| Capacity | 945 | 1010 | 851 | 1069 |
| Ratio | 0.30 | 0.05 | 0.21 | 0.07 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| Location: | 1000 North 800 West |
| Date: | 20 Year Projection |
| Time Frame: | PM Count |
| PHF: | 0.96 |
| Heavy Vehicle %: | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 93 | 228 | 39 | 38 | 50 | 21 | 25 | 194 | 27 | 31 | 43 | 56 | 0.96 |

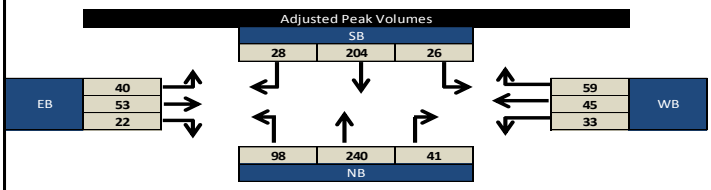



Heavy Vehicle

| PT | ET | fHV |
|---|---|---|
| 1% | 2 | 0.99 |

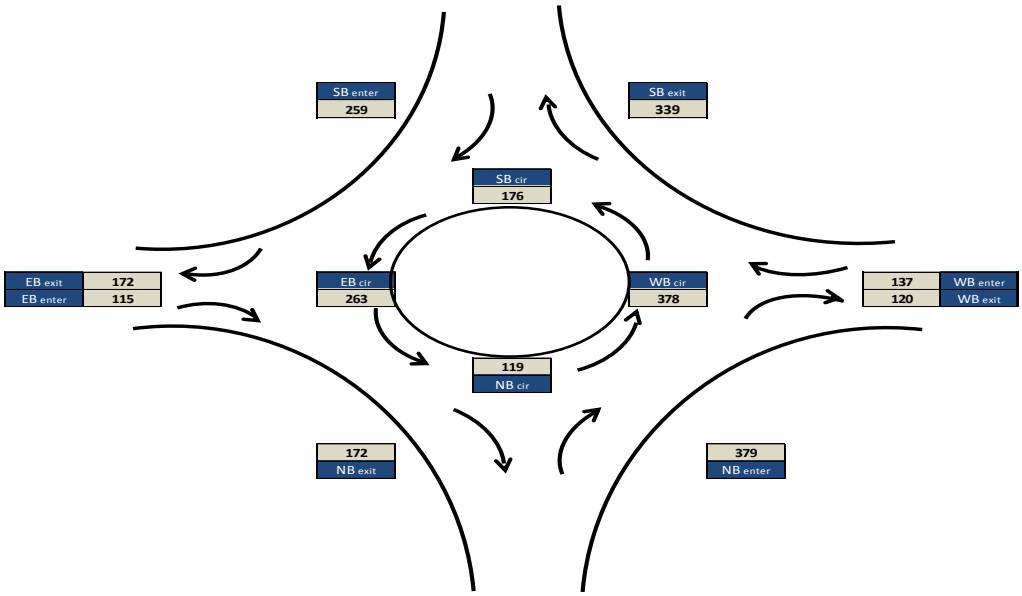
Adjusted Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 98 | 240 | 41 | 40 | 53 | 22 | 26 | 204 | 28 | 33 | 45 | 59 |




Flow Rates

| Entry Flow Rates | | | Circulating Flow Rates | | | | | | Exiting Flow Rates | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 379 | 115 | 259 | 137 | 119 | 263 | 176 | 378 | 259 | 172 | 339 | 120 |




## Capacity

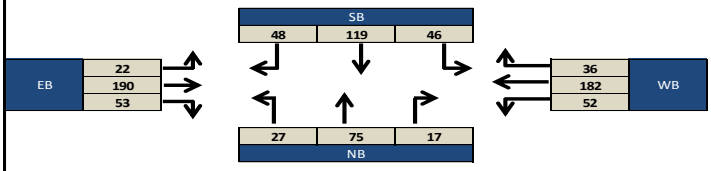
Entry Capacity

| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 379 | 115 | 259 | 137 |
| Capacity | 869 | 948 | 775 | 1003 |
| Ratio | 0.44 | 0.12 | 0.33 | 0.14 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 400 South 800 West |
| **Date:** | 20-Jan-15 |
| **Time Frame:** | AM Count |
| **PHF:** | 0.95 |
| **Heavy Vehicle %:** | 1% |

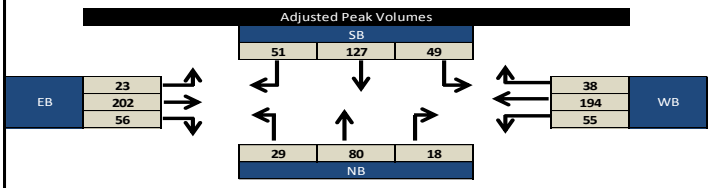
## Demand

| Peak Volumes | | | | | | | | | | | | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
| 27 | 75 | 17 | 22 | 190 | 53 | 46 | 119 | 48 | 52 | 182 | 36 | 0.95 |



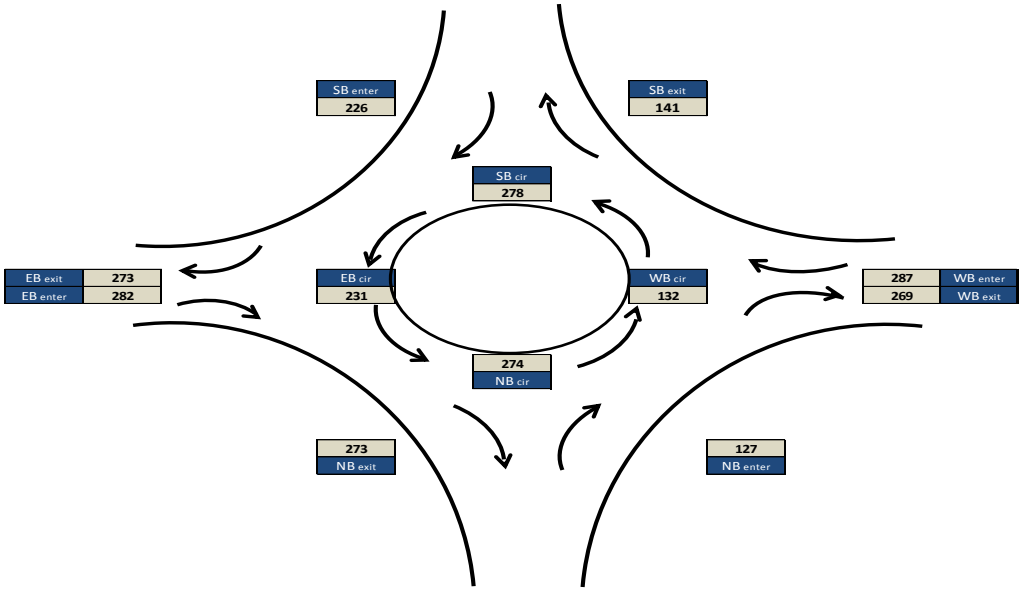

| Heavy Vehicle | | |
|---|---|---|
| $P_T$ | $E_T$ | $f_{HV}$ |
| 1% | 2 | 0.99 |

| Adjusted Volumes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
| 29 | 80 | 18 | 23 | 202 | 56 | 49 | 127 | 51 | 55 | 194 | 38 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 127 | 282 | 226 | 287 | 274 | 231 | 278 | 132 | 238 | 273 | 141 | 269 |




## Capacity

Entry Capacity

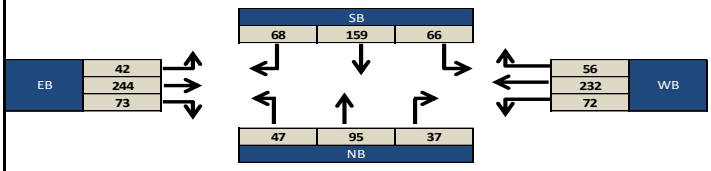
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 127 | 282 | 226 | 287 |
| Capacity | 897 | 856 | 990 | 859 |
| Ratio | 0.14 | 0.33 | 0.23 | 0.33 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| Location: | 400 South 800 West |
| Date: | 20 Year Projection |
| Time Frame: | AM Count |
| PHF: | 0.95 |
| Heavy Vehicle %: | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 47 | 95 | 37 | 42 | 244 | 73 | 66 | 159 | 68 | 72 | 232 | 56 | 0.95 |

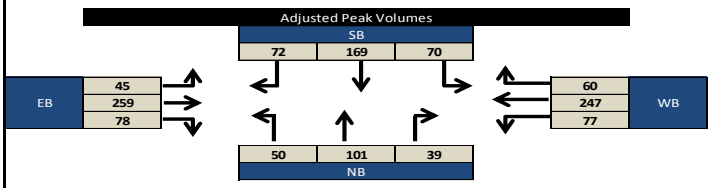



Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

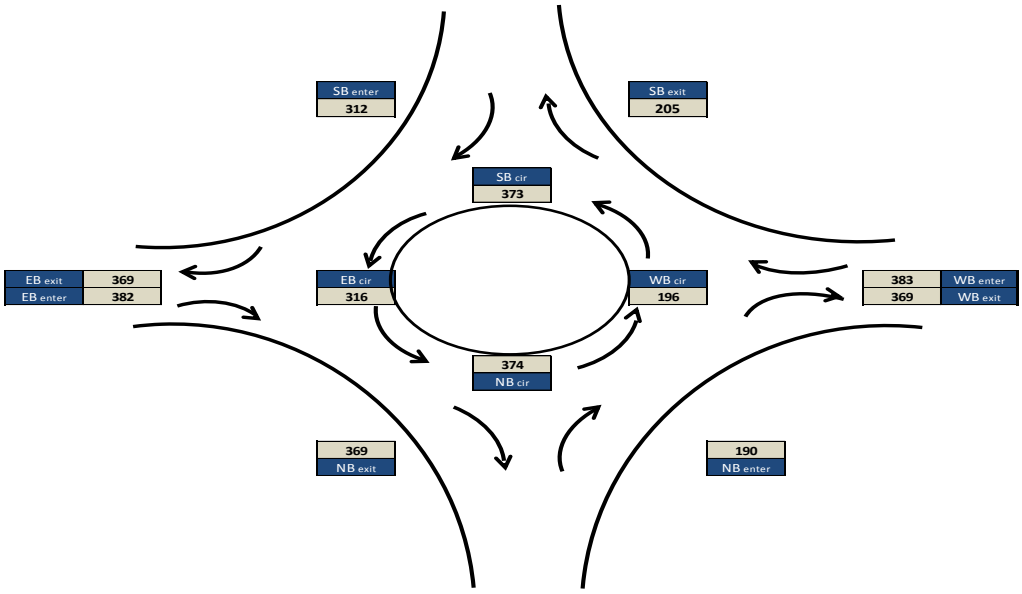
Adjusted Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 101 | 39 | 45 | 259 | 78 | 70 | 169 | 72 | 77 | 247 | 60 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 190 | 382 | 312 | 383 | 374 | 316 | 373 | 196 | 323 | 369 | 205 | 369 |




## Capacity

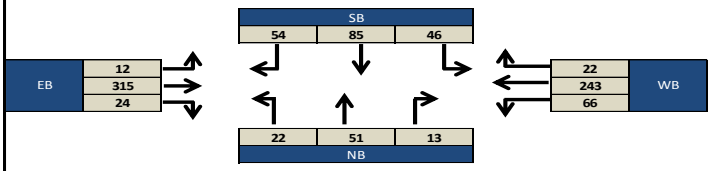
Entry Capacity

| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 190 | 382 | 312 | 383 |
| Capacity | 824 | 778 | 929 | 777 |
| Ratio | 0.23 | 0.49 | 0.34 | 0.49 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 400 South 800 West |
| **Date:** | 20-Jan-15 |
| **Time Frame:** | PM Count |
| **PHF:** | 0.91 |
| **Heavy Vehicle %:** | 1% |

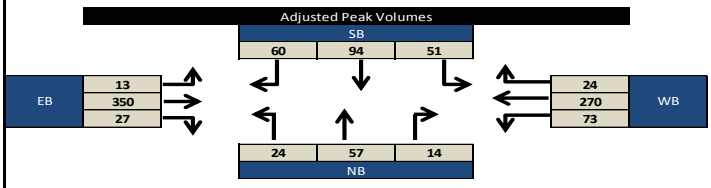
## Demand

| Peak Volumes | | | | | | | | | | | | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
| 22 | 51 | 13 | 12 | 315 | 24 | 46 | 85 | 54 | 66 | 243 | 22 | 0.91 |



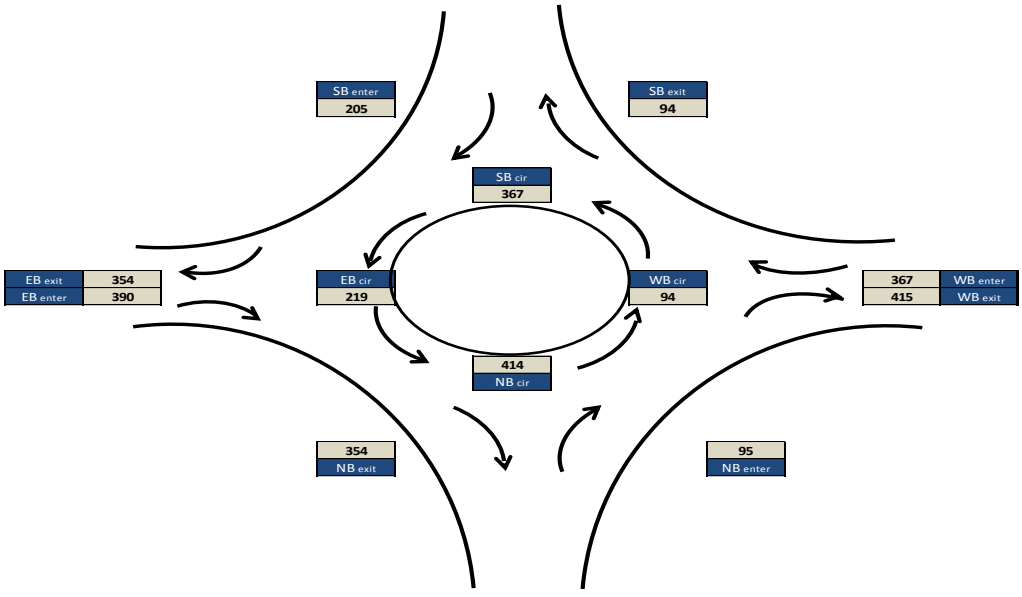

| Heavy Vehicle | | |
|---|---|---|
| $P_T$ | $E_T$ | $f_{HV}$ |
| 1% | 2 | 0.99 |

| Adjusted Volumes | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
| 24 | 57 | 14 | 13 | 350 | 27 | 51 | 94 | 60 | 73 | 270 | 24 |




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 95 | 390 | 205 | 367 | 414 | 219 | 367 | 94 | 194 | 354 | 94 | 415 |




## Capacity

Entry Capacity

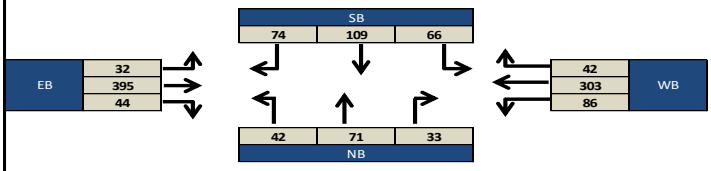
| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 95 | 390 | 205 | 367 |
| Capacity | 908 | 783 | 1028 | 747 |
| Ratio | 0.11 | 0.50 | 0.20 | 0.49 |
| Operation | Pass | Pass | Pass | Pass |

| | |
|---|---|
| **Location:** | 400 South 800 West |
| **Date:** | 20 Year Projection |
| **Time Frame:** | PM Count |
| **PHF:** | 0.91 |
| **Heavy Vehicle %:** | 1% |

## Demand

Peak Volumes

| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR | PHF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | 71 | 33 | 32 | 395 | 44 | 66 | 109 | 74 | 86 | 303 | 42 | 0.91 |



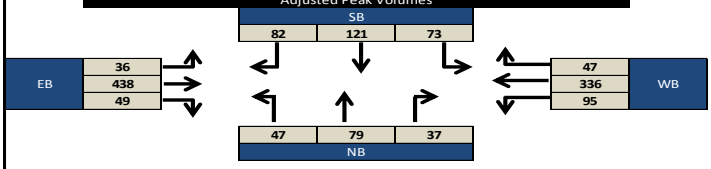

Heavy Vehicle

| $P_T$ | $E_T$ | $f_{HV}$ |
|---|---|---|
| 1% | 2 | 0.99 |

Adjusted Volumes

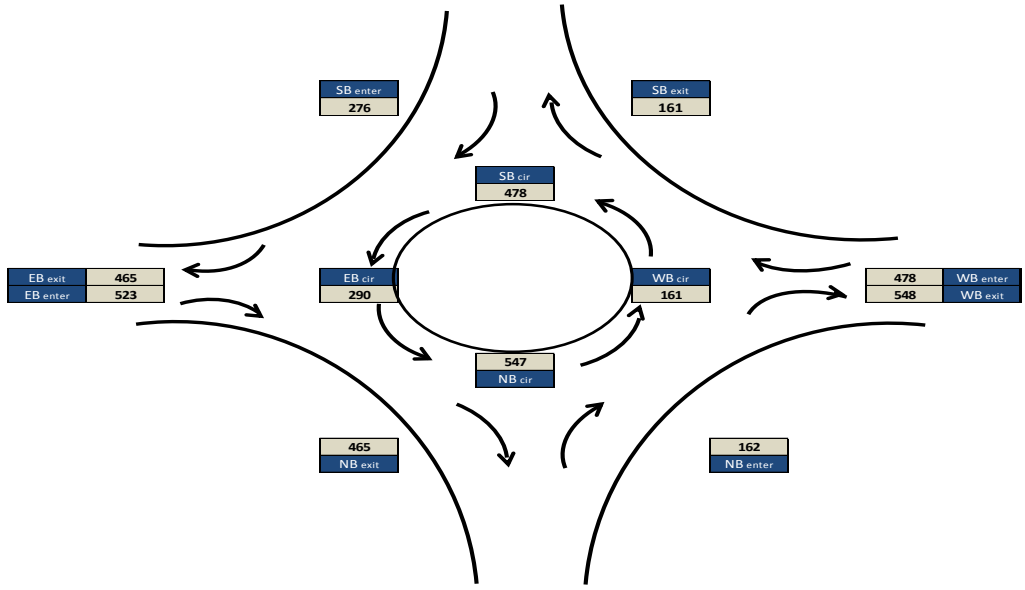
| NBL | NB | NBR | EBL | EB | EBR | SBL | SB | SBR | WBL | WB | WBR |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 47 | 79 | 37 | 36 | 438 | 49 | 73 | 121 | 82 | 95 | 336 | 47 |

Adjusted Peak Volumes




Flow Rates

| Entry Flow Rates | | | | Circulating Flow Rates | | | | Exiting Flow Rates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NB enter | EB enter | SB enter | WB enter | NB cir | EB cir | SB cir | WB cir | NB exit | EB exit | SB exit | WB exit |
| 162 | 523 | 276 | 478 | 547 | 290 | 478 | 161 | 265 | 465 | 161 | 548 |




## Capacity

Entry Capacity

| | Entry | | | |
|---|---|---|---|---|
| | NB enter | EB enter | SB enter | WB enter |
| Demand | 162 | 523 | 276 | 478 |
| Capacity | 846 | 700 | 962 | 654 |
| Ratio | 0.19 | 0.75 | 0.29 | 0.73 |
| Operation | Pass | Pass | Pass | Pass |