MEMORANDUM

To: City of Boulder Planning & Development Services

From: Steve Tuttle, PE, PTOE; Cassie Slade, PE

Date: April 28, 2015

Project: North Boulder Armory Redevelopment Project

Subject: Parking Study

The North Boulder Armory redevelopment project is proposing to develop mixed-use residential and commercial uses on the site of the former North Boulder Armory located at the southeast corner of Broadway & Lee Hill Drive. The site is bounded by Lee Hill Drive on the north, Broadway on the west, 14th Street on the east and existing residential use to the south.

The project site is subdivided into four "blocks", with Blocks #1 and Blocks #2 proposed for initial development and Blocks #3 and #4 for future development. For the purposes of parking study, only Blocks #1 and #2 were evaluated. Based on the conceptual site plan, this portion of the project plans to construct:

- 146 multi-family dwelling units
- 16,965 SF arts market/studio space and ground floor retail or flex space
- 1,502 SF coffee/breakfast shop
- 10,000 SF restaurants

This memorandum summarizes the analysis of parking requirements and potential reduction.

Parking Requirements

The City of Boulder provides parking standard requirements in the Boulder Revised Code (BRC) to determine the number of parking spaces needed based on zoning district and proposed land uses. The intent of the standards is to provide adequate parking for all uses to prevent impacts on the adjacent streets and minimize parking lot paving. **Table 1** provides the BRC parking rate per land use type and applies that to the size of the residential or commercial space to calculate the number of required parking spaces based on the Code.

Table 1. Parking Requirement

Land Use	Size	Parking Rate (per BRC)	Parking Requirement
Studio	23 DU	1.25 per DU	29 spaces
1 Bedroom	90 DU	1.25 per DU	113 spaces
2 Bedroom	33 DU	1.00 per DU	33 spaces
Office	900 SF	1 per 400 SF	2 spaces
Quality Restaurant	3,500 SF	1 per 175 SF	20 spaces
Family Restaurant and Brewery	6,500 SF	1 per 175 SF	37 spaces
Coffee Shop	1,502 SF	1 per 175 SF	9 spaces
Retail	16,965 SF	1 per 400 SF	42 spaces
Total	**146 DU / 29,367 SF**		**285 spaces**

As seen in **Table 1**, the number of parking spaces required by BRC is 285. This assumes that all land uses are utilizing their parking space allocation at the exact same time. It does not take into consideration that the mix of land uses provides the opportunity to share parking spaces. For example, during the weekday some residents will drive to work, leaving an empty parking space that can be used by daytime retail employees and/or customers.

Shared Parking

The complementary land uses found in mixed-use developments allow for the required number of parking spaces to be reduced. This is because mixed-use development encourages visits to multiple land uses during the same visit, allowing a visitor, employee, or resident to "park once." The mix of uses also allows shared parking to occur on the site. Shared parking is the use of the same parking space by more than one user. This is possible because most parking spaces are only used part time by an individual user, and the highest parking demand for some land uses occurs at different times of the day or different days of the week. Most land uses have parking demand that accumulates at specific, predictable times of the day and week. North Armory proposes to have a variety of land uses that fit the description of a site that can benefit from shared parking.

The Urban Land Institute (ULI) is a nonprofit education and research company that provides resources to estimate the shared parking of these developments. To determine the most appropriate adjustment to the parking requirement, the data provided in the ULI *Shared Parking Manual* (2nd Edition) was utilized. First, the parking requirements were adjusted to account for the non-auto trips. These trips include employees or customers that arrive by walking, biking, or transit. They also include trips that are taken within the site by a non-auto mode, such as an employee walking to a restaurant for lunch. To be

consistent with the traffic impact study, a conservative non-auto trip percentage of 20% was applied to the rates to account for those that walk, bike, or ride transit based on the location of the site relative to existing transit, the project Transportation Demand Management (TDM) Plan, and bicycle and pedestrian facilities in the area. The non-auto reduction was not applied to the residential units since a non-auto trip to work or shopping (both on- and off-site) requires the resident to leave their vehicle parked in a space at the North Armory site. Second, the ratio of customers to employees for each commercial land use was estimated using ULI data to account for the different parking behaviors of these users (e.g., employees arrive earlier and stay longer than customers).

As shown in **Table 2**, when the non-auto adjustment is applied to the commercial parking requirement to account for the trips that will not require a parking space on-site, the parking requirement can be reduced to 264 spaces. The table also details the percentage of customers and employees estimated for each land use.

Table 2. Shared Parking

Land Use	Size	Parking Rate	Parking Requirement (per BRC)	Non-Auto %	Parking Requirement: After Non-Auto Reduction	Customer	Employee
Studio	23 DU	1.25 per DU	29	0%	29	--	--
1 Bedroom	90 DU	1.25 per DU	113	0%	113	--	--
2 Bedroom	33 DU	1.00 per DU	33	0%	33	--	--
Office	900 SF	1 per 400 SF	2	20%	2	8%	92%
Fine Dining Restaurant	3,500 SF	1 per 175 SF	20	20%	16	85%	15%
Family Restaurant	6,500 SF	1 per 175 SF	37	20%	30	85%	15%
Fast Food Restaurant	1,502 SF	1 per 175 SF	9	20%	7	85%	15%
Retail	16,965 SF	1 per 400 SF	42	20%	34	80%	20%
Total Residential	**146 DU**		**175**		**175**		
Total Commercial	**29,367 SF**		**110**		**89**		
North Armory Total Estimated Parking Requirement			**285**		**264**		

As mentioned earlier, parking demand peaks at different times of the day for some land uses, and accumulates before and after the peak demand in predictable patterns. By calculating the parking demand for each land use throughout the hour and day, it is possible to determine if parking spaces can be shared at any time during the day and determine the hour of highest parking demand for the site as a

whole. **Figures 1 and 2** illustrate the hourly accumulation of parking spaces with and without non-auto mode share for the proposed North Armory site. The graphs show the parking pattern of the mix of residential, retail, and restaurant uses. The number of parking spaces reduces in the morning as residents leave for work and then spaces begin to fill as commercial uses open their doors for customers. The evening has the highest parking demand since that is when residents will return home and restaurants will be the busiest. Once the commercial uses are closed for the day, the parking demand reduces to just the parking demand for the residents.

Figure 1. North Armory Estimated Weekday Parking Demand

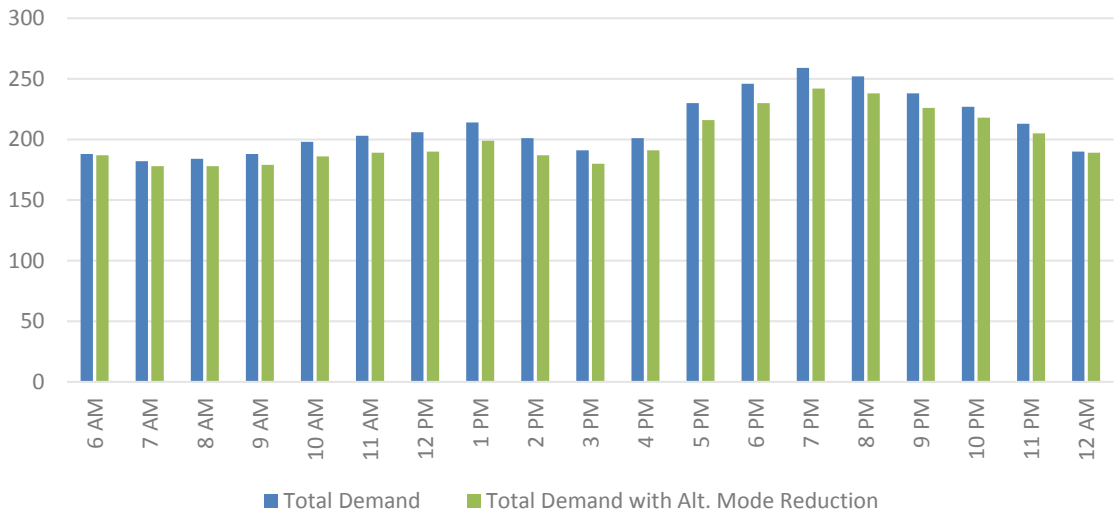
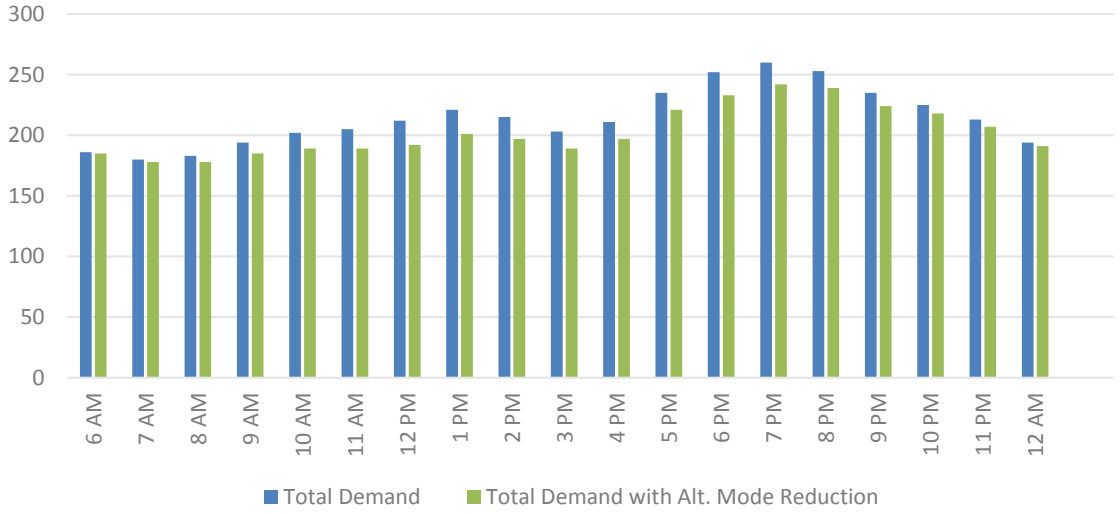


Figure 2. North Armory Estimated Weekend Parking Demand



The figures indicate that the accumulation of parking demand for the North Armory land uses provides some opportunity for shared parking during the day and that the peak demand for the site is lower than the total number of spaces required by BRC. The ULI data estimates that the peak demand will be the same for the weekday and weekend. The peak parking demand for the site occurs at 7 p.m. and is 264 spaces. The peak demand is 242 spaces when taking into account the 20% non-auto trips. Table 3 summarizes the potential parking reduction based on shared parking and non-auto trips.

North Armory – Weekday /Weekend	0% Non-Auto Reduction	20% Non-Auto Reduction
Total Parking Requirement	285 Spaces	264 Spaces
Estimated Peak Demand	259 Spaces	242 Spaces
Recommended Reduction	**9%**	**15%**

Parking Accommodation

Section 9-9-6 (f) (1) of the Development Standards in the Boulder Revised Code states that a parking reduction for mixed use developments may be granted by the city manager "with the total reduction not to exceed twenty-five percent of the required parking." Section 9-9-6 (f) (3) provides the parking reduction criteria with four requirements listed:

(A) The parking needs of the use will be adequately served through on-street parking or off-street parking;

(B) A mix of residential uses with either office or retail uses is proposed, and the parking needs of all uses will be accommodated through shared parking;

(C) If joint use of common parking areas is proposed, varying time periods of use will accommodate proposed parking needs; or

(D) The applicant provides an acceptable proposal for an alternate modes of transportation program, including a description of existing and proposed facilities, proximity to existing transit lines, and assurances that the use of alternate modes of transportation will continue to reduce the need for on-site parking on an ongoing basis.

The North Boulder Armory Redevelopment project meets the above listed criteria for a parking reduction. Based on the Boulder Parking Rates and without a reduction the site requires 285 spaces. There is a mix of residential, retail, and office land uses that will be able to share the parking and it is assumed at least 20% non-auto use reduction for the site. Per the ULI Shared Parking data, the mix of uses can be reduced to 242 parking spaces (15%), which satisfies (f) (3) (B) and (f) (3) (C). The project proposes to provide a total of 262 parking spaces (212 in the parking garages and 50 on-street). This satisfies the criteria (f) (3) (A) which states the parking needs can be adequately served through on-street or off-street parking. The proposed parking of 262 spaces is a 9% parking reduction and does not exceed the maximum of a 25%

reduction. The North Armory site is located along the highly utilized and well-connected SKIP route and the bus stop on Broadway adjacent to the site is proposed to be improved by the redevelopment. With the redevelopment the bus stop on Broadway adjacent to the site will be improved. The TDM plan proposes Eco-Passes for all residents and employees, which satisfies (f) (3) (D). In addition to the transit improvements, the site will provide the required number of bike parking spaces throughout the site (both short term and secured long term), storage of bike trailers, and a work station. There will be one car share vehicle located on-site as well.

Conclusion

The development proposed at the North Armory site will have a variety of land uses with complementary parking patterns allowing parking spaces to be shared throughout the day. Many of the visitors, employees, and residents are expected to travel to, from and within the site by walking, biking, or transit. Based on a ULI shared parking evaluation, the parking requirement for the site can be reduced to 242 parking spaces (15% reduction). The current site plan proposes a total of 262 parking spaces, on- and off-street, which is a 9% reduction from the BRC parking requirements. The parking plan, with proposed reductions, is anticipated to adequately serve site parking demands without impacting the adjacent neighborhoods and meets the parking reduction requirements set forth by the BRC.

/CRS

North Boulder Armory Redevelopment Project

TRAFFIC IMPACT STUDY

City of Boulder

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NORTH BOULDER ARMORY REDEVELOPMENT

TRAFFIC IMPACT STUDY

1.0 INTRODUCTION

This traffic impact study has been prepared by the Fox Tuttle Hernandez Transportation Group for the redevelopment of the North Boulder Armory site in the City of Boulder. The project proposes to repurpose the Armory Building with a Brew Pub and potential for flex space. The rest of the site will be redeveloped to include a mix of retail, office, apartments, townhomes, restaurants, and a coffee shop. The 8.5 ± acre property is located in the southeast corner of Broadway and Lee Hill Drive in north Boulder.

The purpose of this study is to assist in identifying potential traffic impacts within the study area as a result of this development project. The traffic study addresses existing, short-term (Year 2016), and long-term (Year 2035) peak hour intersection conditions (weekday AM and PM) in the study area without and with the project generated traffic. The information contained in this study is anticipated to be used by the City in identifying any intersection or roadway deficiencies and potential improvements for both the near term and long term future scenarios.

2.0 PROJECT DESCRIPTION

The site is 8.5 ± acres and will be a mixed use development centering around the redevelopment of the existing Armory Building. The site will access the existing roadways as listed: one access on Broadway, one on Lee Hill Drive, one on Yellow Pine Avenue, and four on 14th Street. There will be four internal intersections created with the proposed extension of 13th Street and Zamia Avenue. All accesses and internal intersections are anticipated to be full-movement, side-street stop-controlled. There is adequate circulation opportunities for pedestrians and bicyclists throughout the site and connection to the existing facilities.

A vicinity map is shown on **Figure 1**. The site and access plan is provided on **Figure 2**.

3.0 EXISTING CONDTIONS

3.1 Roadways

The study area boundaries took into consideration the amount of traffic to be generated by the project and potential impact to the existing and proposed arterial and collector roadway network.

The existing study area street network consists of arterial, collector and local streets. The primary public roadways that serve the project site are discussed in the following text. The existing study area roadway network is illustrated on **Figure 1**.

US 36 is a four-lane principal arterial that provides a regional connection between Boulder and Denver, as well as adjacent communities to the north and east of Boulder. Within the study area this roadway is an arterial with limited access; however, through Boulder it becomes an urban six-lane arterial (28th Street) with multiple signalized intersections and access driveways. South of the City it becomes a freeway and leads into downtown Denver. US 36 currently services approximately 12,500 vehicles per day (vpd) just north of Broadway (Year 2013). The posted speed limit on US 36 is 55 miles per hour (mph) within the vicinity of the study area.

Broadway is a two-lane principal arterial, with a center turn lane that provides a north-south connection through the study area. It begins at US 36 and travels south through the entire length of Boulder. This roadway serves as access into the heart of Boulder and connecting to many residential communities and retail centers along the way. It is the western border of the project site. The posted speed limit on Broadway is 40 mph north of the auto repair access and 30 mph south this access.

Lee Hill Drive is a two-lane roadway that provides east-west access through the study area. It connects to US 36 and leads into the foothills. This roadway is categorized as a minor arterial east of Broadway and a collector west of Broadway. Lee Hill Drive services approximately 3,970 vpd west of the project site. The posted speed limit on this roadway is 30 mph in the site vicinity. Lee Hill Drive is the northern border of the project site.

14th Street is a two-lane local street that provides north-south access through the study area on the east edge of the project. It serves as access to residential neighborhoods and has on-street parking on both sides. 14th Street services approximately 810 vpd

south of Lee Hill Drive. North of Yarmouth, 14th Street services approximately 1,700 vpd. The posted speed limit is 25 mph in the vicinity of the site.

Yellow Pine Avenue is a two-lane east-west local street that provides a secondary connection between Broadway and 14th Street. It serves as access to residential neighborhoods and has on-street parking on both sides. East of Broadway, Yellow Pine Avenue services approximately 1,300 vpd. The posted speed limit on is 25 mph. This roadway is just south of the southern boundary of the project site and will provide access into the redevelopment site.

Yarmouth Avenue is a two-lane minor arterial and travels east-west between Broadway and US 36. It provides access to multiple residential neighborhoods, a small retail center, and the Boulder Journey School. Yarmouth Avenue directly connects to 14th Street providing another southern route for the project site. The posted speed limit on Yarmouth Avenue is 30 mph.

3.2 Intersections

The study area was developed from discussions with City of Boulder staff and includes six existing intersections. They are listed below with the current traffic control:

1. Broadway and Lee Hill Drive (signalized)
2. Broadway and Yellow Pine Avenue (side-street stop-control)
3. Broadway and Yarmouth Avenue (side-street stop-control)
4. Lee Hill Drive and 14th Street (side-street stop-control)
5. Yarmouth Avenue and 14th Street (side-street stop-control)
6. US 36 (28th Street) and Lee Hill Drive (side-street stop-control)

3.3 Existing Traffic Volumes

Weekday AM and PM peak hour turning-movement volumes and daily roadway volumes were collected in November 2014 for this project. The existing traffic volumes are illustrated on **Figure 3**. The existing intersection geometry and traffic control are also shown on the traffic volume figure. Count data sheets are provided in the **Appendix**.

3.4 Pedestrian and Bicycle

South of the site there is a trail along Fourmile Canyon Creek that leads into Foothills Community Park, which has additional paved and hiking trails. There are sidewalks on both sides of the street along all roadways within the study area, except on the west side of 14th Street. This stretch will be constructed with the development of the North Boulder Armory. On Broadway at Yarmouth Avenue there are marked crosswalks that have a high volume of pedestrians. There are crosswalks at the intersection of Broadway and Lee Hill Drive as well.

Broadway, Lee Hill Drive, and Yarmouth Avenue have bike lanes on both sides of the street throughout and beyond the project limits. These facilities provide connectivity and access to city and regional facilities.

3.5 Transit

Broadway serves as major transit corridor with the Y, 204 and SKIP routes served directly adjacent to the site. Routes Y and SKIP travel along Broadway with bus stops adjacent to the project site. Route SKIP (Broadway) travels the length of Boulder along Broadway connecting to downtown, University of Colorado, Boulder Transit Center, two park-n-rides, and various community destinations. Route Y is a regional route between Boulder and Lyons. It travels along US 36 from the Lyons park-n-ride and enters Boulder on Broadway, ending at the Boulder Transit Center in downtown. The bus stops for southbound routes on Broadway are at Front Range Drive and just south of Yellow Pine Avenue. The bus stop for northbound routes on Broadway is just north of Yarmouth Avenue. The bus stops for Route 204 on Yarmouth for each direction are located just east of Broadway.

3.6 Existing Intersection Capacity Analysis

In determining the operational characteristics of an intersection, “Levels of Service” (LOS) A through F are applied, with LOS A indicating very good operations and LOS F indicating congested operations. The intersection LOS is represented as a delay in seconds per vehicle for the intersection as a whole and for each turning movement. A more detailed discussion of LOS methodology is contained in the **Appendix** for reference. Criteria contained in the

Highway Capacity Manual (HCM)[1] was applied for these analyses in order to determine existing levels of service during peak hour periods.

The results of the LOS calculations for the intersections are summarized in **Table 1**. The intersection level of service worksheets are attached in the **Appendix**. The data in the tables show that all study area intersections are operating acceptably overall in both peak periods. All movements operate at LOS D or better in the existing conditions.

4.0 FUTURE BACKGROUND TRAFFIC CONDITIONS

4.1 Annual Growth Factor and Future Volume Methodology

In order to forecast the future peak hour traffic volumes, historical traffic volumes were gathered from the City of Boulder Traffic Count Database. Since there is not a count site within the study area the available counts on US 36 north of Broadway and Lee Hill Drive west of 6th Street were utilized. The historical data on US 36 indicated there was a 1.2 percent annual growth on the highway; however, the data on Lee Hill Drive indicated it had a 1.1 percent annual decrease in traffic. Together with City staff, it was determined that a growth rate of 0.5 percent annually would be appropriate for the study area.

This growth rate was applied to the existing study area traffic volumes to determine the short-term and long-term volumes. West of the North Boulder Armory site, there is another development referred to as 820 Lee Hill Drive which plans to construct 31 single-family detached homes. The trips estimated for this residential development were gathered from the traffic impact study performed by Fox Tuttle (August 2013) and added to the background volumes in the short-term and long-term scenarios. Using these assumptions, the 2016 background traffic is summarized on **Figure 4** and the 2035 background traffic is summarized on **Figure 5**.

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1 Highway Capacity Manual, Highway Research Board Special Report 209, Transportation Research Board, National Research Council, 2010. Synchro v. 8 software utilized.

4.2 Year 2016 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the 2016 background scenario and to identify any capacity constraints associated with background traffic. The level of service criteria discussed previously was applied to the study area intersections to determine the impacts with the short-term background volumes.

The results of the LOS calculations for the intersections are summarized in **Table 1**. The intersection level of service worksheets are attached in the **Appendix**. The data shows that all study area intersections will continue to operate acceptably overall in the short-term background scenario. All intersections and movements continue to be LOS D or better in both peak periods.

4.3 Year 2035 Background Intersection Capacity Analysis

The study area intersections were evaluated to determine baseline operations for the 2035 background scenario and to identify any capacity constraints associated with background traffic. The level of service criteria discussed previously was applied to the study area intersections to determine the impacts with the long-term background volumes.

The results of the LOS calculations for the intersections are summarized in **Table 1**. The intersection level of service worksheets are attached in the **Appendix**. The data shows that all study area intersections will operate acceptably overall in the long-term background scenario. All intersections and movement continue to be LOS D or better in both peak periods.

5.0 PROPOSED DEVELOPMENT TRAFFIC

5.1 Trip Generation

A trip generation estimate was performed to determine the traffic characteristics of the planned park. The trip rates contained in the I*nstitute of Transportation Engineers (ITE) Trip Generation Manual*[2] for land use #220 “Apartment”, #230 “Residential Condominium/Townhouse”, #715 “Single Tenant Office Building”, #826 “Specialty Retail”, #931 “Quality Restaurant”, #932 “High-

[2] Trip Generation 9th Edition, Institute of Transportation Engineers, 2012.

Turnover (Sit-down) Restaurant", and #936 "Coffee/Donut Shop without Drive-Through Window" were applied to estimate proposed traffic for the site.

The site is 8.5 ± acres and proposes to repurpose the Armory Building with a Brew Pub and potential for flex space. The rest of the site will be redeveloped to include approximately 146 apartments, 65 townhomes, 900 square feet (sq. ft.) for the leasing office, 18,545 sq. ft. of retail, 5,000 sq. ft. for two additional restaurants, and a 1,611 sq. ft. coffee shop. There will be two parking garages to accommodate the vehicular traffic with additional on-street parking throughout the site.

The most applicable ITE land use types were utilized and the units were multiplied by the ITE trip rates to estimate the new site traffic as shown in **Table 2**. The proposed project is expected to experience mostly new trips, as known as 'primary trips'. The site is expected to experience the three of the four basic trip types as discussed below:

Primary Trips. These trips are made specifically to visit the site and are considered "new" trips. Primary trips would not have been made if the proposed project did not exist. Therefore, this is the only trip type that increases the total number of trips made on a regional basis.

Pass-By Trips. Pass-by trips do not create any increase in the traffic volumes within the primary impact area. In fact, the only impact of the pass-by trips occurs at the site driveways and adjacent intersections where through movements become turning movements into and out of the site. Therefore, pass-by trips have no additional impact on the road system beyond the site's driveways or immediately adjacent intersections. Per discussions with City staff, pass-by was only applied to the high-turnover restaurants and coffee shop.

Pass-by percentages presented in **Table 2** are based on ITE data, though reduced to account for lower adjacent Average Daily Traffic (ADT) compared to suburban sites. It was assumed the high-turnover restaurants will have 25 percent pass-by trips (ITE data is 43 percent) and the coffee shop will have 40 percent pass-trips (ITE data is 83 percent). Additional information regarding pass-by is provided in the **Appendix**.

Multi-Use Trips. These internal trips occur from one land use or building to another within the site boundaries. For example, a person may patronize a retail use and restaurant in one "trip". Multi-use or multi-purpose trips do not affect the exterior site access points, nor add any additional traffic volumes to the adjacent street network.

Multi-use trips are accounted for within the 20 percent non-auto use reduction as it is assumed that these trips would occur without the person moving their vehicle.

The trip type breakdown is shown in **Table 2**. The redevelopment uses are anticipated to generate the following primary and pass-by trips:

- Primary Trips: 2,933 weekday, 249 AM peak hour, 224 PM peak hour
- Pass-by Trips: 689 weekday, 88 AM peak hour, 42 PM peak hour

5.2 Trip Distribution and Assignment

The estimated trip volumes presented in **Table 2** were distributed onto the study area street network based on existing traffic characteristics of the area, existing and future land use, and existing and future traffic patterns in the area. The overall assumed distribution is as follows, as well as presented on **Figure 6**:

Residential:

- 5 percent to/from north Broadway
- 50 percent to/from south Broadway
- 25 percent to/from south US 36 via Lee Hill Drive
- 5 percent to/from west Lee Hill Drive
- 15 percent to/from east Yarmouth Avenue

Retail and Restaurant:

- 5 percent to/from north Broadway
- 45 percent to/from south Broadway
- 25 percent to/from south US 36 via Lee Hill Drive
- 10 percent to/from west Lee Hill Drive
- 15 percent to/from east Yarmouth Avenue

Using these distribution assumptions, the projected site traffic was assigned to the study area roadway network for the weekday AM and PM peak hour periods. These site-generated volumes are shown on **Figure 7.**

6.0 FUTURE TRAFFIC CONDITIONS WITH SITE DEVELOPMENT

This section discusses impacts associated with the redevelopment of the North Boulder Armory in the short-term and long-term scenarios.

6.1 Year 2016 Background + Project Intersection Capacity Analysis

The site-generated traffic volumes were added to the 2016 background volumes to analyze potential site impacts in the short-term build-out scenario. The 2016 background + site-generated traffic volumes are illustrated on **Figure 8**. The level of service criteria discussed in prior sections was applied to the study area intersections to determine impacts with the addition of site-build out traffic volumes in the short-term. The results of the LOS calculations for the intersections are summarized in **Table 1**.

The study area intersections operate acceptably overall and on all movements in both peak hours.

The proposed accesses will operate acceptably in both peak hours. The accesses should be constructed with the following lane configuration and traffic control:

- **<u>Broadway and Zamia Avenue:</u>**
    - Side-street stop control (westbound)
    - One entering lane and one exiting lane (full-movement)
    - The capacity analysis indicates that turn lanes on Broadway are unnecessary; however, the existing center turn lane can be utilized by southbound left-turning vehicles.
- **<u>Lee Hill Drive and 13th Street:</u>**
    - This access will align with the existing access midway between Broadway and 14th Street to create a four-legged intersection.

- Side-street stop control (northbound/southbound)
- One entering lane and one exiting lane (full-movement)
- The capacity analysis indicates that turn lanes on Lee Hill Drive are unnecessary; however, the existing center turn lane can be utilized by westbound left-turning vehicles.

- **13th Street and Zamia Avenue (North):**
  - Side-street stop control (westbound)
  - One entering and one exiting lane per approach (full-movement)
  - The capacity analysis indicates that turn lanes are unnecessary.
- **13th Street and Zamia Avenue (South):**
  - Side-street stop control (eastbound)
  - One entering and one exiting lane per approach (full-movement)
  - The capacity analysis indicates that turn lanes are unnecessary.
- **Yellow Pine Avenue and 13th Street:**
  - This intersection currently exists and with the redevelopment 13th Street will extend north to Lee Hill Drive.
  - Side-street stop control (northbound/southbound) as currently exists
  - One entering and one exiting lane per approach (full-movement) as currently exists
  - The capacity analysis indicates that turn lanes are unnecessary.
- **14th Street and Block 3 Access (#1):**
  - Side-street stop control (eastbound)

- One entering and one exiting lane per approach (full-movement)
- The capacity analysis indicates that turn lanes are unnecessary.

- **<u>14th Street and Block 3 Access (#2):</u>**
  - Side-street stop control (eastbound)
  - One entering and one exiting lane per approach (full-movement)
  - The capacity analysis indicates that turn lanes are unnecessary.
- **<u>14th Street and Zamia Avenue:</u>**
  - This intersection currently exists and Zamia Avenue will extend west to Broadway with the redevelopment.
  - Side-street stop control (eastbound/westbound)
  - One entering and one exiting lane per approach (full-movement)
  - The capacity analysis indicates that turn lanes are unnecessary.
- **<u>14th Street and Block 4 Access (#3):</u>**
  - Side-street stop control (eastbound)
  - One entering and one exiting lane per approach (full-movement)
  - The capacity analysis indicates that turn lanes are unnecessary.
- **<u>14th Street and Yellow Pine Avenue:</u>**
  - This intersection currently exists and development traffic will travel through this intersection due to access on 14th Street and the extension of 13th Street.
  - Side-street stop control (eastbound) as currently exists
  - One entering and one exiting lane per approach (full-movement) as currently exists

- The capacity analysis indicates that turn lanes are unnecessary.

- **<u>13th Street and Garage #1:</u>**
  - Side-street stop control (eastbound)
  - One entering and one exiting lane per approach (full-movement)
  - The capacity analysis indicates that turn lanes are unnecessary.
- **<u>13th Street and Garage #2/Block 4 Access (#4):</u>**
  - Side-street stop control (eastbound/westbound)
  - One entering and one exiting lane per approach (full-movement)
  - The capacity analysis indicates that turn lanes are unnecessary.

6.2 Year 2035 Background + Project Intersection Capacity Analysis

The projected 2035 background volumes were added to the site generated volumes and are illustrated on **Figure 9**. The level of service criteria discussed in prior sections was applied to the study area intersections to determine impacts with the addition of site traffic in the Year 2035 scenario. The results of the LOS calculations for the intersections are summarized in **Table 1**.

The study area intersections will operate acceptably overall with the addition of project trips. The following movement begins to operate at LOS E with the project trips:

- **<u>US 36 (28th Street) at Lee Hill Drive</u>:** This stop-controlled intersection has LOS E on the eastbound approach (left + through) during both peak hours due to the high volume on US 36 which results in minimal gaps for the side-street traffic to enter the intersection. There is minimal traffic on the eastbound approach with a recorded maximum of 5 vph. This intersection was further analyzed in SimTraffic to understanding if the delay is creating a queue. The analysis indicates that the 95th percentile queue will be 6 feet, which is approximately half of one car.

  Recommendation: No mitigation measures are recommended. High side-street approach delays during both peak hours are typical of unsignalized approaches along a

major arterial roadway. The side-street volumes are not approaching traffic signal warrant thresholds.

All of the accesses, internally and externally, will operate at LOS C or better in both peak hours with the proposed lane configuration and traffic control listed in 2016 background + project.

7.0 CONCLUSIONS

The site is 8.5 ± acres and proposes to repurpose the Armory Building with a Brew Pub and potential for flex space. The rest of the site will be redeveloped to include a mix of retail, office, apartments, townhomes, restaurants, and a coffee shop. The site will access the existing roadways as listed: one access on Broadway, one on Lee Hill Drive, one on Yellow Pine Avenue, and four on 14th Street. There will be four internal intersections created with the proposed extension of 13th Street and Zamia Avenue. All accesses and internal intersections are anticipated to be full-movement, side-street stop-controlled.

The project is estimated to generate approximately 3,622 daily trips with 337 trips occurring in the AM peak hour and 266 trips occurring in the PM peak hour at build-out. It was determined that the existing roadway and intersection network can serve the site added traffic volumes in the short-term and long-term scenarios with the existing geometry and traffic control. **There are no recommended improvements since all intersections and movements will operate acceptably in both peak hours for the short-term and long-term scenarios.**

It is recommended that pedestrian and bicycle facilities be provided throughout the project site. As shown on the plans, sidewalks should be constructed on both sides of the internal roads and connect to all existing facilities. The project proposes to reconstruct the sidewalks on Broadway and Lee Hill Drive adjacent to the site to provide detached facilities. Additional accommodates are proposed for bicyclists that are listed in the Transportation Demand Management plan (separate cover).

FOX TUTTLE HERNANDEZ
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Table 1 - Intersection Level of Service Summary

Intersection and Lanes Groups	Existing				2016 Background				2016 Background + Project				2035 Background				2035 Background + Project			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
STOP SIGN CONTROL																				
Broadway and Yellow Pine Avenue	**0.4**	**A**	**0.4**	**A**	**0.4**	**A**	**0.4**	**A**	**0.6**	**A**	**0.6**	**A**	**0.3**	**A**	**0.5**	**A**	**0.6**	**A**	**0.6**	**A**
Westbound Left+Right	*14.1*	*B*	*15.2*	*C*	*14.3*	*B*	*15.4*	*C*	*16.4*	*C*	*16.6*	*C*	*15.9*	*C*	*17.2*	*C*	*18.5*	*C*	*18.7*	*C*
Northbound Through+Right	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Southbound Left	*8.2*	*A*	*9.4*	*A*	*8.3*	*A*	*9.4*	*A*	*8.4*	*A*	*9.7*	*A*	*8.3*	*A*	*9.9*	*A*	*8.4*	*A*	*10.2*	*B*
Southbound Through	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Broadway and Yarmouth Avenue	**1.8**	**A**	**2.2**	**A**	**1.8**	**A**	**2.2**	**A**	**2.0**	**A**	**2.4**	**A**	**1.8**	**A**	**2.3**	**A**	**2.0**	**A**	**2.5**	**A**
Westbound Left	*15.4*	*C*	*17.0*	*C*	*15.7*	*C*	*17.3*	*C*	*17.2*	*C*	*18.9*	*C*	*16.8*	*C*	*19.7*	*C*	*18.7*	*C*	*21.8*	*C*
Westbound Right	*15.4*	*C*	*17.0*	*C*	*15.7*	*C*	*17.3*	*C*	*17.2*	*C*	*18.9*	*C*	*16.8*	*C*	*19.7*	*C*	*18.7*	*C*	*21.8*	*C*
Northbound Through+Right	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Southbound Left	*8.3*	*A*	*9.8*	*A*	*8.3*	*A*	*9.9*	*A*	*8.5*	*A*	*10.3*	*B*	*8.3*	*A*	*10.5*	*B*	*8.5*	*A*	*11.0*	*B*
Southbound Through	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Lee Hill Drive and 14th Street	**0.9**	**A**	**1.4**	**A**	**0.9**	**A**	**1.4**	**A**	**1.0**	**A**	**1.4**	**A**	**0.8**	**A**	**1.1**	**A**	**0.9**	**A**	**1.2**	**A**
Eastbound Through+Right	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Westbound Left+Through	*0.2*	*A*	*0.5*	*A*	*0.2*	*A*	*0.5*	*A*	*0.3*	*A*	*0.6*	*A*	*0.4*	*A*	*0.6*	*A*	*0.4*	*A*	*0.7*	*A*
Northbound Left+Right	*10.5*	*B*	*10.7*	*B*	*10.5*	*B*	*10.8*	*B*	*11.0*	*B*	*11.1*	*B*	*10.6*	*B*	*10.7*	*B*	*11.0*	*B*	*10.9*	*B*
Yarmouth Avenue and 14th Street	**2.0**	**A**	**2.8**	**A**	**2.0**	**A**	**2.7**	**A**	**2.7**	**A**	**3.1**	**A**	**1.8**	**A**	**2.4**	**A**	**2.3**	**A**	**2.6**	**A**
Eastbound Left+Through+Right	*0.2*	*A*	*0.4*	*A*	*0.2*	*A*	*0.4*	*A*	*0.3*	*A*	*0.7*	*A*	*0.4*	*A*	*0.5*	*A*	*0.5*	*A*	*0.8*	*A*
Westbound Left+Through+Right	*0.2*	*A*	*0.7*	*A*	*0.2*	*A*	*0.7*	*A*	*0.1*	*A*	*0.6*	*A*	*0.0*	*A*	*0.7*	*A*	*0.0*	*A*	*0.6*	*A*
Northbound Left+Through+Right	*9.2*	*A*	*9.6*	*A*	*9.2*	*A*	*9.6*	*A*	*9.2*	*A*	*9.6*	*A*	*8.9*	*A*	*9.2*	*A*	*8.9*	*A*	*9.3*	*A*
Southbound Left+Through+Right	*10.3*	*B*	*11.9*	*B*	*10.3*	*B*	*12.0*	*B*	*10.9*	*B*	*12.7*	*B*	*10.0*	*A*	*11.7*	*B*	*10.4*	*B*	*12.3*	*B*
US 36 (28th Street) and Lee Hill Drive	**8.2**	**A**	**4.2**	**A**	**8.7**	**A**	**4.3**	**A**	**10.9**	**B**	**4.7**	**A**	**11.4**	**B**	**4.2**	**A**	**15.0**	**B**	**4.6**	**A**
Eastbound Left+Through	*24.9*	*C*	*12.3*	*B*	*26.3*	*D*	*12.5*	*B*	*31.9*	*D*	*12.9*	*B*	*34.4*	*D*	*13.1*	*B*	*44.0*	*E*	*13.6*	*B*
Eastbound Right	*0.0*	*A*	*27.4*	*D*	*0.0*	*A*	*28.6*	*D*	*0.0*	*A*	*32.1*	*D*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Northbound Left	*9.1*	*A*	*8.4*	*A*	*9.1*	*A*	*8.4*	*A*	*9.3*	*A*	*8.6*	*A*	*9.3*	*A*	*8.6*	*A*	*9.4*	*A*	*8.7*	*A*
Northbound Through	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Northbound Right	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Southbound Left	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Southbound Through	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Southbound Right	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*	*0.0*	*A*
Broadway and Zamia Avenue									**1.0**	**A**	**0.7**	**A**					**1.0**	**A**	**0.7**	**A**
Westbound Left+Right									*15.9*	*C*	*16.4*	*C*					*17.4*	*C*	*17.8*	*C*
Northbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
Southbound Left									*8.3*	*A*	*9.7*	*A*					*8.4*	*A*	*10.0*	*A*
Southbound Through									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
Lee Hill Drive and 13th Street									**1.7**	**A**	**1.2**	**A**					**1.6**	**A**	**1.1**	**A**
Eastbound Left									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
Eastbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
Westbound Left									*8.1*	*A*	*7.8*	*A*					*8.2*	*A*	*7.9*	*A*
Westbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
Northbound Left+Through+Right									*10.6*	*B*	*10.5*	*B*					*10.9*	*B*	*10.6*	*B*
Southbound Left+Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*

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Table 1 - Intersection Level of Service Summary

Intersection and Lanes Groups	Existing				2016 Background				2016 Background + Project				2035 Background				2035 Background + Project			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
13th Street and Zamia Avenue (North)									**0.7**	**A**	**0.7**	**A**					**0.7**	**A**	**0.7**	**A**
Westbound Left+Right									*8.7*	*A*	*8.7*	*A*					*8.7*	*A*	*8.7*	*A*
Northbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
Southbound Left+Through									*0.6*	*A*	*0.6*	*A*					*0.6*	*A*	*0.0*	*A*
13th Street and Zamia Avenue (South)									**4.0**	**A**	**4.6**	**A**					**4.0**	**A**	**4.6**	**A**
Eastbound Left+Right									*9.1*	*A*	*9.0*	*A*					*9.1*	*A*	*9.0*	*A*
Northbound Left+Through									*1.1*	*A*	*0.0*	*A*					*1.1*	*A*	*0.0*	*A*
Southbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
Yellow Pine Avenue and 13th Street									**5.2**	**A**	**5.4**	**A**					**5.1**	**A**	**5.6**	**A**
Eastbound Left+Through+Right									*1.3*	*A*	*2.4*	*A*					*1.2*	*A*	*2.4*	*A*
Westbound Left+Through+Right									*3.1*	*A*	*3.7*	*A*					*4.1*	*A*	*3.3*	*A*
Northbound Left+Through+Right									*8.9*	*A*	*9.0*	*A*					*9.0*	*A*	*9.0*	*A*
Southbound Left+Through+Right									*8.5*	*A*	*8.6*	*A*					*8.5*	*A*	*8.6*	*A*
14th Street and Block 3 Access (#1)									**0.8**	**A**	**0.5**	**A**					**0.7**	**A**	**0.4**	**A**
Eastbound Left+Right									*8.6*	*A*	*8.7*	*A*					*8.6*	*A*	*8.8*	*A*
Northbound Left+Through									*0.0*	*A*	*0.5*	*A*					*0.0*	*A*	*0.4*	*A*
Southbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
14th Street and Block 3 Access (#2)									**0.7**	**A**	**0.6**	**A**					**0.6**	**A**	**0.5**	**A**
Eastbound Left+Right									*8.5*	*A*	*8.6*	*A*					*8.5*	*A*	*8.7*	*A*
Northbound Left+Through									*0.2*	*A*	*0.4*	*A*					*0.2*	*A*	*0.4*	*A*
Southbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
14th Street and Zamia Avenue									**5.2**	**A**	**5.5**	**A**					**5.3**	**A**	**5.3**	**A**
Eastbound Left+Through+Right									*8.4*	*A*	*8.4*	*A*					*8.4*	*A*	*8.4*	*A*
Westbound Left+Through+Right									*8.8*	*A*	*9.1*	*A*					*8.8*	*A*	*9.1*	*A*
Northbound Left+Through+Right									*1.9*	*A*	*1.1*	*A*					*1.7*	*A*	*1.0*	*A*
Southbound Left+Through+Right									*3.1*	*A*	*4.0*	*A*					*3.3*	*A*	*3.9*	*A*
14th Street and Block 4 Access (#3)									**1.3**	**A**	**0.7**	**A**					**1.2**	**A**	**0.6**	**A**
Eastbound Left+Right									*8.7*	*A*	*8.8*	*A*					*8.7*	*A*	*8.8*	*A*
Northbound Left+Through									*0.3*	*A*	*0.7*	*A*					*0.2*	*A*	*0.7*	*A*
Southbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
14th Street and Yellow Pine Avenue									**1.7**	**A**	**2.0**	**A**					**1.7**	**A**	**1.7**	**A**
Eastbound Left+Right									*8.5*	*A*	*8.7*	*A*					*8.5*	*A*	*8.7*	*A*
Northbound Left+Through									*1.4*	*A*	*1.9*	*A*					*1.6*	*A*	*1.5*	*A*
Southbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
Zamia Avenue and Garage #1									**7.1**	**A**	**6.5**	**A**					**7.1**	**A**	**6.5**	**A**
Eastbound Left+Right									*9.8*	*A*	*9.4*	*A*					*9.8*	*A*	*9.4*	*A*
Northbound Left+Through									*7.0*	*A*	*7.1*	*A*					*7.0*	*A*	*7.1*	*A*
Southbound Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*
13th Street and Garage #2/Block 4 Access (#4)									**7.0**	**A**	**5.6**	**A**					**7.0**	**A**	**5.7**	**A**
Eastbound Left+Through+Right									*8.5*	*A*	*8.5*	*A*					*8.5*	*A*	*8.5*	*A*
Westbound Left+Through+Right									*8.8*	*A*	*8.9*	*A*					*8.8*	*A*	*8.9*	*A*
Northbound Left+Through+Right									*6.4*	*A*	*5.5*	*A*					*6.4*	*A*	*5.5*	*A*
Southbound Left+Through+Right									*0.0*	*A*	*0.0*	*A*					*0.0*	*A*	*0.0*	*A*

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Table 1 - Intersection Level of Service Summary

Intersection and Lanes Groups	Existing				2016 Background				2016 Background + Project				2035 Background				2035 Background + Project			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
SIGNAL CONTROL																				
Broadway and Lee Hill Drive	**15.4**	**B**	**9.8**	**A**	**15.8**	**B**	**10.0**	**A**	**16.1**	**B**	**10.2**	**B**	**15.6**	**B**	**10.4**	**B**	**15.9**	**B**	**10.6**	**B**
Eastbound Left+Through	*34.9*	*C*	*13.2*	*B*	*35.7*	*D*	*13.1*	*B*	*36.3*	*D*	*12.9*	*B*	*35.0*	*C*	*13.5*	*B*	*35.4*	*D*	*13.4*	*B*
Eastbound Right	*24.8*	*C*	*12.4*	*B*	*24.6*	*C*	*12.3*	*B*	*24.4*	*C*	*12.1*	*B*	*24.8*	*C*	*12.5*	*B*	*24.6*	*C*	*12.4*	*B*
Westbound Left	*26.7*	*C*	*12.6*	*B*	*26.6*	*C*	*12.4*	*B*	*26.5*	*C*	*12.2*	*B*	*27.1*	*C*	*12.5*	*B*	*27.0*	*C*	*12.3*	*B*
Westbound Through+Right	*25.1*	*C*	*14.8*	*B*	*24.9*	*C*	*15.0*	*B*	*24.8*	*C*	*14.8*	*B*	*25.3*	*C*	*14.9*	*B*	*25.2*	*C*	*14.9*	*B*
Northbound Left	*6.1*	*A*	*8.5*	*A*	*6.0*	*A*	*9.0*	*A*	*6.9*	*A*	*9.4*	*A*	*6.8*	*A*	*9.6*	*A*	*7.2*	*A*	*10.0*	*A*
Northbound Through+Right	*4.6*	*A*	*8.9*	*A*	*4.8*	*A*	*9.2*	*A*	*5.0*	*A*	*9.5*	*A*	*5.0*	*A*	*10.0*	*A*	*5.2*	*A*	*10.2*	*B*
Southbound Left	*4.7*	*A*	*6.7*	*A*	*4.8*	*A*	*6.9*	*A*	*5.0*	*A*	*7.4*	*A*	*4.7*	*A*	*7.5*	*A*	*4.8*	*A*	*8.0*	*A*
Southbound Through+Right	*8.2*	*A*	*6.3*	*A*	*8.4*	*A*	*6.4*	*A*	*8.6*	*A*	*6.6*	*A*	*8.3*	*A*	*6.3*	*A*	*8.5*	*A*	*6.4*	*A*

Note: Delay represented in average seconds per vehicle.

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Table 2 - Trip Generation Summary

Land Use	Size	Unit	Average Daily New Trips				AM Peak Hour New Trips				PM Peak Hour New Trips			
			Rate	Total	In	Out	Rate	Total	In	Out	Rate	Total	In	Out
Blocks 1 and 2														
ITE 220 - Apartment	146	Dwelling Units	6.65	971	486	485	0.51	74	15	59	0.62	91	59	32
ITE 715 - Single Tenant Office Building [Leasing Office]	0.900	1,000 SF	11.65	10	5	5	1.80	2	2	0	1.74	2	0	2
ITE 826 - Specialty Retail Center	18.545	1,000 SF	44.32	822	411	411	3.69	68	33	35	2.71	50	22	28
ITE 931 - Quality Restaurant	3.500	1,000 SF	89.95	315	158	157	0.81	3	2	1	7.49	26	17	9
ITE 932 - High-Turnover (Sit-down) Restaurant [Brew Pub]	4.000	1,000 SF	127.15	509	255	254	10.81	43	24	19	9.85	39	23	16
ITE 932 - High-Turnover (Sit-down) Restaurant [Taco restaurant]	2.500	1,000 SF	127.15	318	159	159	10.81	27	15	12	9.85	25	15	10
ITE 936 - Coffee/Donut Shop without Drive-Through Window	1.611	1,000 SF	No ITE Data (2)	1205	603	602	108.38	175	89	86	40.75	66	33	33
Blocks 3 and 4														
ITE 230 - Residential Condominium/Townhouse	66	Dwelling Units	5.81	383	192	191	0.44	29	5	24	0.52	34	23	11
		Subtotal		***4533***	***2269***	***2264***		***421***	***185***	***236***		***333***	***192***	***141***
Non-Auto Use Reduction (1)		20%		*-907*	*-454*	*-453*		*-84*	*-37*	*-47*		*-67*	*-38*	*-28*
		Subtotal		***3626***	***1815***	***1811***		***337***	***148***	***189***		***266***	***154***	***113***
Pass-by Percentage for High-Turnover Restaurant (3)		25%		*-207*	-104	-103		*-18*	-10	-8		*-16*	-10	-7
Pass-by Percentage for Coffee/Donut Shop (3)		40%		*-482*	*-241*	*-241*		*-70*	*-36*	*-34*		*-26*	*-13*	*-13*
		Total Pass-by Trips		*689*	*345*	*344*		*88*	*46*	*42*		*42*	*23*	*20*
Total New Trips (All Blocks)			***Daily >***	***2937***	***1470***	***1467***	***AM >***	***249***	***102***	***147***	***PM >***	***224***	***131***	***93***

Source: ITE Trip Generation 9th Edition. 2012.

(1) Non-Auto Use Factor applies a trip reduction to account for TDM, transit trips, pedestrian trips, and bicycle trips that will occur that are not respresneted in the ITE (traditionally suburban) rates as well as for multi-use trips that will occur between retail uses.

(2) ITE does not provide a daily rate; therefore, the daily volumes were estimated by dividing the average peak hour volume by 10%.

(3) Pass-by trips are trips that already exist on the adjacent roadway but divert into the site to visit retail uses. Pass-by trips do not represent new, unique trips to the system but are included in driveway turning movement volumes. Pass-by percentages shown above are based on the ITE Trip Generation Handbook with adjustment to reflect adajcent roadway ADT.

FOX TUTTLE HERNANDEZ
TRANSPORTATION GROUP

NORTH BOULDER ARMORY REDVELOPMENT

VICINITY MAP

Project #	14023	Original Scale		Date	1/19/15	Drawn by	CRS	Figure #	1

Block 3 Access (#1)
T–Intersection; Full–Movement
Side–Street Stop Control

Block 3 Access (#2)
T–Intersection; Full–Movement
Side–Street Stop Control

Lee Hill Drive and 13th Street
Full–movement
Side–Street Stop Control

Broadway and Zamia Avenue
Full–movement
Side–Street Stop Control

Garage #1 Access
Full–movement
Side–Street Stop Control

Garage #2 Access &
Block 4 Access
Full–movement
Side–Street Stop Control

Extension of 13th Street for
access to Yellow Pine Avenue

Block 4 Access (#3)
T–Intersection; Full–Movement
Side–Street Stop Control

14th Street at Zamia Avenue
Full–Movement
Side–Street Stop Control

Need to Replace Site Plan.
Mulhern will send soon.

N

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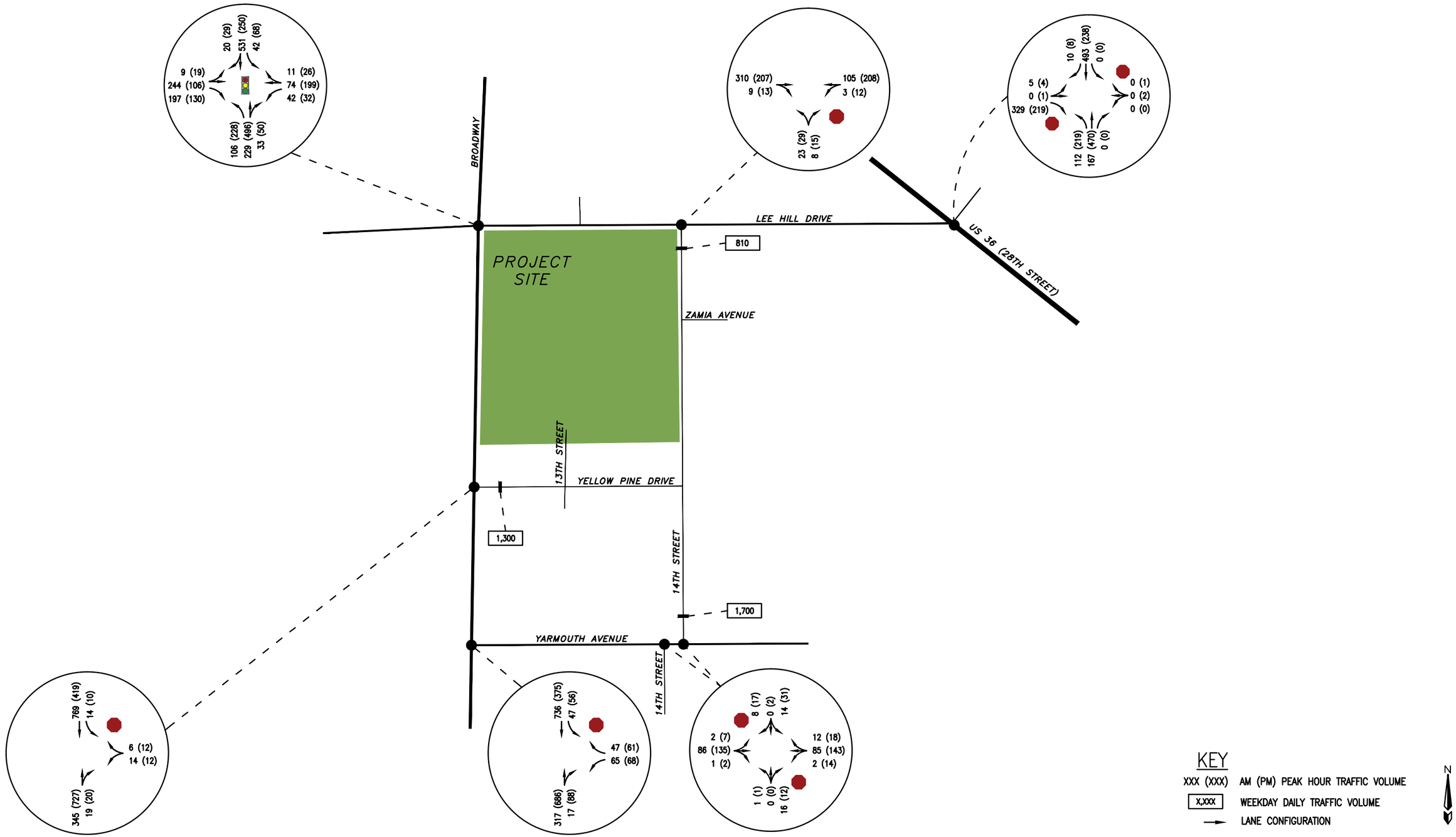
TRANSPORTATION GROUP

NORTH BOULDER ARMORY REDVELOPMENT

CONCEPTUAL SITE PLAN

Project #	14023	Original Scale	NTS	Date	1/19/15	Drawn by	CRS	Figure #	2



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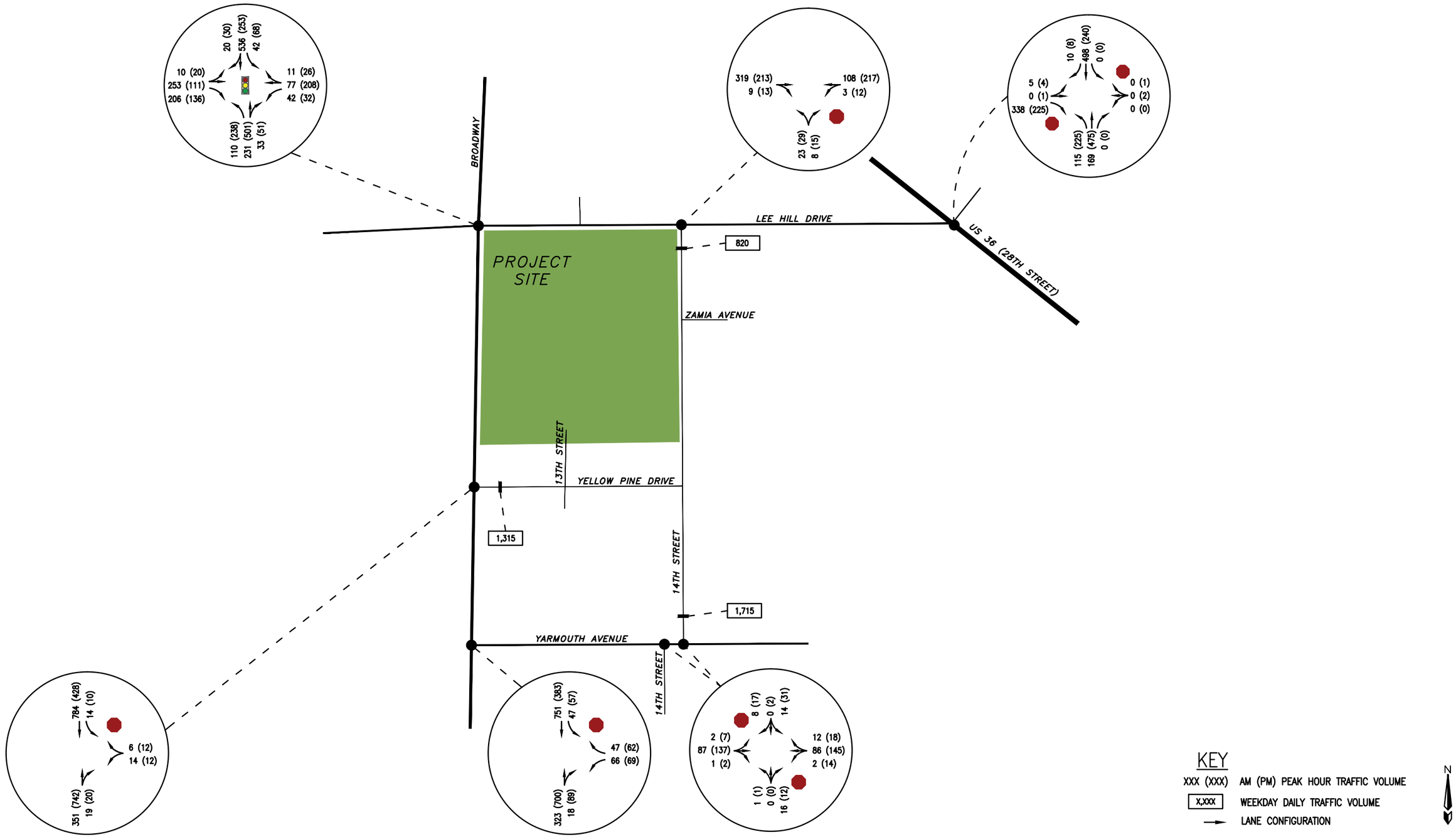
NORTH BOULDER ARMORY REDEVELOPMENT

2014 EXISTING TRAFFIC VOLUMES

FT Project #	14023	Original Scale	NTS	Date	1/19/15	Drawn by	CRS	Figure #	3



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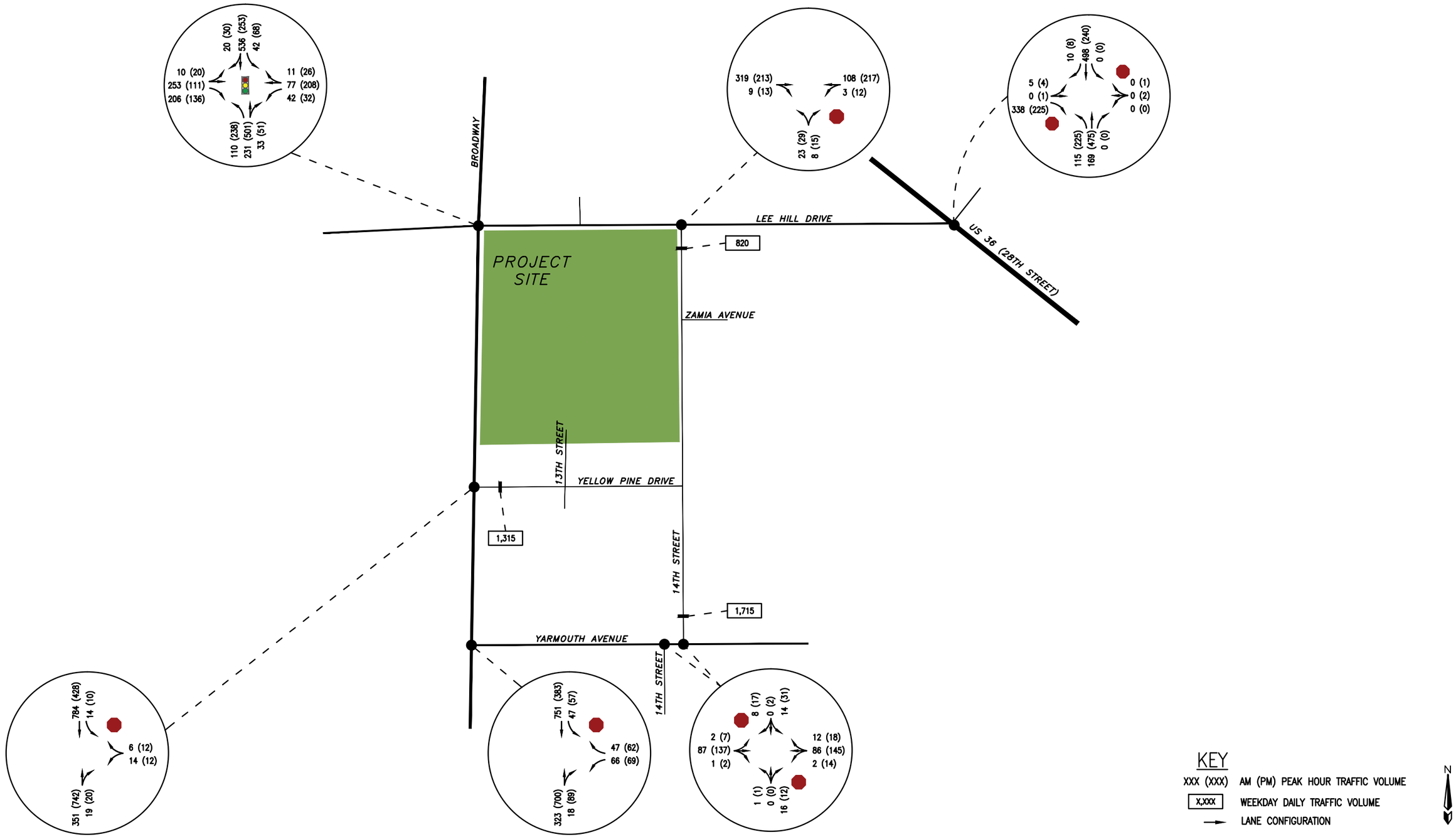
NORTH BOULDER ARMORY REDEVELOPMENT

YEAR 2016 BACKGROUND TRAFFIC VOLUMES

FT Project #	14023	Original Scale	NTS	Date	1/19/15	Drawn by	CRS	Figure #	4



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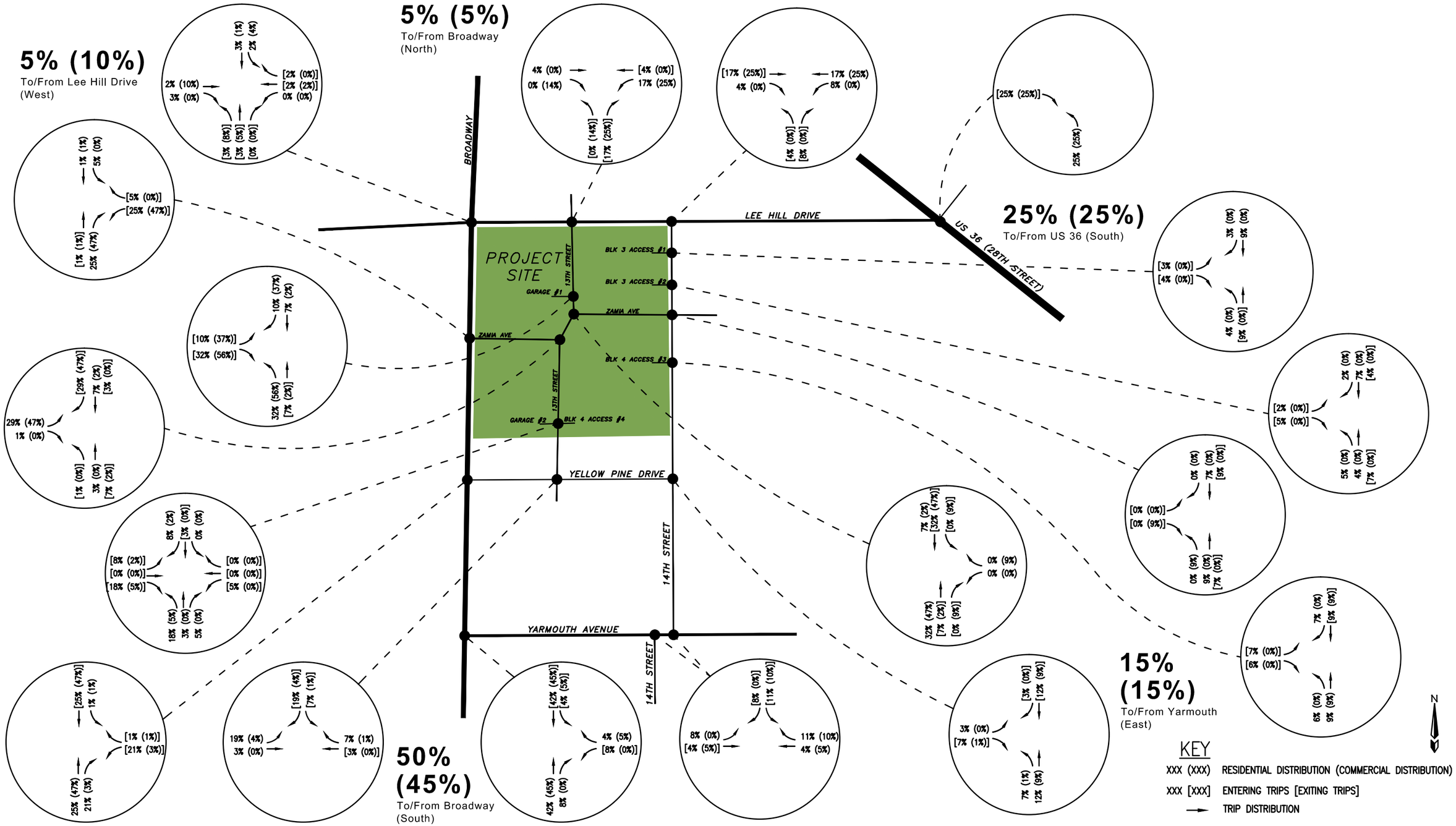
TRANSPORTATION GROUP

NORTH BOULDER ARMORY REDEVELOPMENT

YEAR 2035 BACKGROUND TRAFFIC VOLUMES

FT Project #	14023	Original Scale	NTS	Date	1/19/15	Drawn by	CRS	Figure #	5



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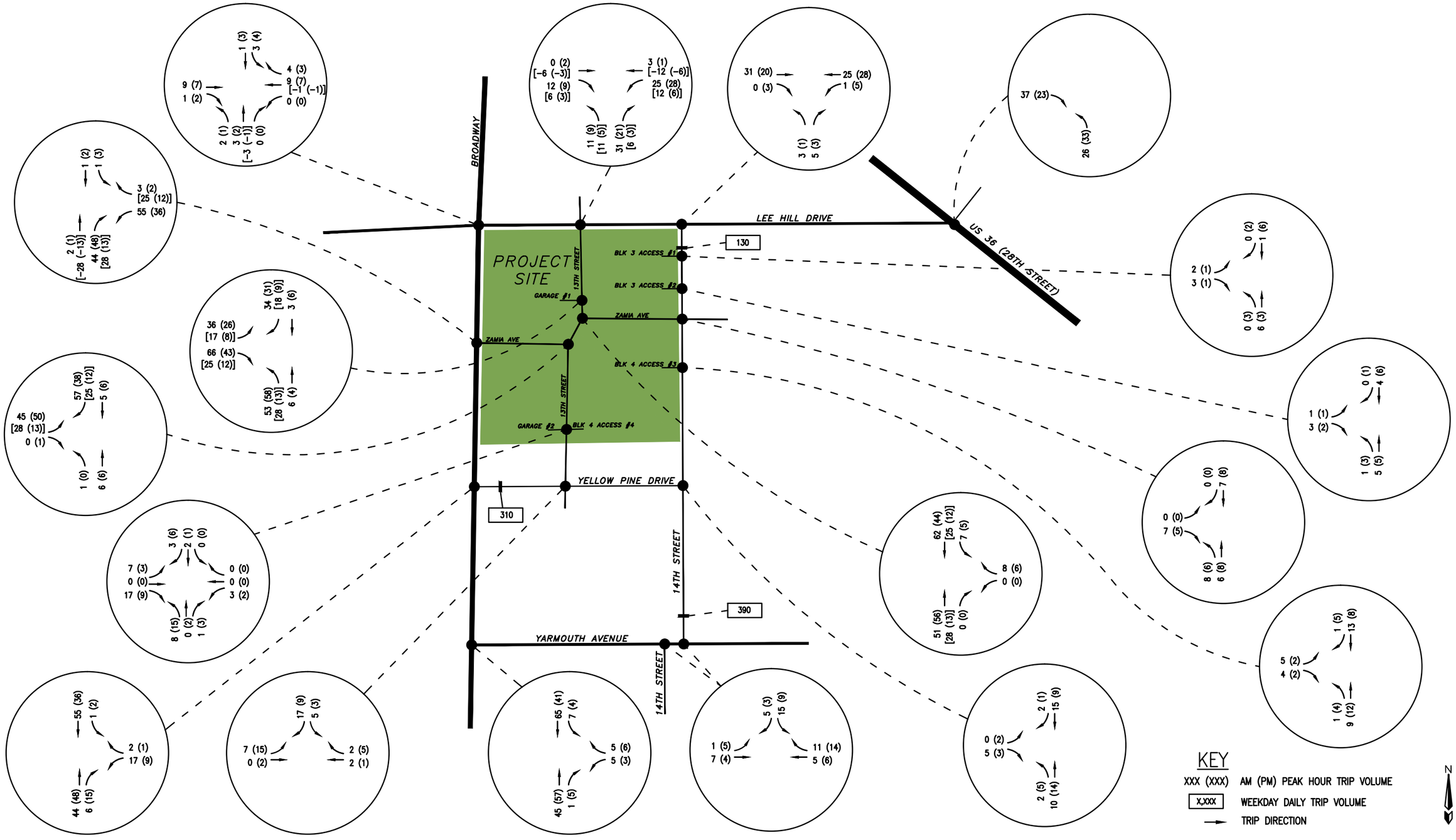
TRANSPORTATION GROUP

NORTH BOULDER ARMORY REDVELOPMENT

TRIP DISTRIBUTION

FT Project #	14023	Original Scale	NTS	Date	1/19/15	Drawn by	CRS	Figure #	6



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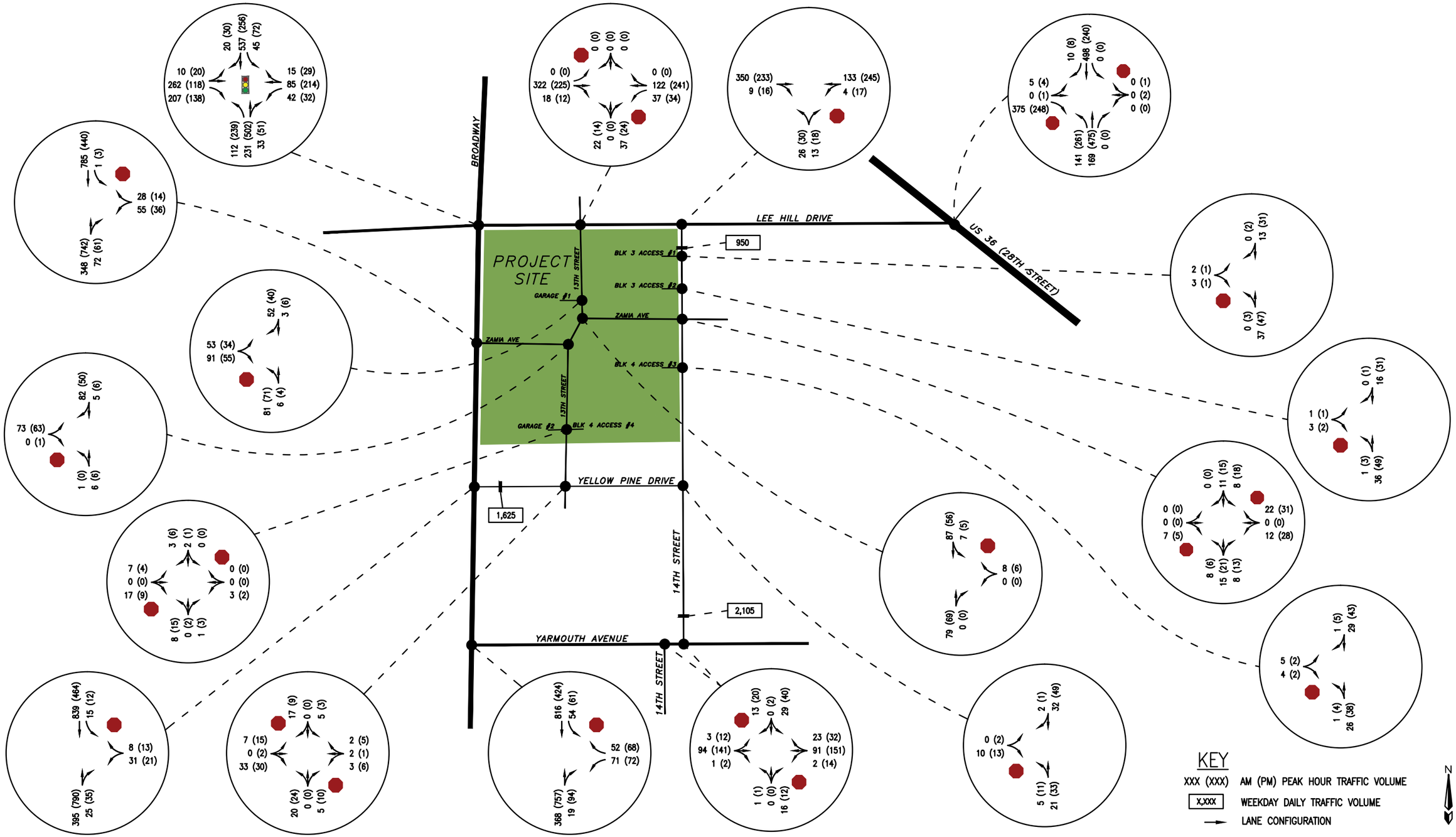
TRANSPORTATION GROUP

NORTH BOULDER ARMORY REDVELOPMENT

SITE-GENERATED TRAFFIC VOLUMES

FT Project #	14023	Original Scale	NTS	Date	1/19/15	Drawn by	CRS	Figure # 7

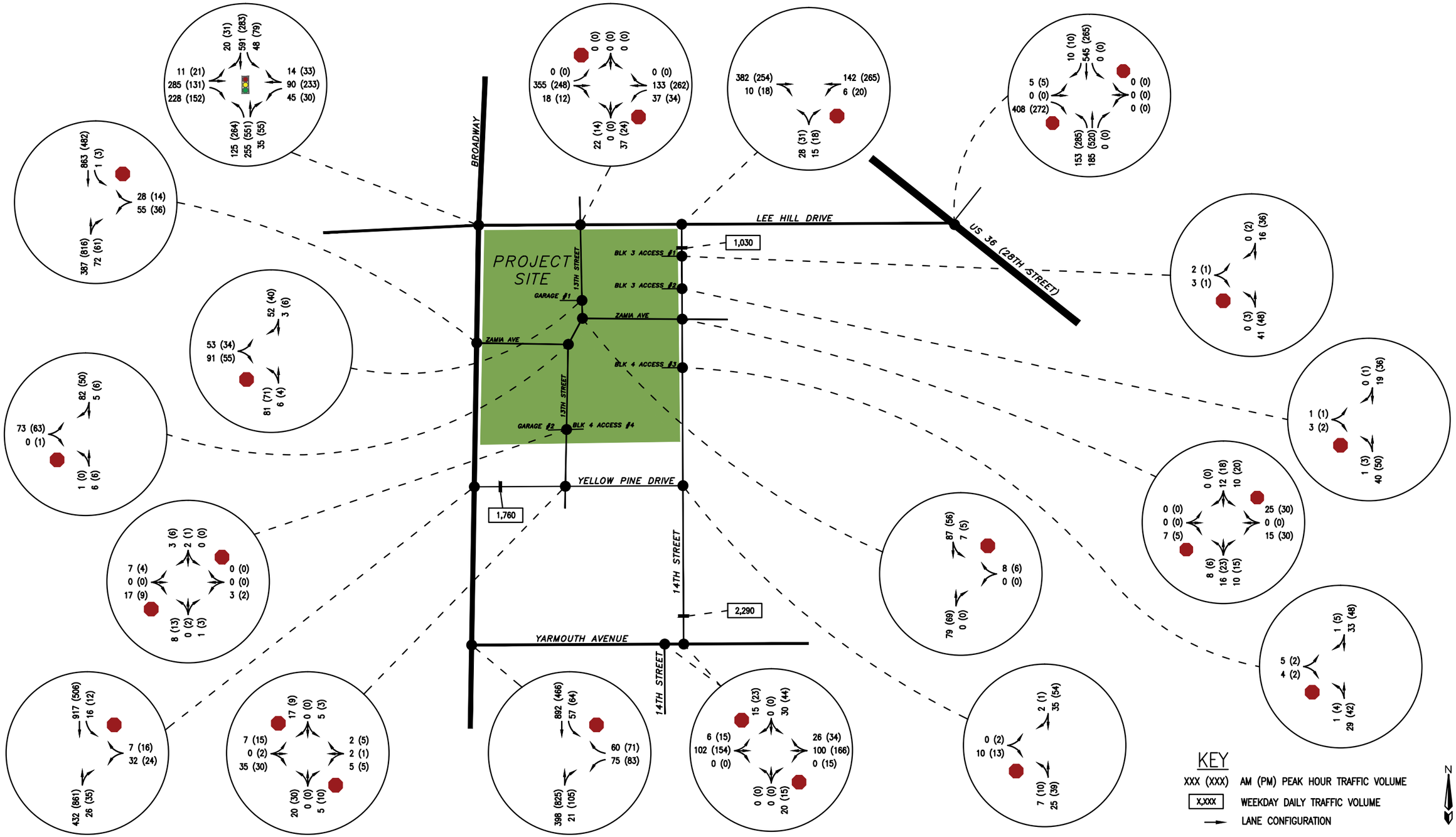


FOX TUTTLE HERNANDEZ
TRANSPORTATION GROUP

NORTH BOULDER ARMORY REDVELOPMENT

YEAR 2016 BACKGROUND + SITE GENERATED TRAFFIC VOLUMES

FT Project #	14023	Original Scale	NTS	Date	1/19/15	Drawn by	CRS	Figure #	8



FOX TUTTLE HERNANDEZ
TRANSPORTATION GROUP

NORTH BOULDER ARMORY REDVELOPMENT

YEAR 2035 BACKGROUND + SITE GENERATED TRAFFIC VOLUMES

FT Project #	14023	Original Scale	NTS	Date	1/19/15	Drawn by	CRS	Figure #	9

Appendix:

Level of Service Definitions

Existing Traffic Data

Trip Generation References

Intersection Capacity Worksheets

Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

In rating roadway and intersection operating conditions with existing or future traffic volumes, "Levels of Service" (LOS) A through F are used, with LOS A indicating very good operation and LOS F indicating poor operation. Levels of service at signalized and unsignalized intersections are closely associated with vehicle delays experienced in seconds per vehicle. More complete level of service definitions and delay data for signal and stop sign controlled intersections are contained in the following table for reference.

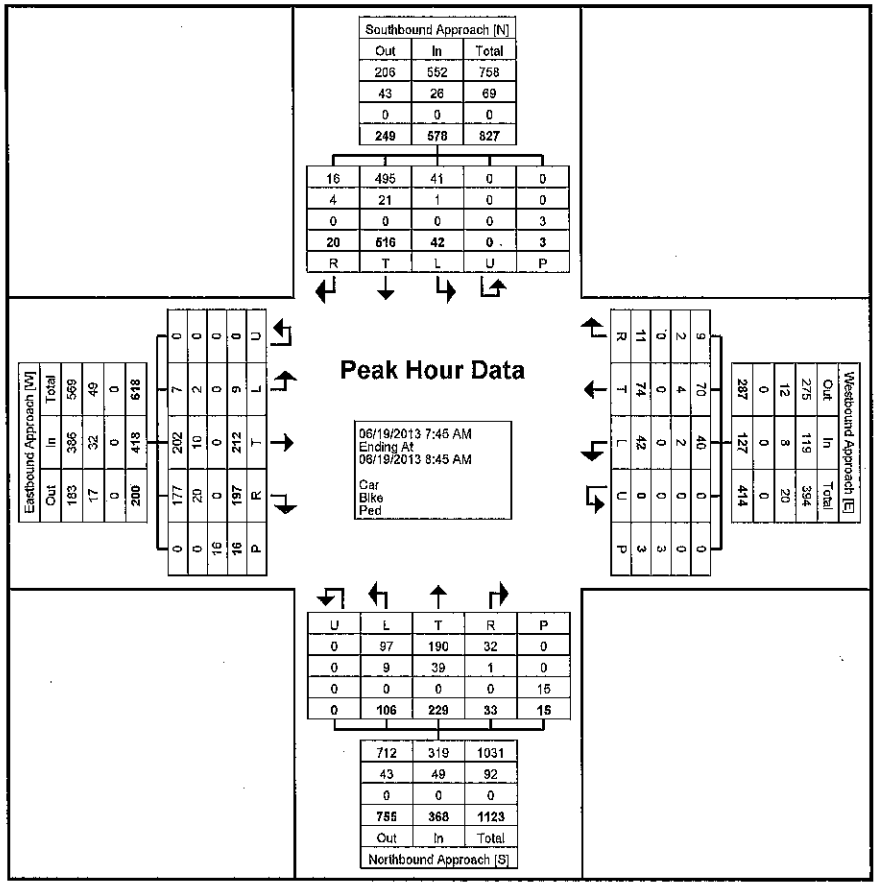
Level of Service Rating	Delay in seconds per vehicle *(a)*		Definition
	Signalized	Unsignalized	
A	0.0 to 10.0	0.0 to 10.0	Low vehicular traffic volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within the traffic stream. Drivers are able to maintain their desired speeds with little or no delay.
B	10.1 to 20.0	10.1 to 15.0	Stable vehicular traffic volume flow with potential for some restriction of operating speeds due to traffic conditions. Vehicle maneuvering is only slightly restricted. The stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	20.1 to 35.0	15.1 to 25.0	Stable traffic operations, however the ability for vehicles to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer vehicle queues cause delays along the corridor.
D	35.1 to 55.0	25.1 to 35.0	Approaching unstable vehicular traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in ability to maneuver and selection of travel speeds due to congestion. Driver comfort and convenience are low, but tolerable.
E	55.1 to 80.0	35.1 to 50.0	Traffic operations characterized by significant approach delays and average travel speeds of one-half to one-third the free flow speed. Vehicular flow is unstable and there is potential for stoppages of brief duration. High signal density, extensive vehicle queuing, or corridor signal progression/timing are the typical causes of vehicle delays at signalized corridors.
F	> 80.0	> 50.0	Forced vehicular traffic flow and operations with high approach delays at critical intersections. Vehicle speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion.

(a) Delay ranges based on 2010 Highway Capacity Manual criteria.

Existing Traffic Data

City of Boulder (CO)
1777 Broadway
P.O. Box 791
Boulder, Colorado, United States 80306
303.441.3266 stringhamm@bouldercolorado.gov

Count Name: Broadway and Leehill TMC 6-19-2013 S.W. corner
Site Code: 129
Start Date: 06/19/2013
Page No: 4



Turning Movement Peak Hour Data Plot (7:45 AM)

City of Boulder (CO)
1777 Broadway
P.O. Box 791
Boulder, Colorado, United States 80306
303.441.3266 stringhamm@bouldercolorado.gov

Count Name: Broadway and Leehill TMC 6-19-2013 S.W. corner
Site Code: 129
Start Date: 06/19/2013

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Southbound Approach						Westbound Approach						Northbound Approach						Eastbound Approach						
	Southbound						Westbound						Northbound						Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:45 AM	11	152	8	0	1	171	2	24	6	0	0	32	10	61	20	0	1	91	67	59	3	0	9	129	423
8:00 AM	2	141	13	0	2	156	5	16	12	0	1	33	4	50	23	0	3	77	39	49	2	0	4	90	356
8:15 AM	3	131	10	0	0	144	3	14	12	0	1	29	7	55	30	0	3	92	48	53	2	0	1	103	368
8:30 AM	4	92	11	0	0	107	1	20	12	0	1	33	12	63	33	0	8	108	43	51	2	0	2	96	344
Total	20	516	42	0	3	578	11	74	42	0	3	127	33	229	106	0	15	368	197	212	9	0	16	418	1491
Approach %	3.5	89.3	7.3	0.0	-	-	8.7	58.3	33.1	0.0	-	-	9.0	62.2	28.8	0.0	-	-	47.1	50.7	2.2	0.0	-	-	-
Total %	1.3	34.6	2.8	0.0	-	38.8	0.7	5.0	2.8	0.0	-	8.5	2.2	15.4	7.1	0.0	-	24.7	13.2	14.2	0.6	0.0	-	28.0	-
PHF	0.455	0.849	0.808	0.000	-	0.845	0.550	0.771	0.875	0.000	-	0.962	0.688	0.909	0.803	0.000	-	0.852	0.735	0.898	0.750	0.000	-	0.810	0.881
Car	16	495	41	0	-	552	9	70	40	0	-	119	32	190	97	0	-	319	177	202	7	0	-	386	1376
% Car	80.0	95.9	97.6	-	-	95.5	81.8	94.6	95.2	-	-	93.7	97.0	83.0	91.5	-	-	86.7	89.8	95.3	77.8	-	-	92.3	92.3
Bike	4	21	1	0	-	26	2	4	2	0	-	8	1	39	9	0	-	49	20	10	2	0	-	32	115
% Bike	20.0	4.1	2.4	-	-	4.5	18.2	5.4	4.8	-	-	6.3	3.0	17.0	8.5	-	-	13.3	10.2	4.7	22.2	-	-	7.7	7.7
Ped	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	15	-	-	-	-	-	16	-	-
% Ped	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

City of Boulder (CO)
1777 Broadway
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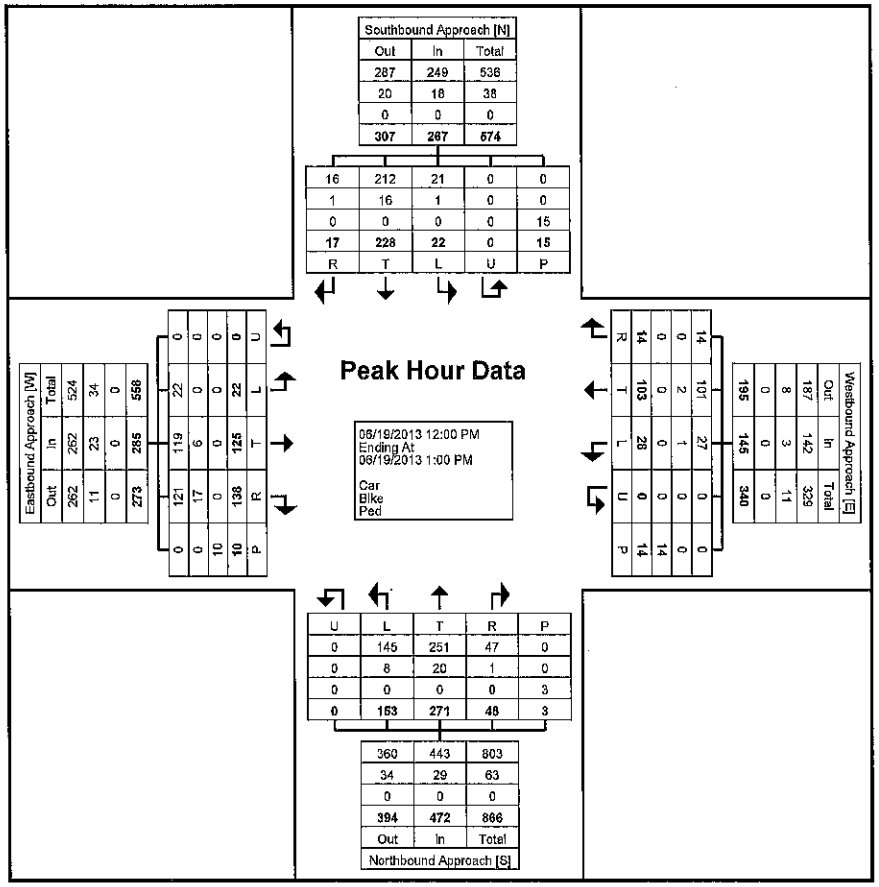
Boulder, Colorado, United States 80306
303.441.3266 stringhamm@bouldercolorado.gov



Turning Movement Peak Hour Data Plot (12:00 PM)

City of Boulder (CO)
1777 Broadway
P.O. Box 791
Boulder, Colorado, United States 80306
303.441.3266 stringhamm@bouldercolorado.gov

Count Name: Broadway and Leehill TMC 6-19-2013 S.W. corner
Site Code: 129
Start Date: 06/19/2013

Turning Movement Peak Hour Data (12:00 PM)

Start Time	Southbound Approach Southbound						Westbound Approach Westbound						Northbound Approach Northbound						Eastbound Approach Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
12:00 PM	4	52	4	0	0	60	5	30	10	0	5	45	19	73	36	0	0	128	34	32	6	0	0	72	305
12:15 PM	5	57	5	0	5	67	1	14	7	0	6	22	6	64	41	0	0	111	36	25	6	0	1	67	267
12:30 PM	1	53	6	0	6	60	3	29	8	0	2	40	12	76	37	0	0	125	36	31	6	0	5	73	298
12:45 PM	7	66	7	0	4	80	5	30	3	0	1	38	11	58	39	0	3	108	32	37	4	0	4	73	299
Total	17	228	22	0	15	267	14	103	28	0	14	145	48	271	153	0	3	472	138	125	22	0	10	285	1169
Approach %	6.4	85.4	8.2	0.0	-	-	9.7	71.0	19.3	0.0	-	-	10.2	57.4	32.4	0.0	-	-	48.4	43.9	7.7	0.0	-	-	-
Total %	1.5	19.5	1.9	0.0	-	22.8	1.2	8.8	2.4	0.0	-	12.4	4.1	23.2	13.1	0.0	-	40.4	11.8	10.7	1.9	0.0	-	24.4	-
PHF	0.607	0.864	0.786	0.000	-	0.834	0.700	0.858	0.700	0.000	-	0.806	0.632	0.891	0.933	0.000	-	0.922	0.958	0.845	0.917	0.000	-	0.976	0.958
Car	16	212	21	0	-	249	14	101	27	0	-	142	47	251	145	0	-	443	121	119	22	0	-	262	1096
% Car	94.1	93.0	95.5	-	-	93.3	100.0	98.1	96.4	-	-	97.9	97.9	92.6	94.8	-	-	93.9	87.7	95.2	100.0	-	-	91.9	93.8
Bike	1	16	1	0	-	18	0	2	1	0	-	3	1	20	8	0	-	29	17	6	0	0	-	23	73
% Bike	5.9	7.0	4.5	-	-	6.7	0.0	1.9	3.6	-	-	2.1	2.1	7.4	5.2	-	-	6.1	12.3	4.8	0.0	-	-	8.1	6.2
Ped	-	-	-	-	15	-	-	-	-	-	14	-	-	-	-	-	3	-	-	-	-	-	10	-	-
% Ped	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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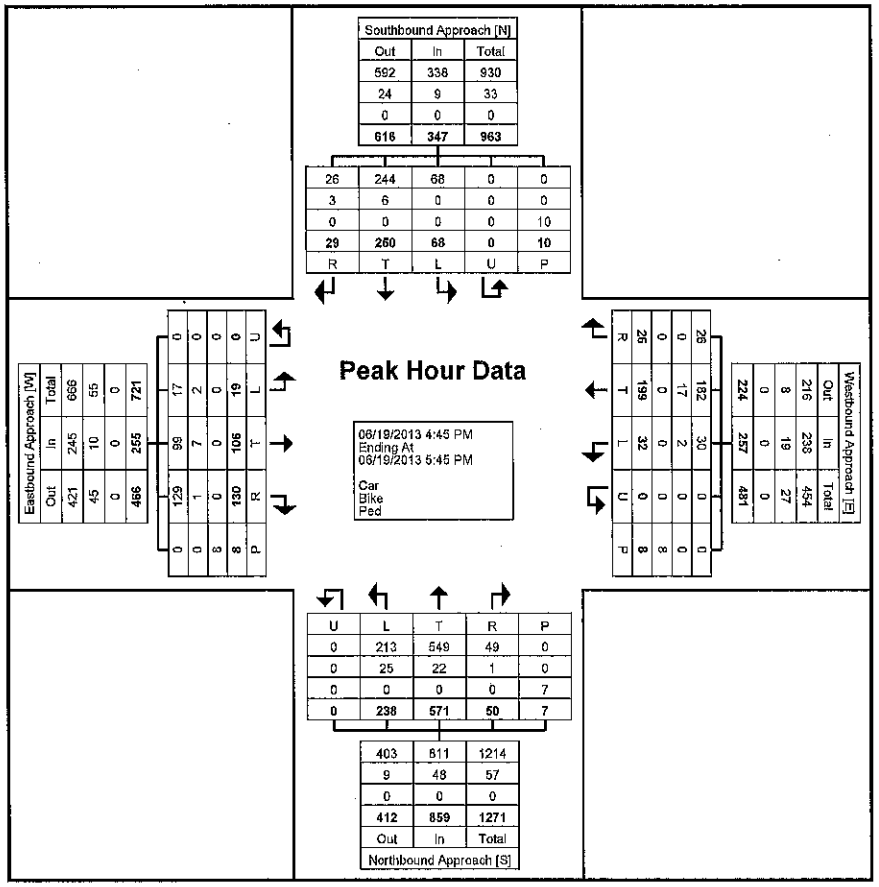


Turning Movement Peak Hour Data Plot (4:45 PM)

City of Boulder (CO)
1777 Broadway
P.O. Box 791
Boulder, Colorado, United States 80306
303.441.3266 stringhamm@bouldercolorado.gov

Count Name: Broadway and Leehill TMC 6-19-2013 S.W. corner
Site Code: 129
Start Date: 06/19/2013

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Southbound Approach Southbound						Westbound Approach Westbound						Northbound Approach Northbound						Eastbound Approach Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
4:45 PM	4	71	16	0	5	91	4	49	5	0	4	58	10	141	52	0	4	203	35	22	3	0	4	60	412
5:00 PM	9	61	19	0	3	89	9	42	9	0	2	60	14	139	65	0	1	218	31	27	7	0	1	65	432
5:15 PM	8	58	19	0	0	85	6	49	11	0	0	66	12	151	58	0	1	221	34	32	3	0	3	69	441
5:30 PM	8	60	14	0	2	82	7	59	7	0	2	73	14	140	63	0	1	217	30	25	6	0	0	61	433
Total	29	250	68	0	10	347	26	199	32	0	8	257	50	571	238	0	7	859	130	106	19	0	8	255	1718
Approach %	8.4	72.0	19.6	0.0	-	-	10.1	77.4	12.5	0.0	-	-	5.8	66.5	27.7	0.0	-	-	51.0	41.6	7.5	0.0	-	-	-
Total %	1.7	14.6	4.0	0.0	-	20.2	1.5	11.6	1.9	0.0	-	15.0	2.9	33.2	13.9	0.0	-	50.0	7.6	6.2	1.1	0.0	-	14.8	-
PHF	0.806	0.880	0.895	0.000	-	0.953	0.722	0.843	0.727	0.000	-	0.880	0.893	0.945	0.915	0.000	-	0.972	0.929	0.828	0.679	0.000	-	0.924	0.974
Car	26	244	68	0	-	338	26	182	30	0	-	238	49	549	213	0	-	811	129	99	17	0	-	245	1632
% Car	89.7	97.6	100.0	-	-	97.4	100.0	91.5	93.8	-	-	92.6	98.0	96.1	89.5	-	-	94.4	99.2	93.4	89.5	-	-	96.1	95.0
Bike	3	6	0	0	-	9	0	17	2	0	-	19	1	22	25	0	-	48	1	7	2	0	-	10	86
% Bike	10.3	2.4	0.0	-	-	2.6	0.0	8.5	6.3	-	-	7.4	2.0	3.9	10.5	-	-	5.6	0.8	6.6	10.5	-	-	3.9	5.0
Ped	-	-	-	-	10	-	-	-	-	-	8	-	-	-	-	-	7	-	-	-	-	-	8	-	-
% Ped	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 28TH ST
E/W STREET: LEE HILL DR
CITY: BOULDER
COUNTY: BOULDER

File Name : 28THLEE
Site Code : 00000022
Start Date : 11/19/2014
Page No : 1

Groups Printed- VEHICLES

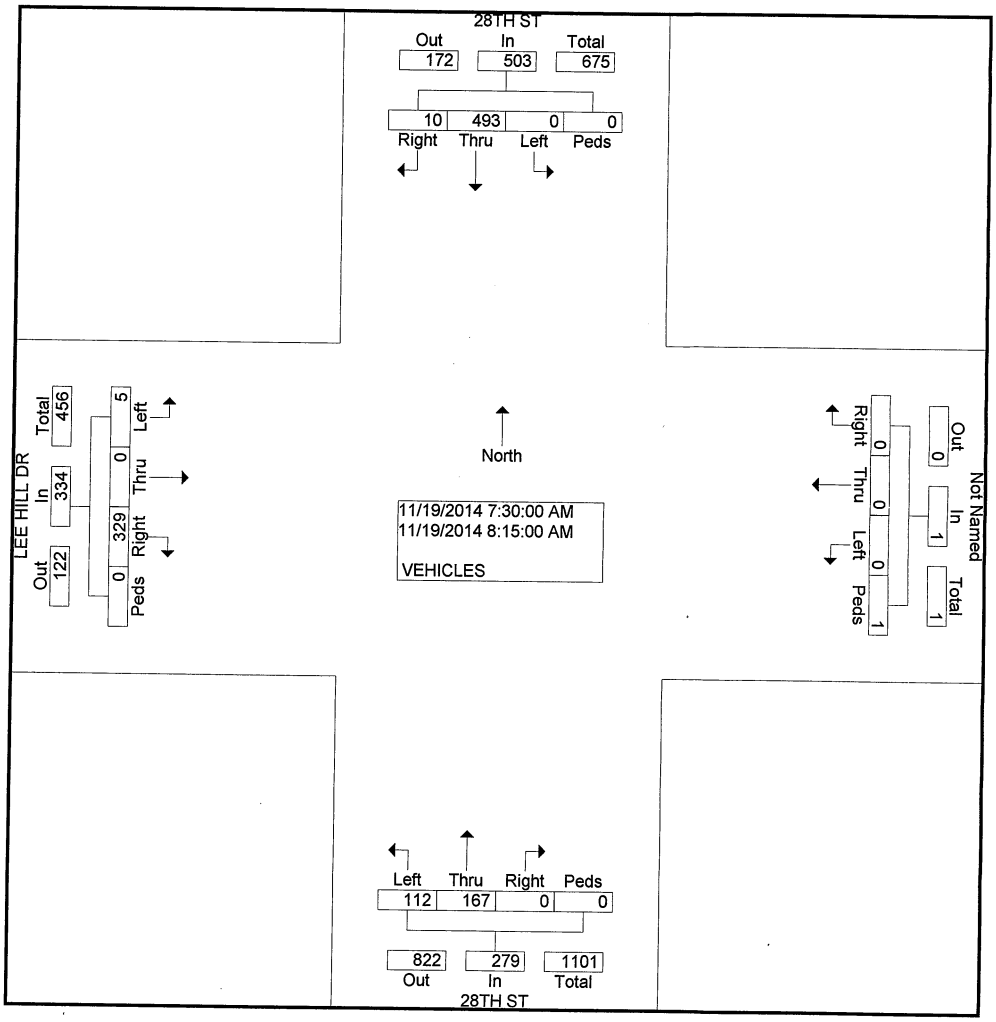
	28TH ST Southbound				Westbound				28TH ST Northbound				LEE HILL DR Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	49	1	0	0	0	0	0	20	18	0	0	0	0	38	0	126
07:15 AM	0	83	4	0	0	0	0	0	24	33	0	0	1	0	62	0	207
07:30 AM	0	112	0	0	0	0	0	0	21	31	0	0	0	0	76	0	240
07:45 AM	0	115	5	0	0	0	0	0	37	52	0	0	1	0	93	0	303
Total	0	359	10	0	0	0	0	0	102	134	0	0	2	0	269	0	876
08:00 AM	0	139	1	0	0	0	0	0	30	38	0	0	2	0	79	0	289
08:15 AM	0	127	4	0	0	0	0	1	24	46	0	0	2	0	81	0	285
08:30 AM	0	102	2	0	0	0	0	1	43	50	0	0	1	3	68	2	272
08:45 AM	0	105	2	0	0	0	0	1	27	59	0	0	1	0	71	1	267
Total	0	473	9	0	0	0	0	3	124	193	0	0	6	3	299	3	1113
04:00 PM	0	68	0	0	0	0	0	0	57	119	0	0	2	0	42	0	288
04:15 PM	0	61	4	0	0	0	0	1	46	102	0	0	0	0	39	0	253
04:30 PM	0	59	2	0	0	0	0	0	51	118	0	0	2	0	58	0	290
04:45 PM	0	53	2	0	0	0	0	0	48	113	0	0	0	1	55	1	273
Total	0	241	8	0	0	0	0	1	202	452	0	0	4	1	194	1	1104
05:00 PM	0	65	0	0	0	2	1	0	59	137	0	0	2	0	52	0	318
05:15 PM	0	47	1	0	0	0	0	0	56	136	0	0	2	0	45	0	287
05:30 PM	0	52	1	0	3	0	0	0	80	136	2	0	1	0	52	0	327
05:45 PM	0	48	1	0	1	0	0	0	52	118	0	0	3	1	41	0	265
Total	0	212	3	0	4	2	1	0	247	527	2	0	8	1	190	0	1197
Grand Total	0	1285	30	0	4	2	1	4	675	1306	2	0	20	5	952	4	4290
Apprch %	0.0	97.7	2.3	0.0	36.4	18.2	9.1	36.4	34.0	65.9	0.1	0.0	2.0	0.5	97.0	0.4	
Total %	0.0	30.0	0.7	0.0	0.1	0.0	0.0	0.1	15.7	30.4	0.0	0.0	0.5	0.1	22.2	0.1	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 28TH ST
E/W STREET: LEE HILL DR
CITY: BOULDER
COUNTY: BOULDER

File Name : 28THLEE
Site Code : 00000022
Start Date : 11/19/2014
Page No : 2

	28TH ST Southbound					Westbound					28TH ST Northbound					LEE HILL DR Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	0	493	10	0	503	0	0	0	1	1	112	167	0	0	279	5	0	329	0	334	1117
Percent	0.0	98.0	2.0	0.0		0.0	0.0	0.0	100.0		40.1	59.9	0.0	0.0		1.5	0.0	98.5	0.0		
07:45 Volume	0	115	5	0	120	0	0	0	0	0	37	52	0	0	89	1	0	93	0	94	303
Peak Factor																					0.922
High Int.	08:00 AM					08:15 AM					07:45 AM					07:45 AM					
Volume	0	139	1	0	140	0	0	0	1	1	37	52	0	0	89	1	0	93	0	94	
Peak Factor					0.898					0.250					0.784					0.888	

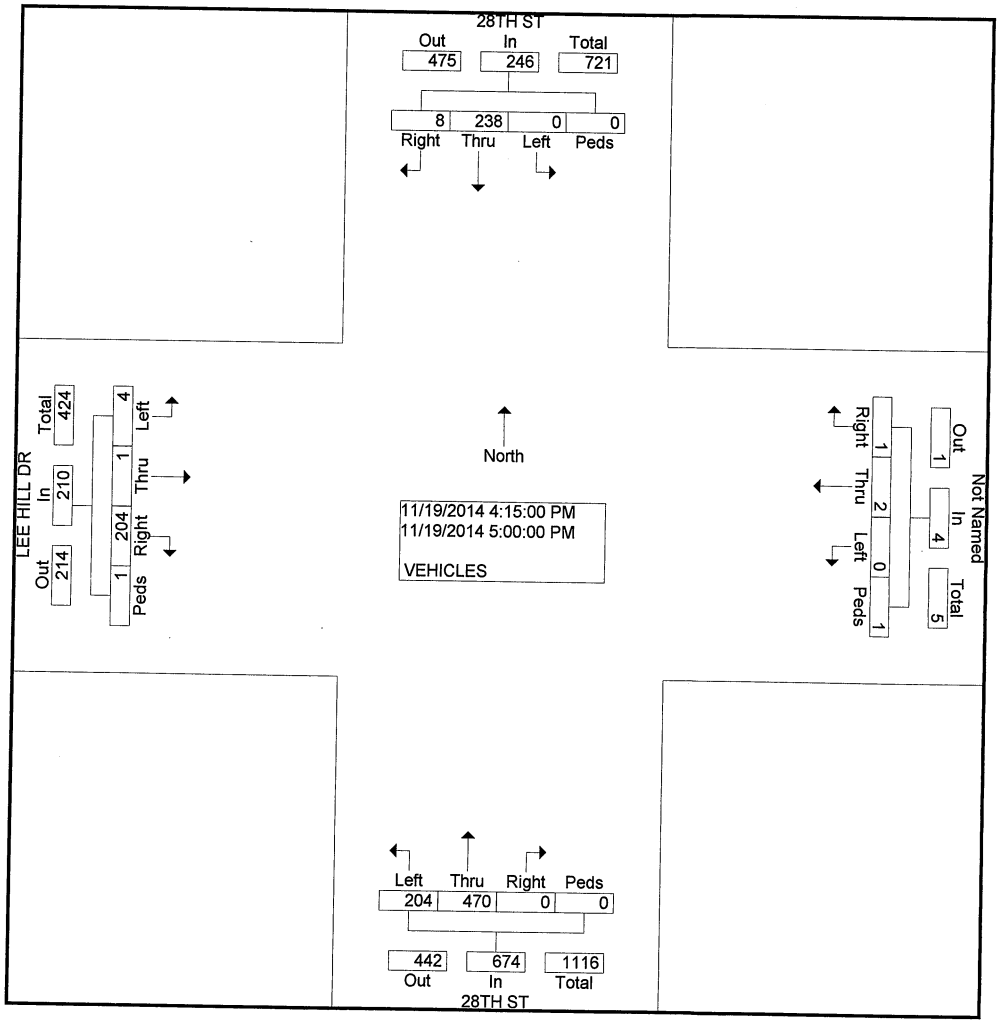


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 28TH ST
E/W STREET: LEE HILL DR
CITY: BOULDER
COUNTY: BOULDER

File Name : 28THLEE
Site Code : 00000022
Start Date : 11/19/2014
Page No : 2

	28TH ST Southbound					Westbound					28TH ST Northbound					LEE HILL DR Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	0	238	8	0	246	0	2	1	1	4	204	470	0	0	674	4	1	204	1	210	1134
Percent	0.0	96.7	3.3	0.0		0.0	50.0	25.0	25.0		30.3	69.7	0.0	0.0		1.9	0.5	97.1	0.5		
05:00 Volume	0	65	0	0	65	0	2	1	0	3	59	137	0	0	196	2	0	52	0	54	318
Peak Factor																					0.892
High Int.	04:15 PM					05:00 PM					05:00 PM					04:30 PM					
Volume	0	61	4	0	65	0	2	1	0	3	59	137	0	0	196	2	0	58	0	60	
Peak Factor					0.946					0.333					0.860					0.875	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: BROADWAY ST
E/W STREET: YELLOW PINE DR
CITY: BOULDER
COUNTY: BOULDER

File Name : BROAYELL
Site Code : 00000005
Start Date : 11/6/2014
Page No : 1

Groups Printed- VEHICLES

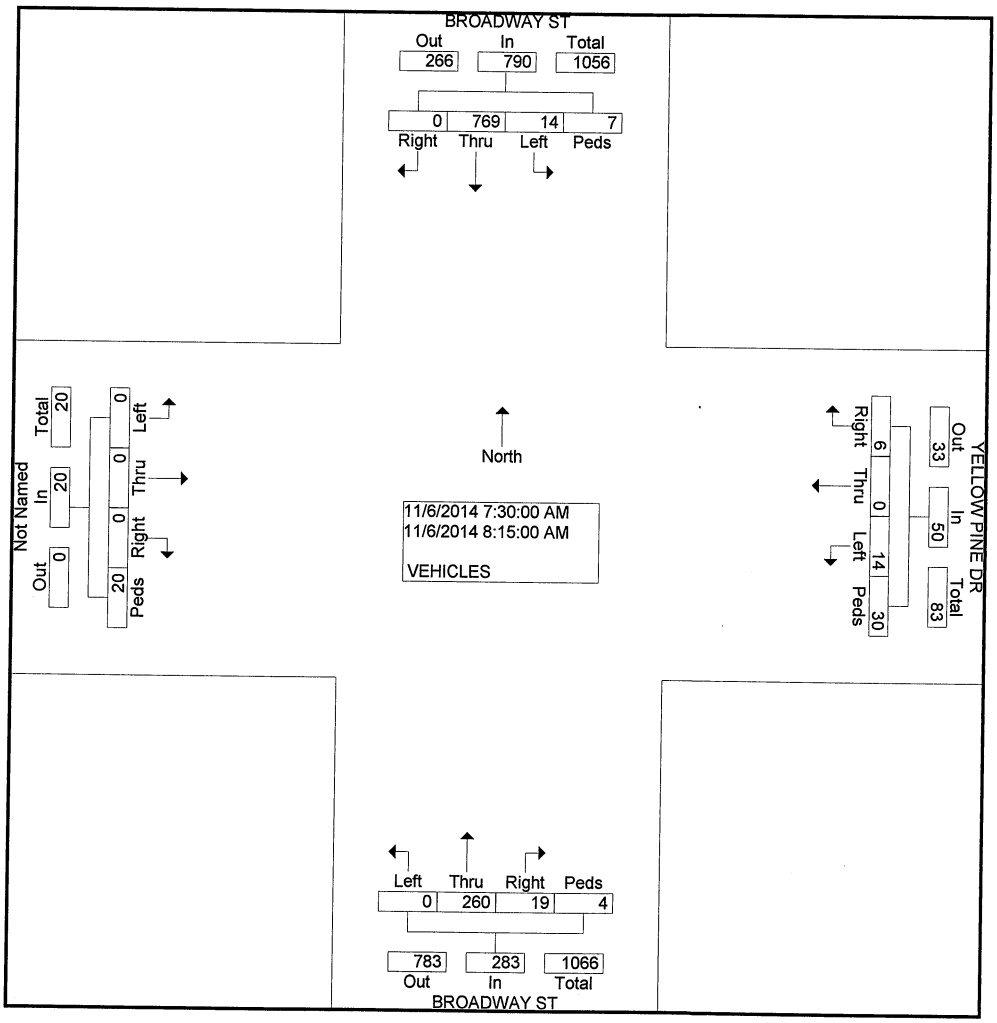
	BROADWAY ST Southbound				YELLOW PINE DR Westbound				BROADWAY ST Northbound				Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	106	0	1	1	0	2	7	0	28	1	1	0	0	0	1	148
07:15 AM	6	138	0	0	5	0	0	6	0	41	2	2	0	0	0	1	201
07:30 AM	3	196	0	2	3	0	1	7	0	48	4	1	0	0	0	1	266
07:45 AM	4	191	0	1	2	0	3	7	0	62	6	0	0	0	0	5	281
Total	13	631	0	4	11	0	6	27	0	179	13	4	0	0	0	8	896
08:00 AM	4	199	0	2	4	0	1	10	0	73	3	2	0	0	0	9	307
08:15 AM	3	183	0	2	5	0	1	6	0	77	6	1	0	0	0	5	289
08:30 AM	7	151	0	0	2	0	5	9	0	79	6	0	0	0	0	1	260
08:45 AM	0	139	0	1	3	0	2	8	0	94	12	0	0	0	0	1	260
Total	14	672	0	5	14	0	9	33	0	323	27	3	0	0	0	16	1116
04:00 PM	1	117	0	0	6	0	1	0	0	157	8	0	0	0	0	3	293
04:15 PM	5	114	0	0	3	0	2	8	0	172	7	0	0	0	0	4	315
04:30 PM	0	101	0	1	2	0	5	14	0	180	6	0	0	0	0	4	313
04:45 PM	1	92	0	0	5	0	1	11	0	185	3	0	0	0	0	0	298
Total	7	424	0	1	16	0	9	33	0	694	24	0	0	0	0	11	1219
05:00 PM	4	112	0	2	2	0	4	5	0	190	4	0	0	0	0	2	325
05:15 PM	0	85	0	3	4	0	2	2	0	182	8	0	0	0	0	0	286
05:30 PM	6	94	0	0	6	0	3	6	0	149	12	0	0	0	0	0	276
05:45 PM	8	91	0	0	9	0	2	7	0	114	3	0	0	0	0	1	235
Total	18	382	0	5	21	0	11	20	0	635	27	0	0	0	0	3	1122
Grand Total	52	2109	0	15	62	0	35	113	0	1831	91	7	0	0	0	38	4353
Apprch %	2.4	96.9	0.0	0.7	29.5	0.0	16.7	53.8	0.0	94.9	4.7	0.4	0.0	0.0	0.0	100.0	
Total %	1.2	48.4	0.0	0.3	1.4	0.0	0.8	2.6	0.0	42.1	2.1	0.2	0.0	0.0	0.0	0.9	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: BROADWAY ST
E/W STREET: YELLOW PINE DR
CITY: BOULDER
COUNTY: BOULDER

File Name : BROAYELL
Site Code : 00000005
Start Date : 11/6/2014
Page No : 2

	BROADWAY ST Southbound					YELLOW PINE DR Westbound					BROADWAY ST Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 09:00 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	14	769	0	7	790	14	0	6	30	50	0	260	19	4	283	0	0	0	20	20	1143
Percent	1.8	97.3	0.0	0.9		28.0	0.0	12.0	60.0		0.0	91.9	6.7	1.4		0.0	0.0	0.0	100.0		
08:00 Volume	4	199	0	2	205	4	0	1	10	15	0	73	3	2	78	0	0	0	9	9	307
Peak Factor																					0.931
High Int.	08:00 AM					08:00 AM					08:15 AM					08:00 AM					
Volume	4	199	0	2	205	4	0	1	10	15	0	77	6	1	84	0	0	0	9	9	
Peak Factor					0.963					0.833					0.842					0.556	

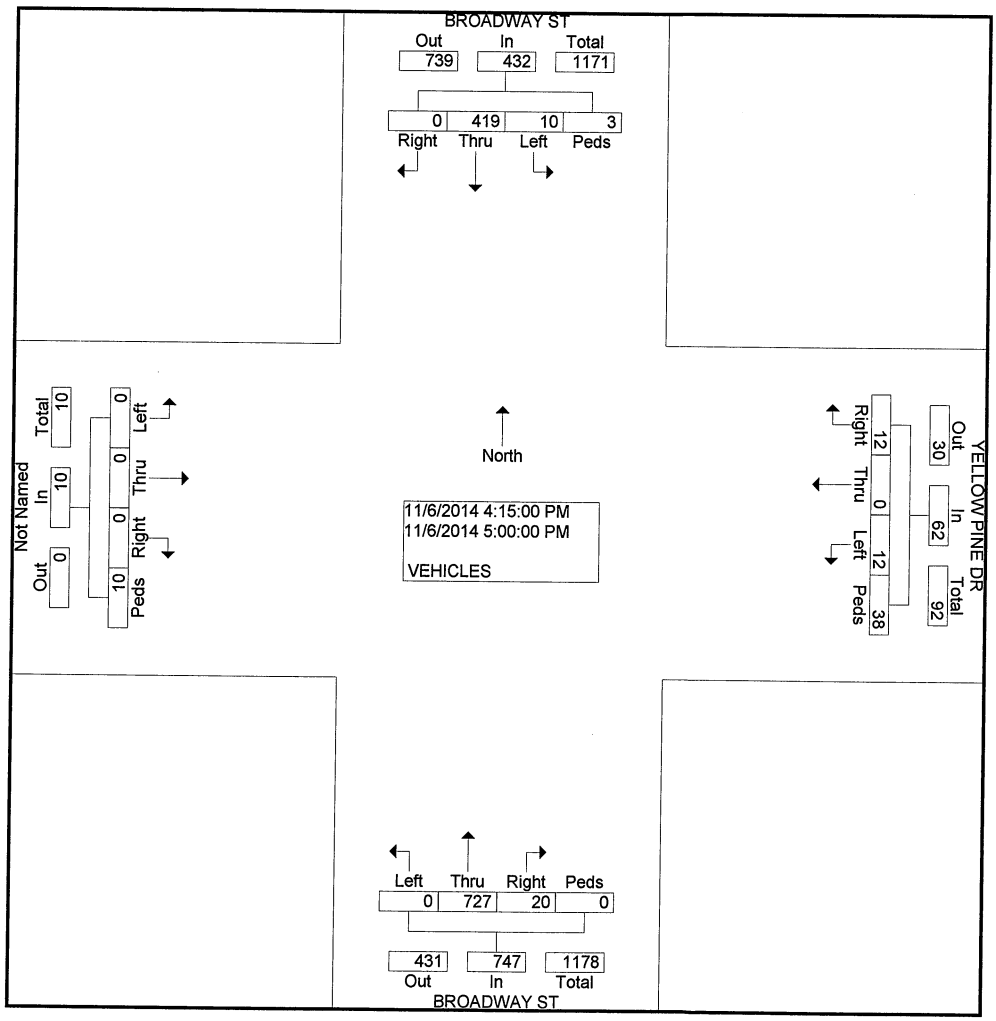


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: BROADWAY ST
E/W STREET: YELLOW PINE DR
CITY: BOULDER
COUNTY: BOULDER

File Name : BROAYELL
Site Code : 00000005
Start Date : 11/6/2014
Page No : 2

	BROADWAY ST Southbound					YELLOW PINE DR Westbound					BROADWAY ST Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	10	419	0	3	432	12	0	12	38	62	0	727	20	0	747	0	0	0	10	10	1251
Percent	2.3	97.0	0.0	0.7		19.4	0.0	19.4	61.3		0.0	97.3	2.7	0.0		0.0	0.0	0.0	100.0		
05:00 Volume	4	112	0	2	118	2	0	4	5	11	0	190	4	0	194	0	0	0	2	2	325
Peak Factor																					0.962
High Int.	04:15 PM					04:30 PM					05:00 PM					04:15 PM					
Volume	5	114	0	0	119	2	0	5	14	21	0	190	4	0	194	0	0	0	4	4	
Peak Factor					0.908					0.738					0.963					0.625	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 14TH ST
E/W STREET: LEE HILL DR
CITY: BOULDER
COUNTY: BOULDER

File Name : 14THLEEH
Site Code : 00000005
Start Date : 11/5/2014
Page No : 1

Groups Printed- VEHICLES

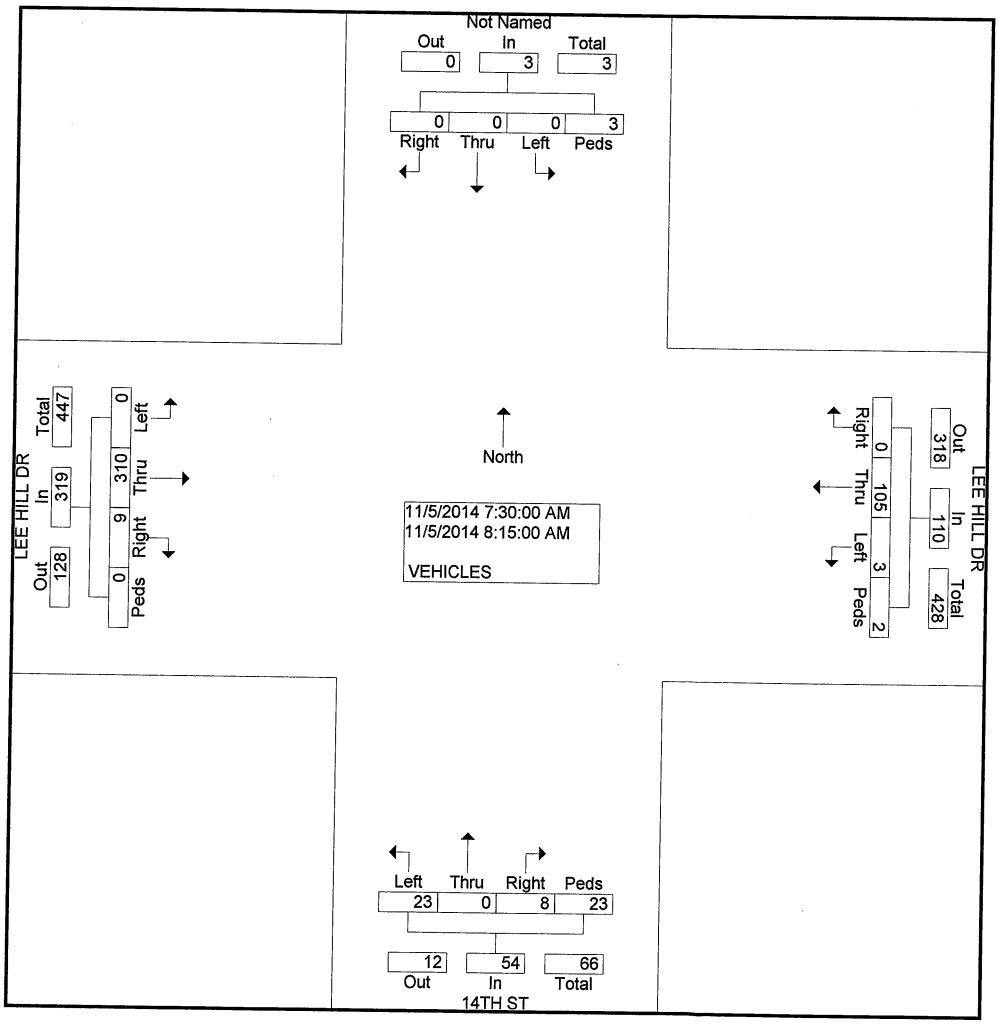
	Southbound				LEE HILL DR Westbound				14TH ST Northbound				LEE HILL DR Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	0	0	1	0	18	0	0	1	0	2	2	0	46	0	0	70
07:15 AM	0	0	0	1	4	20	0	0	5	0	3	2	0	53	3	0	91
07:30 AM	0	0	0	0	1	17	0	0	3	0	3	4	0	69	0	0	97
07:45 AM	0	0	0	2	0	35	0	1	4	0	1	9	0	76	1	0	129
Total	0	0	0	4	5	90	0	1	13	0	9	17	0	244	4	0	387
08:00 AM	0	0	0	0	1	30	0	0	8	0	3	3	0	83	1	0	129
08:15 AM	0	0	0	1	1	23	0	1	8	0	1	7	0	82	7	0	131
08:30 AM	0	0	0	1	1	31	0	0	1	0	3	3	0	66	2	0	108
08:45 AM	0	0	0	0	1	28	0	0	3	0	5	2	0	53	1	0	93
Total	0	0	0	2	4	112	0	1	20	0	12	15	0	284	11	0	461
04:00 PM	0	0	0	1	1	50	0	0	3	0	3	4	0	58	1	0	121
04:15 PM	0	0	0	0	1	39	0	0	4	0	5	5	0	37	2	0	93
04:30 PM	0	0	0	1	4	53	0	0	11	0	5	3	0	47	8	0	132
04:45 PM	0	0	0	1	3	54	0	1	6	0	2	5	0	64	0	0	136
Total	0	0	0	3	9	196	0	1	24	0	15	17	0	206	11	0	482
05:00 PM	0	0	0	0	4	47	0	0	8	0	3	1	0	44	3	0	110
05:15 PM	0	0	0	2	4	47	0	0	5	0	8	0	0	48	1	0	115
05:30 PM	0	0	0	1	4	60	0	0	7	0	3	2	0	48	2	0	127
05:45 PM	0	0	0	0	5	69	0	0	2	0	2	1	0	53	2	0	134
Total	0	0	0	3	17	223	0	0	22	0	16	4	0	193	8	0	486
Grand Total	0	0	0	12	35	621	0	3	79	0	52	53	0	927	34	0	1816
Apprch %	0.0	0.0	0.0	100.0	5.3	94.2	0.0	0.5	42.9	0.0	28.3	28.8	0.0	96.5	3.5	0.0	
Total %	0.0	0.0	0.0	0.7	1.9	34.2	0.0	0.2	4.4	0.0	2.9	2.9	0.0	51.0	1.9	0.0	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 14TH ST
E/W STREET: LEE HILL DR
CITY: BOULDER
COUNTY: BOULDER

File Name : 14THLEEH
Site Code : 00000005
Start Date : 11/5/2014
Page No : 2

	Southbound					LEE HILL DR Westbound					14TH ST Northbound					LEE HILL DR Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	0	0	0	3	3	3	105	0	2	110	23	0	8	23	54	0	310	9	0	319	486
Percent	0.0	0.0	0.0	100.0		2.7	95.5	0.0	1.8		42.6	0.0	14.8	42.6		0.0	97.2	2.8	0.0		
08:15 Volume	0	0	0	1	1	1	23	0	1	25	8	0	1	7	16	0	82	7	0	89	131
Peak Factor																					0.927
High Int.	07:45 AM					07:45 AM					08:15 AM					08:15 AM					
Volume	0	0	0	2	2	0	35	0	1	36	8	0	1	7	16	0	82	7	0	89	
Peak Factor					0.375					0.764					0.844					0.896	

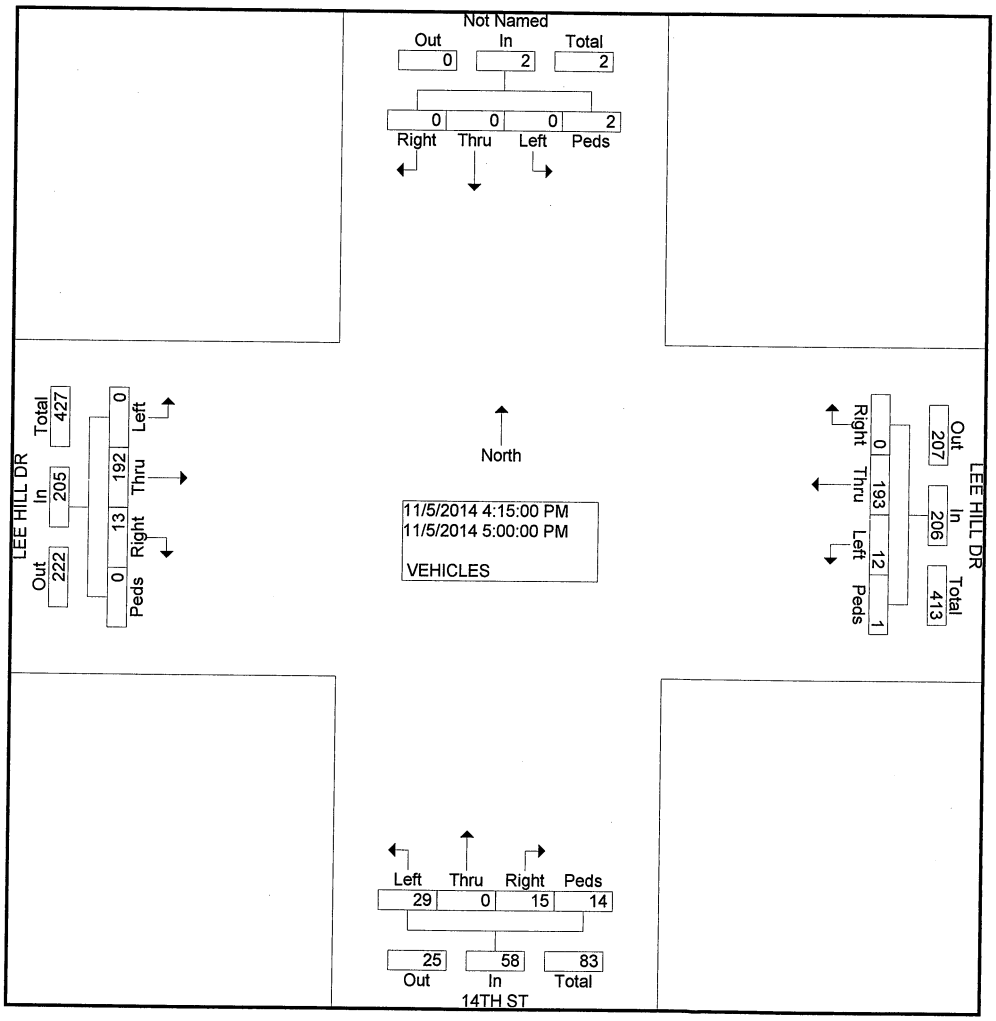


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 14TH ST
E/W STREET: LEE HILL DR
CITY: BOULDER
COUNTY: BOULDER

File Name : 14THLEEH
Site Code : 00000005
Start Date : 11/5/2014
Page No : 2

	Southbound					LEE HILL DR Westbound					14TH ST Northbound					LEE HILL DR Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	0	0	0	2	2	12	193	0	1	206	29	0	15	14	58	0	192	13	0	205	471
Percent	0.0	0.0	0.0	100.0		5.8	93.7	0.0	0.5		50.0	0.0	25.9	24.1		0.0	93.7	6.3	0.0		
04:45 Volume	0	0	0	1	1	3	54	0	1	58	6	0	2	5	13	0	64	0	0	64	136
Peak Factor																					0.866
High Int.	04:30 PM					04:45 PM					04:30 PM					04:45 PM					
Volume	0	0	0	1	1	3	54	0	1	58	11	0	5	3	19	0	64	0	0	64	
Peak Factor					0.500					0.888					0.763					0.801	



COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 14TH ST
E/W STREET: YARMOUTH AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : 14THYARM
Site Code : 00000005
Start Date : 11/12/2014
Page No : 1

Groups Printed- 1 - VEHICLES

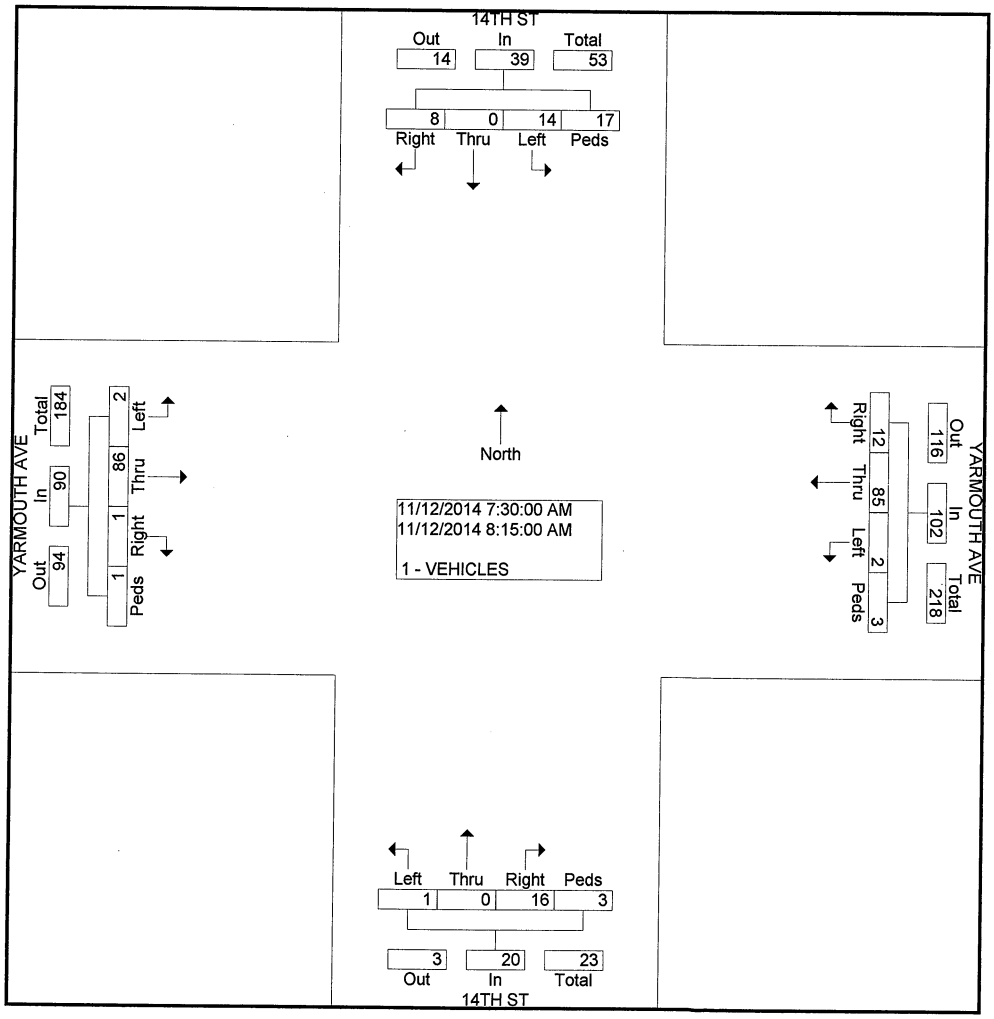
	14TH ST Southbound				YARMOUTH AVE Westbound				14TH ST Northbound				YARMOUTH AVE Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	3	0	0	0	0	12	1	0	0	0	3	0	1	7	0	0	27
07:15 AM	2	0	2	1	1	15	3	0	0	0	0	0	2	10	0	0	36
07:30 AM	5	0	1	3	1	15	3	0	0	0	5	1	2	11	0	1	48
07:45 AM	1	0	1	5	0	25	5	0	1	0	5	0	0	21	1	0	65
Total	11	0	4	9	2	67	12	0	1	0	13	1	5	49	1	1	176
08:00 AM	4	0	5	5	1	28	2	2	0	0	3	2	0	21	0	0	73
08:15 AM	4	0	1	4	0	17	2	1	0	0	3	0	0	33	0	0	65
08:30 AM	3	0	2	1	2	18	0	2	0	0	6	2	2	28	1	1	68
08:45 AM	5	0	5	2	1	22	7	0	0	0	2	0	2	29	0	0	75
Total	16	0	13	12	4	85	11	5	0	0	14	4	4	111	1	1	281
04:00 PM	6	0	3	5	3	40	9	2	0	0	4	1	2	46	3	0	124
04:15 PM	3	0	4	6	4	38	2	0	1	0	1	2	3	35	1	0	100
04:30 PM	8	2	8	1	3	38	3	0	0	0	2	4	0	24	0	0	93
04:45 PM	9	0	3	12	4	41	5	1	0	0	3	1	2	42	1	0	124
Total	26	2	18	24	14	157	19	3	1	0	10	8	7	147	5	0	441
05:00 PM	11	0	2	3	3	26	8	0	0	0	6	1	2	34	0	0	96
05:15 PM	6	0	3	3	3	21	5	0	0	0	3	2	3	25	0	0	74
05:30 PM	6	0	1	2	6	40	3	2	0	0	4	0	3	20	0	0	87
05:45 PM	2	0	0	4	7	23	3	0	1	0	0	0	4	21	0	0	65
Total	25	0	6	12	19	110	19	2	1	0	13	3	12	100	0	0	322
Grand Total	78	2	41	57	39	419	61	10	3	0	50	16	28	407	7	2	1220
Apprch %	43.8	1.1	23.0	32.0	7.4	79.2	11.5	1.9	4.3	0.0	72.5	23.2	6.3	91.7	1.6	0.5	
Total %	6.4	0.2	3.4	4.7	3.2	34.3	5.0	0.8	0.2	0.0	4.1	1.3	2.3	33.4	0.6	0.2	

COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 14TH ST
E/W STREET: YARMOUTH AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : 14THYARM
Site Code : 00000005
Start Date : 11/12/2014
Page No : 2

	14TH ST Southbound					YARMOUTH AVE Westbound					14TH ST Northbound					YARMOUTH AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:30 AM to 08:15 AM - Peak 1 of 1																					
Intersection	07:30 AM																				
Volume	14	0	8	17	39	2	85	12	3	102	1	0	16	3	20	2	86	1	1	90	251
Percent	35.9	0.0	20.5	43.6		2.0	83.3	11.8	2.9		5.0	0.0	80.0	15.0		2.2	95.6	1.1	1.1		
08:00 Volume	4	0	5	5	14	1	28	2	2	33	0	0	3	2	5	0	21	0	0	21	73
Peak Factor																					0.860
High Int.	08:00 AM					08:00 AM					07:30 AM					08:15 AM					
Volume	4	0	5	5	14	1	28	2	2	33	0	0	5	1	6	0	33	0	0	33	
Peak Factor					0.696					0.773					0.833					0.682	

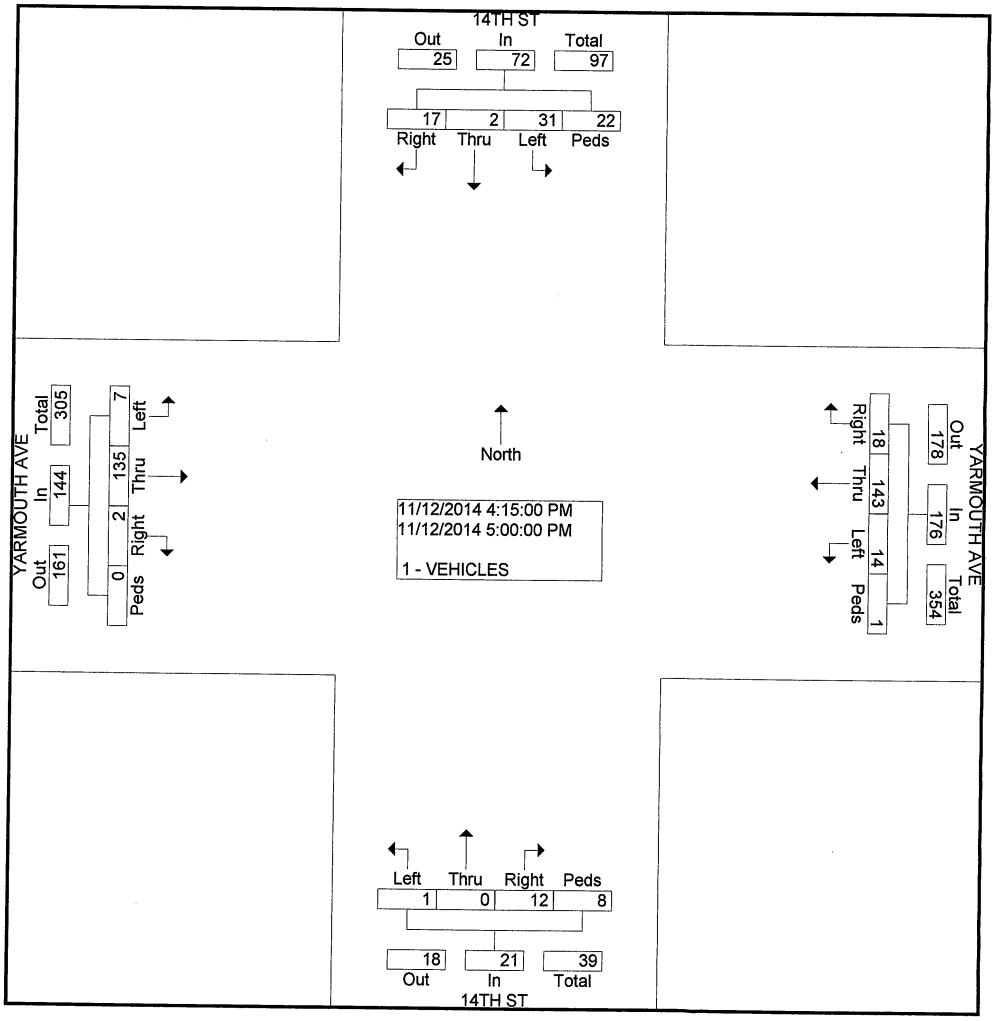


COUNTER MEASURES INC.
1889 YORK STREET
DENVER,COLORADO 80206
303-333-7409

N/S STREET: 14TH ST
E/W STREET: YARMOUTH AVE
CITY: BOULDER
COUNTY: BOULDER

File Name : 14THYARM
Site Code : 00000005
Start Date : 11/12/2014
Page No : 2

	14TH ST Southbound					YARMOUTH AVE Westbound					14TH ST Northbound					YARMOUTH AVE Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Intersection	04:15 PM																				
Volume	31	2	17	22	72	14	143	18	1	176	1	0	12	8	21	7	135	2	0	144	413
Percent	43.1	2.8	23.6	30.6		8.0	81.3	10.2	0.6		4.8	0.0	57.1	38.1		4.9	93.8	1.4	0.0		
04:45 Volume	9	0	3	12	24	4	41	5	1	51	0	0	3	1	4	2	42	1	0	45	124
Peak Factor																					0.833
High Int.	04:45 PM					04:45 PM					05:00 PM					04:45 PM					
Volume	9	0	3	12	24	4	41	5	1	51	0	0	6	1	7	2	42	1	0	45	
Peak Factor					0.750					0.863					0.750					0.800	



Location: 14TH ST S/O LEE HILL DR
City: BOULDER
County: BOULDER
Direction: NORTHBOUND-SOUTHBOUND

COUNTER MEASURES, INC
1889 YORK STREET
DENVER, CO 80206
303-333-1105

Site Code: 111714

Start Time	17-Nov-14 NB	17-Nov-14 SB	Tue NB	Tue SB	Wed NB	Wed SB	Thu NB	Thu SB	Fri NB	Fri SB	Sat NB	Sat SB	Sun NB	Sun SB	Week Average NB	Week Average SB
12:00 AM	*	*	0	0	0	0	1	1	*	*	*	*	*	*	0	0
01:00	*	*	0	0	0	0	0	0	*	*	*	*	*	*	0	0
02:00	*	*	0	0	0	0	0	0	*	*	*	*	*	*	0	0
03:00	*	*	0	1	3	3	0	0	*	*	*	*	*	*	1	1
04:00	*	*	0	1	1	2	0	1	*	*	*	*	*	*	0	1
05:00	*	*	0	1	1	2	2	3	*	*	*	*	*	*	1	2
06:00	*	*	13	12	7	5	8	11	*	*	*	*	*	*	9	9
07:00	*	*	24	31	38	36	**30**	29	*	*	*	*	*	*	31	32
08:00	*	*	**32**	32	**40**	**38**	24	30	*	*	*	*	*	*	**32**	**33**
09:00	*	*	24	**34**	29	34	24	30	*	*	*	*	*	*	26	33
10:00	*	*	30	32	22	22	14	23	*	*	*	*	*	*	22	26
11:00	*	*	28	30	26	24	26	**31**	*	*	*	*	*	*	27	28
12:00 PM	*	*	32	34	24	22	27	26	*	*	*	*	*	*	28	27
01:00	*	*	20	25	29	34	18	19	*	*	*	*	*	*	22	26
02:00	*	*	26	24	24	28	29	31	*	*	*	*	*	*	26	28
03:00	*	*	39	36	30	32	26	28	*	*	*	*	*	*	32	32
04:00	*	*	36	38	28	28	**40**	**42**	*	*	*	*	*	*	35	36
05:00	*	*	**42**	**46**	**44**	**48**	34	34	*	*	*	*	*	*	**40**	**43**
06:00	*	*	22	20	24	24	30	28	*	*	*	*	*	*	25	24
07:00	*	*	9	10	13	21	14	13	*	*	*	*	*	*	12	15
08:00	*	*	11	13	9	11	10	8	*	*	*	*	*	*	10	11
09:00	*	*	5	6	4	8	11	14	*	*	*	*	*	*	7	9
10:00	*	*	2	3	2	5	4	4	*	*	*	*	*	*	3	4
11:00	*	*	0	0	2	3	1	1	*	*	*	*	*	*	1	1
Lane	0	0	395	429	400	430	373	407	0	0	0	0	0	0	390	421
Day	0		824		830		780		0		0		0		811	
AM Peak	-	-	08:00	09:00	08:00	08:00	07:00	11:00	-	-	-	-	-	-	08:00	08:00
Vol.	-	-	32	34	40	38	30	31	-	-	-	-	-	-	32	33
PM Peak	-	-	17:00	17:00	17:00	17:00	16:00	16:00	-	-	-	-	-	-	17:00	17:00
Vol.	-	-	42	46	44	48	40	42	-	-	-	-	-	-	40	43

Comb. Total	0	824	830	780	0	0	0	811

ADT ADT 811 AADT 811

Site Code: 111705

Location: 14TH ST N/O YARMOUTH AVE
City: BOULDER
County: BOULDER
Direction: NORTHBOUND-SOUTHBOUND

COUNTER MEASURES, INC
1889 YORK STREET
DENVER, CO 80206
303-333-1105

Start	17-Nov-14		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	0	0	0	0	1	1	*	*	*	*	*	*	0	0
01:00	*	*	2	1	0	0	2	2	*	*	*	*	*	*	1	1
02:00	*	*	0	0	0	0	0	0	*	*	*	*	*	*	0	0
03:00	*	*	0	0	0	0	0	0	*	*	*	*	*	*	0	0
04:00	*	*	4	4	3	3	2	2	*	*	*	*	*	*	3	3
05:00	*	*	6	7	2	2	5	5	*	*	*	*	*	*	4	5
06:00	*	*	14	12	11	14	12	12	*	*	*	*	*	*	12	13
07:00	*	*	56	57	64	67	52	50	*	*	*	*	*	*	57	58
08:00	*	*	**70**	**63**	**66**	**70**	**74**	72	*	*	*	*	*	*	**70**	**68**
09:00	*	*	49	44	56	58	54	45	*	*	*	*	*	*	53	49
10:00	*	*	60	62	46	50	66	**74**	*	*	*	*	*	*	57	62
11:00	*	*	52	53	54	60	56	65	*	*	*	*	*	*	54	59
12:00 PM	*	*	59	64	56	59	66	66	*	*	*	*	*	*	60	63
01:00	*	*	52	62	61	64	66	66	*	*	*	*	*	*	60	64
02:00	*	*	47	56	58	67	60	58	*	*	*	*	*	*	55	60
03:00	*	*	**72**	78	61	72	55	53	*	*	*	*	*	*	63	68
04:00	*	*	57	66	60	74	**84**	**95**	*	*	*	*	*	*	67	78
05:00	*	*	72	**84**	**86**	**99**	68	68	*	*	*	*	*	*	**75**	**84**
06:00	*	*	54	60	42	48	38	40	*	*	*	*	*	*	45	49
07:00	*	*	34	39	41	44	28	28	*	*	*	*	*	*	34	37
08:00	*	*	19	18	23	24	20	21	*	*	*	*	*	*	21	21
09:00	*	*	20	22	26	24	20	22	*	*	*	*	*	*	22	23
10:00	*	*	3	3	10	10	4	5	*	*	*	*	*	*	6	6
11:00	*	*	5	4	8	8	4	4	*	*	*	*	*	*	6	5
Lane	0	0	807	859	834	917	837	854	0	0	0	0	0	0	825	876
Day	0		1666		1751		1691		0		0		0		1701	
AM Peak	-	-	08:00	08:00	08:00	08:00	08:00	10:00	-	-	-	-	-	-	08:00	08:00
Vol.	-	-	70	63	66	70	74	74	-	-	-	-	-	-	70	68
PM Peak	-	-	15:00	17:00	17:00	17:00	16:00	16:00	-	-	-	-	-	-	17:00	17:00
Vol.	-	-	72	84	86	99	84	95	-	-	-	-	-	-	75	84

Comb. Total	0	1666	1751	1691	0	0	0	1701

ADT ADT 1,703 AADT 1,703

Site Code: 111712

Location: YELLOW PINE DR E/O BROADWAY ST
City: BOULDER
County: BOULDER
Direction: LARIMER

COUNTER MEASURES, INC
1889 YORK STREET
DENVER, CO 80206
303-333-1105

Start	17-Nov-14		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	2	0	0	0	2	0	*	*	*	*	*	*	1	0
01:00	*	*	2	2	0	0	1	0	*	*	*	*	*	*	1	1
02:00	*	*	0	0	0	0	0	0	*	*	*	*	*	*	0	0
03:00	*	*	0	0	0	0	0	0	*	*	*	*	*	*	0	0
04:00	*	*	2	2	2	4	7	4	*	*	*	*	*	*	4	3
05:00	*	*	4	2	6	6	8	8	*	*	*	*	*	*	6	5
06:00	*	*	11	10	16	16	6	10	*	*	*	*	*	*	11	12
07:00	*	*	36	24	30	34	24	21	*	*	*	*	*	*	30	26
08:00	*	*	37	33	51	46	**65**	**59**	*	*	*	*	*	*	51	46
09:00	*	*	**68**	55	**60**	**56**	59	58	*	*	*	*	*	*	**62**	**56**
10:00	*	*	56	**62**	54	50	62	55	*	*	*	*	*	*	57	56
11:00	*	*	28	32	54	56	34	26	*	*	*	*	*	*	39	38
12:00 PM	*	*	49	51	56	62	44	39	*	*	*	*	*	*	50	51
01:00	*	*	**50**	**56**	52	50	45	32	*	*	*	*	*	*	49	46
02:00	*	*	42	44	31	32	40	40	*	*	*	*	*	*	38	39
03:00	*	*	45	48	38	42	48	52	*	*	*	*	*	*	44	47
04:00	*	*	48	45	44	47	42	50	*	*	*	*	*	*	45	47
05:00	*	*	48	49	**71**	**74**	**63**	**66**	*	*	*	*	*	*	**61**	**63**
06:00	*	*	44	44	42	30	58	55	*	*	*	*	*	*	48	43
07:00	*	*	27	24	28	20	36	37	*	*	*	*	*	*	30	27
08:00	*	*	20	17	20	14	20	22	*	*	*	*	*	*	20	18
09:00	*	*	12	9	16	10	16	17	*	*	*	*	*	*	15	12
10:00	*	*	4	2	2	1	14	11	*	*	*	*	*	*	7	5
11:00	*	*	0	0	2	2	1	1	*	*	*	*	*	*	1	1
Lane	0	0	635	611	675	652	695	663	0	0	0	0	0	0	670	642
Day	0		1246		1327		1358		0		0		0		1312	
AM Peak	-	-	09:00	10:00	09:00	09:00	08:00	08:00	-	-	-	-	-	-	09:00	09:00
Vol.	-	-	68	62	60	56	65	59	-	-	-	-	-	-	62	56
PM Peak	-	-	13:00	13:00	17:00	17:00	17:00	17:00	-	-	-	-	-	-	17:00	17:00
Vol.	-	-	50	56	71	74	63	66	-	-	-	-	-	-	61	63

Comb. Total	0	1246	1327	1358	0	0	0	1312

ADT ADT 1,310 AADT 1,310

Trip Generation References

Table 5.22
Pass-By Trips and Diverted Linked Trips
Weekday, p.m. Peak Period

Land Use 932—High-Turnover (Sit-Down) Restaurant

SEATS	SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	ADJ. STREET PEAK HOUR VOLUME	SOURCE
n/a	5.8	Orlando, FL	1992	150	2:00–6:00 p.m.	—	68	—	32	n/a	TPD Inc.
n/a	5	Casselberry, FL	1992	65	2:00–6:00 p.m.	—	42	—	58	n/a	TPD Inc.
168	5.3	Louisville area, KY	1993	24	4:00–6:00 p.m.	37	—	13	50	1,615	Barton-Aschman Assoc.
169	2.9	Louisville area, KY	1993	41	4:00–6:00 p.m.	27	—	36	37	3,935	Barton-Aschman Assoc.
150	3.1	Louisville area, KY	1993	21	4:00–6:00 p.m.	29	—	33	38	2,580	Barton-Aschman Assoc.
250	7.1	New Albany, IN	1993	n/a	4:00–6:00 p.m.	23	—	54	23	1,565	Barton-Aschman Assoc.
n/a	8	Kissimmee, FL	1995	664	2:00–6:00 p.m.	39	—	21	40	n/a	TPD Inc.
n/a	11.4	Orlando, FL	1996	267	2:00–6:00 p.m.	43	—	19	38	n/a	TPD Inc.
n/a	11.5	Orlando, FL	1996	317	2:00–6:00 p.m.	51	—	20	29	n/a	TPD Inc.
n/a	4.6	Orlando, FL	1992	276	2:00–6:00 p.m.	—	37	—	63	n/a	TPD Inc.
n/a	5.7	Orlando, FL	1994	308	2:00–6:00 p.m.	—	43	—	57	n/a	TPD Inc.
n/a	6.2	Orlando, FL	1995	521	2:00–6:00 p.m.	43	—	11	46	n/a	TPD Inc.

Average Pass-By Trip Percentage: 43

Table 5.25
Pass-By Trips and Diverted Linked Trips
Weekday

Land Use 935—Fast-Food Restaurant with Drive-Through Window and No Indoor Seating (Specialized Land Use: Coffee/Espresso Stand)

SIZE (1,000 SQ. FT. GFA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	SOURCE
0.1	Vancouver, WA	Nov. 1997	69	6:00 a.m.–6:00 p.m.	—	17	—	83	Kittelson & Associates Inc.

Table 5.26
Pass-By Trips and Diverted Linked Trips
Weekday

Land Use 935—Fast-Food Restaurant with Drive-Through Window and No Indoor Seating (Specialized Land Use: Coffee/Espresso Stand)

EMPLOYEES	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PRIMARY TRIP (%)	NON-PASS-BY TRIP (%)	DIVERTED LINKED TRIP (%)	PASS-BY TRIP (%)	SOURCE
1	Vancouver, WA	Nov. 1997	70	6:00 a.m.–6:00 p.m.	—	17	—	83	KIttelson & Associates Inc.
1	Woodburn, OR	Feb. 1998	109	6:00 a.m.–6:00 p.m.	—	5	—	95	Kittelson & Associates Inc.
1	Vancouver, WA	Feb. 1998	83	6:00 a.m.–1:00 p.m.	—	11	—	89	Kittelson & Associates Inc.

Average Pass-By Trip Percentage: 89

TRIP GENERATION OF COFFEE SHOPS WITH COMBINATION DRIVE-THROUGH AND SIT-DOWN FACILITIES

By the Technical Committee of the Colorado-Wyoming Section of ITE[1]

Abstract. A recent trend in the development of coffee shops incorporates a drive-through facility in conjunction with the traditional sit-down coffee house. A new quandary enfolds when transportation and traffic professionals plan new stores and search for the proper category of trip generation estimates to fit this type of development. Should one use "Fast-Food Restaurant with Drive-Through Window", a category which contains a sufficient sample of data necessary for reliability? Or, should an engineer use "Coffee/Bread/Sandwich Shop", which appears as a subcategory of Fast-Food Restaurant with Drive-Through Window, and for which only one study has been performed?

Many people, ranging from engineers and planners to politicians and the general public, rely upon trip generation data and their resulting traffic impact studies. This diverse group of personalities, each with its own unique perspective, would benefit from more reliable estimates resulting from further data collection pertaining specifically to the new breed of coffee shop with drive-through facility.

The purpose of this study entails collection of new data on the trip generation characteristics of coffee shops with a combination drive-through and sit-down facilities. Furthermore, this study ties together two recent data collection efforts. This paper will compare and analyze subtle differences in the results, differentiating between realistic trends versus mere anomalies. The measured trip generation rates for coffee houses with drive-through facilities are presented for use by the Transportation Professional. In conjunction with this study, data was recently submitted to ITE for inclusion in a future edition of *Trip Generation*[2].

BACKGROUND

In March of 2006, Krager and Associates[3] completed a study of six Starbucks coffee houses located along the Front Range urban areas of Colorado. All six sites included a combination of drive-through and sit-down facilities. At that time, the Technical Committee of the Colorado/Wyoming Section of ITE (CO/WY ITE) received multiple inquiries concerning a need for trip generation data of coffee shops with drive-through facilities. Evidencing the broad need for data, requests originated from professionals in both the private and public sectors. Following completion of their study, Krager and Associates

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[1] John C. La Sala, PE, PTOE, City and County of Denver; Karl P. Packer, PE, PTOE, LSC Transportation Consultants; William A. Hange, PE, PTOE, City of Loveland; Sean Kellar, PE, City of Loveland; Joseph Cordts, PE, City and County of Denver; Kathleen Krager, PE, PTOE, Krager and Associates; Jessica L. Slaton, PE, PTOE, Carter and Burgess; David R. Woolfall, PE, PTOE, Carter and Burgess; Bill Andrews, City of Greeley; Curtis D. Rowe, PE, PTOE, Kimley-Horn; Pepper Whittlef, PE, City of Pueblo

[2] *Trip Generation*, 7th Edition. Institute of Transportation Engineers, 2003.

[3] Krager and Associates, Inc., Starbucks Coffee House, Study of Trip Generation Rates, Colorado Stores with both Walk-in and Drive-Through Facilities. March 2006.

generously shared their study with the Technical Committee of CO/WY ITE, who built upon the data collection efforts by Krager.

In addition to the study by Krager, the Fall 2005 edition of INCITER, the newsletter of the North Central Section of ITE, contains an article by Mike Spack and Brian Bergquist[4] which summarizes trip generation rates for eight coffee shops in metropolitan Minneapolis-St. Paul, Minnesota. The study by the North Central Section counted four sites each of shops with and without drive-through windows. All eight sites contained sit-down facilities. As shown below in Table 1, for shops with drive-through windows, the trip generation rates per 1,000 square feet of gross floor area correlated well between the two studies.

Study	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
INCITE, Minnesota, 2005	65	66	131	18	17	35
Krager, Colorado, 2006	59	59	118	18	20	38

Table 1: From Previous Studies, Peak Hour Trip Generation Rates per 1,000 SF GFA for Coffee Shops with Combination Drive-Through and Sit-Down Facilities. Peak hours reference peak hour of adjacent street traffic.

TRIP GENERATION MANUAL

Updates to the ITE *Trip Generation*[5] manual occur on a cycle of approximately every five years, with the most recent revision (7th edition) in 2003. When faced with a need for data on coffee shops, a transportation professional would currently find limited information. Within the category of Fast-Food Restaurant without Drive-Through Window (Land Use # 933), one specialized land use contains two studies for Coffee Shop. Under the category of Fast-Food Restaurant with Drive-Through Window (Land Use # 934), one specialized and very broad category of Coffee/Bread/Sandwich Shop is based upon only one study. Under land use category # 935 (Fast Food Restaurant with Drive-Through Window and No Indoor Seating), there exists a specialized listing of Coffee/Espresso Stand which also contains only one study.

When attempting to analyze a combination drive-through/sit-down coffee shop, one could possibly choose between the following categories from *Trip Generation*: Coffee/Bread/Sandwich Shop or Fast-Food Restaurant with Drive-Through Window. The first category contains only one study, presumably conducted at a combination coffee/bread/sandwich shop. Therefore, utilization of this specialized land use for a drive-through/sit-down coffee shop would be conducted with caution. Perhaps, the closest land-use category would be Fast-Food Restaurant with Drive-Through Window (Land Use # 934). However, since coffee shops typically generate more morning trips than fast food restaurants, the selection of Land Use # 934 could produce skewed results in a traffic study. Krager[6] notes that inaccurate estimates have contributed to operational or circulation problems when a site is built. Also, questionable data has occasionally caused

[4] Spack, Mike and Bergquist, Brian, Coffee Shop Trip Generation Study. INCITER, Volume 22, Number 4, Fall 2005.
[5] Ibid, *Trip Generation*, 7th Edition.
[6] Ibid, Krager and Associates, Inc.

delays in access permitting where jurisdictions require more refined data. Table 2 summarizes the data available from *Trip Generation* for similar land uses.

ITE Land Use	Daily Trips (# Studies)	AM Peak Trips	PM Peak Trips
Fast-Food Restaurant without Drive-Through Window	716 (1)	44 (2)	26 (4)
Coffee Shop	No data	73 (2)	29 (2)
Fast-Food Restaurant with Drive-Through Window	496 (21)	53 (59)	35 (110)
Coffee/Bread/Sandwich Shop	No data	183 (1)	39 (1)

Table 2: Similar land uses from ITE *Trip Generation* manual, 7th edition, showing total trips generated per 1,000 SF GFA. Number of studies are shown in parentheses.

METHODOLOGY

Because of the rapidly growing trend of combination drive-through/sit-down coffee shops, it was decided to specifically focus our study on this land use. Also, since both the Krager and INCITE studies counted land uses of this type, a more suitable frame of reference was available. Since the Technical Committee was given access to the data from the Krager study and since both parties were interested in expanding upon this study, it was agreed to use similar methodology. Measurement of additional sites would provide a validity test of the privately performed study.

All traffic entering and exiting the sites were measured during weekdays (Tuesday, Wednesday or Thursday). At a minimum, all sites were counted during the morning peak period between 7:00 and 9:00 am. Evening peak counts were collected between the hours of 4:00 and 6:00 pm. Since the peak hour of adjacent street traffic typically occurs during those hours, unless a 24-hour count of the access driveways was conducted, it was assumed that the one hour peak obtained corresponded with the peak hour of adjacent street traffic. If a 24-hour count of the site accesses was obtained, then morning and evening peak hours of the generator could be determined. The Krager study obtained counts through video taping all accesses and drive-through lanes. With the exception of one site at which a 24-hour tube count was conducted, the Technical Committee manually counted all vehicles entering and exiting the site, also differentiating between sit-down and drive-through trips. As a result, both studies reported percentage of drive-through trips in addition to entering and exiting trips.

Since the Krager study restricted their analysis to only the Starbucks brand of coffee shop, the Technical Committee hoped to diversify the array of brands. However, within the category of combination drive-through/sit-down facilities, no other brand was found along the Front Range of Colorado. Perhaps, more diverse branding exists in other regions, but other than one count taken in Chicago, Illinois, we did not have the resources readily available to scout for shops outside of our region.

DISCUSSION OF DATA AND FUTURE NEEDS

Tables 3 and 4 summarize the trip generation data for the twelve shops included in this study. Table 3 shows the location and characteristics for each site, while Table 4 summarizes the trip generation data. In Table 3, the final column differentiates between stores located in-line with other facilities such as a strip-mall configuration, versus free-standing (stand-alone) coffee shops. It should be noted that traffic was properly differentiated in all cases with counts consisting solely of trips to and from the subject site. As seen from Table 3, only site # 9 is located outside of Colorado. All counts were conducted in either urban areas outside the central business district (non-CBD), or in suburban areas. For this study, no counts were taken at stores located in rural areas. Counts from six sites were taken from the Krager study while six more sites were counted by the CO/WY ITE Technical Committee.

Tables 3 and 4 also represent the data which was submitted to ITE for a future edition of *Trip Generation*. The averages shown at the bottom of Table 4 are weighted average trip generation rates, calculated as specified by ITE in the *Trip Generation Handbook, 2nd Edition.*[7] The handbook states that the standard deviation should be less than or equal to 110 percent of the weighted average rate. Per 1,000 square feet of gross floor area, weighted average rates equal 113 total AM peak trips with a standard deviation of 23 percent, and 35 total PM peak trips with a standard deviation of 33 percent. Additionally, for the two sites where 24-hour counts were conducted (sites number 1 and 10), AM and PM peak hours of the generator were submitted along with the 24-hour counts. Since valid data was available for only two sites, it is probably not considered reliable for the purposes of trip generation estimates. When less than six data points exist, the *Trip Generation Handbook* recommends usage of data with caution.

#	Street(s) or Address	City (Colorado unless noted otherwise)	Square Footage	In-line (IL) or Free Standing (FS)
1	Kipling/Florida	Lakewood	2,000	FS
2	Parker/Peoria	Aurora	1,916	FS
3	Leetsdale/Holly	Denver	1,798	FS
4	4465 Centennial Blvd.	Colorado Springs	2,616	FS
5	Pearl/84th	Thornton	1,517	IL
6	Monaco/Evans	Denver	1,465	IL
7	Wildcat/Fairview	Highlands Ranch	1,750	IL
8	Sheridan/24th	Edgewater	1,520	IL
9	7101 S. Stony Island	Chicago, IL.	2,500	FS
10	Federal/44th	Denver	1,197	FS
11	1510 W. Eisenhower Blvd.	Loveland	2,646	FS
12	4320 9th St.	Greeley	1,500	IL

Table 3: Sites included in this study.

[7] *Trip Generation Handbook*, 2nd Edition. Institute of Transportation Engineers, 2004.

Site #	Square Footage	Trip Generation Rate per 1,000 SF GFA							
		AM Peak Hour of Adjacent Street				PM Peak Hour of Adjacent Street			
		Enter	Exit	Total	% DT	Enter	Exit	Total	% DT
1	2,000	60	58	118	28	23	23	46	
2	1,916	63	56	120	28				
3	1,798	73	81	154	26				
4	2,616	44	49	92	44	16	20	37	51
5	1,517	40	42	81	81	11	13	24	73
6	1,465	81	76	158	61	18	25	43	64
7	1,750	77	70	147	66	17	17	34	50
8	1,520	73	73	146	63	18	18	36	54
9	2,500	33	28	60	46	14	14	28	51
10	1,197	50	67	117		22	14	36	
11	2,646	37	36	73	73				
12	1,500	83	81	164	62				
Average	**1,869 SF**	**56.81**	**56.63**	**113.44**	**50.8%**	**17.30**	**18.13**	**35.43**	**55.5%**

Table 4: Peak Hour Trip Generation Rates per 1,000 SF. Peak hours reference peak hour of adjacent street traffic. All data rounded off to the nearest integer. Blank cells designate an uncounted value.

Table 5 pools together all referenced data in order to provide one convenient reference. It compares the data of this study with that of the previous studies of the identical land use of combination sit-down/drive-through coffee shops. It also shows the data for similar land uses from the most recent edition of *Trip Generation*.

Source of Data (Year reported)	Average Square Footage	Land Use	AM Peak Trips (# studies)	PM Peak Trips (# studies)
ITE *Trip Generation* (2003)		Fast-Food Restaurant without Drive-Through Window	44 (2)	26 (4)
ITE *Trip Generation*		Coffee Shop	73 (2)	29 (2)
ITE *Trip Generation*		Fast-Food Restaurant with Drive-Through Window	53 (59)	35 (110)
ITE *Trip Generation*		Coffee/Bread/Sandwich Shop	183 (1)	39 (1)
INCITE, Minnesota (2005)	1,675	Coffee Shop with Sit-Down and Drive-Through Facilities	131 (4)	35 (4)
Krager, Colorado (2006)	1,885		118 (6)	38 (6)
CO/WY ITE Technical Committee (2007)	1,852		109 (6)	33 (6)

Table 5: Data comparison of Peak Hour Trip Generation Rates per 1,000 SF. All values rounded off to the nearest integer.

Table 5 clearly shows the close correlation between counts conducted at the identical land use of Coffee Shop with Sit-Down and Drive-Through Facilities. It also can be clearly seen that the existing data from *Trip Generation* differs substantially from the studies conducted solely for Coffee Shop with Sit-Down and Drive-Through Facilities. Although the independent variable is identified as square footage of gross floor area (GFA), perhaps the presence of a store rather than its size more accurately determines trip generation characteristics. Table 6 shows what happens when the factor of square footage is removed from the trip generation values.

Source of Data (Year reported)	Per store, AM Peak Trips	Per store, PM Peak Trips
INCITE, Minnesota (2005)	219	57
Krager, Colorado (2006)	223	72
CO/WY ITE Technical Committee (2007)	201	57

Table 6: Data comparison of Peak Hour Trip Generation rates Per Store. All values rounded off to the nearest integer.

During the AM peak, there is little difference in variation of total trips from the average of three studies: 6.5% for trips per 1,000 square feet, versus 6.1% for trips per store. During the PM peak, the variation is clearly higher for trips per store. The statistical significance of this difference has not been analyzed. However, this bit of study shows that trip generation rates per store show no more correlation than rates per 1,000 square feet of GFA. Also, when using 1,000 square feet of GFA as the independent variable, the standard deviations of the AM and PM peak weighted average trip generation rates were well within the ITE's recommended tolerance limit of 110 percent.

If further study is conducted on an in-depth basis, perhaps the question of the most appropriate independent variable could be clearly determined. Further speculation suggested that the number of drive-through windows could have more correlation. However, at the time of this study, no sites were identified which had more than one window while also having sit-down facilities. One site was identified with two drive-up windows, but without accommodation for sit-down patrons. If a future trend leads to development of a significant quantity of sit-down shops with multiple windows, then number of drive-up windows could be analyzed as a potential independent variable.

One element not studied in this effort was the percentage of pass-by trips. As evidenced by the tables presented in this report, coffee shops tend to attract a high percentage of morning peak hour trips. Since the nature of coffee shop patrons is such that they stop for coffee en route to work, it is likely that a large number of trips could be pass-by. Table 5.26 of the *Trip Generation Handbook, 2nd Edition*[8] depicts data for only three espresso stands (drive-through window with no indoor seating) and shows an average pass-by percentage of 89%. Table 5.24 of the same publication shows pass-by percentages measured for 18 fast-food restaurants with drive-through window, with an average of 50%. Although one could speculate that the pass-by percentage for coffee shops with drive-through/sit-down facilities is likely at least as high as that of fast-food restaurants with

[8]Ibid, *Trip Generation Handbook*, 2nd Edition.

drive-through, future study of pass-by trips at coffee shops is needed in order to identify the appropriate percentage. Data needs for pass-by trips exist for all varieties of coffee shops with sit-down and/or drive-through facilities.

Another aspect of facilities with drive-through facilities which interests transportation professionals is queuing. Although queuing was not measured as a part of this study, it could be another area of future research. To a degree, queuing can tend to be self-regulating if drivers sense that spillback onto the street is occurring. In that case a driver may instead park in the lot and become a walk-in patron. Other times, the driver may visit a different facility rather than risk waiting in a long queue. However, in cases where a site is inadequately designed, spillback onto the street can occur, thus hindering traffic flow. In order to address this matter, it is suggested that the design incorporate sufficient parking in order to handle potential overflow situations.

CONCLUSIONS

- The need exists for trip generation data at all types of coffee shops, involving all combinations of drive-through and/or sit-down facilities.
- The study presented in this report focuses specifically upon coffee shops with a combination of both sit-down and drive-through facilities.
- Data was reported per 1,000 square feet of gross floor area (GFA), although further study is needed in order to determine the most suitable independent variable. At this time, square footage of GFA was determined to be the most likely candidate.
- Data from this study compares closely with that of two other studies of the same land use. Using 1,000 square feet of GFA as the independent variable, AM peak hour total trips between the three studies vary by no more than 6.5% from the average. PM peak hour trips also vary by no more than 6.5% from the average.
- Percentage of drive-through trips for both morning and evening peak periods are relatively consistent: 51% during the AM peak, with 56% during the PM peak hour.
- Further study is needed in order to determine the percentage of pass-by trips at coffee shops of all types of drive-through/sit-down combinations. Additionally, more study could be conducted in order to measure queuing at these facilities.
- **This study resulted in data submission to ITE for a future edition of Trip Generation. The data submitted to ITE is shown in Table 4. Traffic counts from twelve sites were submitted with an average square footage of 1,869. Trip generation rates were reported as an average per 1,000 square feet of GFA for both the AM and PM weekday peak hours of adjacent street traffic. Rounding off to the nearest integer, for the morning peak hour, the average trip generation rate of twelve sites is 113 total trips with 50% entering and 50% exiting trips and a standard deviation of 23 percent. For the evening peak hour, the average rate of eight sites is 35 total trips with 49% entering and 51% exiting trips and a standard deviation of 33 percent.**

Intersection Capacity Worksheets: 2014 Existing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	244	197	42	74	11	106	229	33	42	531	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1859	1583	1770	1828		1770	1827		1770	1852	
Flt Permitted		0.99	1.00	0.29	1.00		0.33	1.00		0.56	1.00	
Satd. Flow (perm)		1844	1583	540	1828		623	1827		1039	1852	
Peak-hour factor, PHF	0.81	0.81	0.81	0.96	0.96	0.96	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	11	301	243	44	77	11	125	269	39	49	625	24
RTOR Reduction (vph)	0	0	188	0	7	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	312	55	44	81	0	125	302	0	49	647	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		17.0	17.0	17.0	17.0		53.3	53.3		52.3	52.3	
Effective Green, g (s)		18.2	18.2	18.2	18.2		53.8	53.8		53.8	53.8	
Actuated g/C Ratio		0.23	0.23	0.23	0.23		0.67	0.67		0.67	0.67	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		419	360	122	415		418	1228		698	1245	
v/s Ratio Prot					0.04			0.17			c0.35	
v/s Ratio Perm		c0.17	0.03	0.08			0.20			0.05		
v/c Ratio		0.74	0.15	0.36	0.20		0.30	0.25		0.07	0.52	
Uniform Delay, d1		28.7	24.7	26.0	25.0		5.4	5.1		4.5	6.6	
Progression Factor		1.00	1.00	1.00	1.00		0.81	0.81		1.00	1.00	
Incremental Delay, d2		6.2	0.1	0.7	0.1		1.8	0.5		0.2	1.6	
Delay (s)		34.9	24.8	26.7	25.1		6.1	4.6		4.7	8.2	
Level of Service		C	C	C	C		A	A		A	A	
Approach Delay (s)		30.5			25.6			5.1			7.9	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	14	6	345	19	14	769
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.84	0.84	0.96	0.96
Hourly flow rate (vph)	17	7	411	23	15	801
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked	0.85					
vC, conflicting volume	1252	422			433	
vC1, stage 1 conf vol	422					
vC2, stage 2 conf vol	830					
vCu, unblocked vol	1208	422			433	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	99			99	
cM capacity (veh/h)	366	632			1126	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	24	433	15	801
Volume Left	17	0	15	0
Volume Right	7	23	0	0
cSH	419	1700	1126	1700
Volume to Capacity	0.06	0.25	0.01	0.47
Queue Length 95th (ft)	5	0	1	0
Control Delay (s)	14.1	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	14.1	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	65	47	317	17	47	736
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.84	0.84	0.96	0.96
Hourly flow rate (vph)	78	57	377	20	49	767
Pedestrians	4		20			30
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		2			3
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1276	422			402	
vC1, stage 1 conf vol	392					
vC2, stage 2 conf vol	885					
vCu, unblocked vol	1276	422			402	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	91			96	
cM capacity (veh/h)	350	614			1153	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	135	398	49	767
Volume Left	78	0	49	0
Volume Right	57	20	0	0
cSH	602	1700	1153	1700
Volume to Capacity	0.22	0.23	0.04	0.45
Queue Length 95th (ft)	21	0	3	0
Control Delay (s)	15.4	0.0	8.3	0.0
Lane LOS	C		A	
Approach Delay (s)	15.4	0.0	0.5	
Approach LOS	C			

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	310	9	3	105	23	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.77	0.77	0.71	0.71
Hourly flow rate (vph)	344	10	4	136	32	11
Pedestrians	3			23		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			2		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			354		497	372
vC1, stage 1 conf vol					349	
vC2, stage 2 conf vol					147	
vCu, unblocked vol			182		346	203
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	98
cM capacity (veh/h)			1211		694	714

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	354	140	44
Volume Left	0	4	32
Volume Right	10	0	11
cSH	1700	1211	699
Volume to Capacity	0.21	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.2	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.5
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	86	1	2	85	12	1	0	16	14	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.80	0.80	0.80	0.71	0.71	0.71	0.61	0.61	0.61
Hourly flow rate (vph)	3	128	1	2	106	15	1	0	23	23	0	13
Pedestrians		17			3			1			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	124			131			285	265	133	282	259	134
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	124			131			285	265	133	282	259	134
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	96	100	99
cM capacity (veh/h)	1459			1453			644	636	913	647	641	900

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	133	124	24	36
Volume Left	3	2	1	23
Volume Right	1	15	23	13
cSH	1459	1453	891	720
Volume to Capacity	0.00	0.00	0.03	0.05
Queue Length 95th (ft)	0	0	2	4
Control Delay (s)	0.2	0.2	9.2	10.3
Lane LOS	A	A	A	B
Approach Delay (s)	0.2	0.2	9.2	10.3
Approach LOS			A	B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	329	0	0	0	112	167	0	0	493	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.25	0.25	0.25	0.78	0.78	0.78	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	366	0	0	0	144	214	0	0	548	11
Pedestrians											1	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1050	1049	548	1049	1049	215	548			214		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1050	1049	548	1049	1049	215	548			214		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	32	100	100	100	86			100		
cM capacity (veh/h)	183	195	536	58	195	824	1022			1356		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	371	0	144	214	0	0	548	11
Volume Left	6	0	144	0	0	0	0	0
Volume Right	366	0	0	0	0	0	0	11
cSH	544	1700	1022	1700	1700	1700	1700	1700
Volume to Capacity	0.68	0.00	0.14	0.13	0.00	0.00	0.32	0.01
Queue Length 95th (ft)	130	0	12	0	0	0	0	0
Control Delay (s)	24.9	0.0	9.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	A	A					
Approach Delay (s)	24.9	0.0	3.7			0.0		
Approach LOS	C	A						

Intersection Summary				
Average Delay	8.2			
Intersection Capacity Utilization	53.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	19	106	130	32	199	26	228	496	50	68	250	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00		0.99	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1847	1533	1752	1824		1751	1832		1762	1827	
Flt Permitted		0.92	1.00	0.68	1.00		0.55	1.00		0.34	1.00	
Satd. Flow (perm)		1716	1533	1246	1824		1005	1832		627	1827	
Peak-hour factor, PHF	0.98	0.98	0.98	0.81	0.81	0.81	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	19	108	133	40	246	32	248	539	54	82	301	35
RTOR Reduction (vph)	0	0	98	0	12	0	0	6	0	0	8	0
Lane Group Flow (vph)	0	127	35	40	266	0	248	587	0	82	328	0
Confl. Peds. (#/hr)	8		8	8		8	10		7	7		10
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		10.8	10.8	10.8	10.8		24.5	24.5		23.5	23.5	
Effective Green, g (s)		12.0	12.0	12.0	12.0		25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.27	0.27	0.27	0.27		0.56	0.56		0.56	0.56	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		457	408	332	486		558	1017		348	1015	
v/s Ratio Prot					c0.15			c0.32			0.18	
v/s Ratio Perm		0.07	0.02	0.03			0.25			0.13		
v/c Ratio		0.28	0.09	0.12	0.55		0.44	0.58		0.24	0.32	
Uniform Delay, d1		13.1	12.4	12.5	14.2		5.9	6.5		5.1	5.4	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0	0.1	0.7		2.6	2.4		1.6	0.8	
Delay (s)		13.2	12.4	12.6	14.8		8.5	8.9		6.7	6.3	
Level of Service		B	B	B	B		A	A		A	A	
Approach Delay (s)		12.8			14.6			8.8			6.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	12	12	727	20	10	419
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.86	0.86	0.96	0.96	0.90	0.90
Hourly flow rate (vph)	14	14	757	21	11	466
Pedestrians			10			38
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			3
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked						
vC, conflicting volume	1265	806			778	
vC1, stage 1 conf vol	768					
vC2, stage 2 conf vol	498					
vCu, unblocked vol	1265	806			778	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			99	
cM capacity (veh/h)	391	370			839	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	28	778	11	466
Volume Left	14	0	11	0
Volume Right	14	21	0	0
cSH	380	1700	839	1700
Volume to Capacity	0.07	0.46	0.01	0.27
Queue Length 95th (ft)	6	0	1	0
Control Delay (s)	15.2	0.0	9.4	0.0
Lane LOS	C		A	
Approach Delay (s)	15.2	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	68	61	686	88	56	375
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.86	0.86	0.96	0.96	0.90	0.90
Hourly flow rate (vph)	79	71	715	92	62	417
Pedestrians	10		20			5
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	1		2			0
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1332	775			816	
vC1, stage 1 conf vol	770					
vC2, stage 2 conf vol	561					
vCu, unblocked vol	1332	775			816	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	82			92	
cM capacity (veh/h)	363	393			805	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	150	806	62	417
Volume Left	79	0	62	0
Volume Right	71	92	0	0
cSH	689	1700	805	1700
Volume to Capacity	0.22	0.47	0.08	0.25
Queue Length 95th (ft)	21	0	6	0
Control Delay (s)	17.0	0.0	9.8	0.0
Lane LOS	C		A	
Approach Delay (s)	17.0	0.0	1.3	
Approach LOS	C			

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	207	13	12	208	29	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.90	0.90	0.69	0.69
Hourly flow rate (vph)	259	16	13	231	42	22
Pedestrians	2			14		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			1		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked						
vC, conflicting volume			275		527	281
vC1, stage 1 conf vol					267	
vC2, stage 2 conf vol					260	
vCu, unblocked vol			275		527	281
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		94	97
cM capacity (veh/h)			1288		670	749

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	275	244	64
Volume Left	0	13	42
Volume Right	16	0	22
cSH	1700	1288	695
Volume to Capacity	0.16	0.01	0.09
Queue Length 95th (ft)	0	1	8
Control Delay (s)	0.0	0.5	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	10.7
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	135	2	14	143	18	1	0	12	31	2	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.88	0.88	0.88	0.54	0.54	0.54	0.69	0.69	0.69
Hourly flow rate (vph)	9	169	2	16	162	20	2	0	22	45	3	25
Pedestrians		22			8						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		2			1						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	184			171			440	403	178	423	394	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	184			171			440	403	178	423	394	196
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	97	91	99	97
cM capacity (veh/h)	1390			1406			493	526	859	516	532	829

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	180	199	24	72
Volume Left	9	16	2	45
Volume Right	2	20	22	25
cSH	1390	1406	813	593
Volume to Capacity	0.01	0.01	0.03	0.12
Queue Length 95th (ft)	0	1	2	10
Control Delay (s)	0.4	0.7	9.6	11.9
Lane LOS	A	A	A	B
Approach Delay (s)	0.4	0.7	9.6	11.9
Approach LOS			A	B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	219	0	2	1	219	470	0	0	238	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.25	0.25	0.25	0.86	0.86	0.86	0.95	0.95	0.95
Hourly flow rate (vph)	5	1	252	0	8	4	255	547	0	0	251	8
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1315	1306	252	1308	1306	548	251			547		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1315	1306	252	1308	1306	548	251			547		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	68	100	94	99	81			100		
cM capacity (veh/h)	109	129	786	78	129	536	1315			1023		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	257	12	255	547	0	0	251	8
Volume Left	5	0	255	0	0	0	0	0
Volume Right	252	4	0	0	0	0	0	8
cSH	804	173	1315	1700	1700	1700	1700	1700
Volume to Capacity	0.32	0.07	0.19	0.32	0.00	0.00	0.15	0.00
Queue Length 95th (ft)	35	6	18	0	0	0	0	0
Control Delay (s)	12.3	27.4	8.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	D	A					
Approach Delay (s)	12.3	27.4	2.7			0.0		
Approach LOS	B	D						

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Capacity Worksheets: 2016 Background

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	253	206	42	77	11	110	231	33	42	536	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1859	1583	1770	1829		1770	1828		1770	1853	
Flt Permitted		0.99	1.00	0.27	1.00		0.33	1.00		0.55	1.00	
Satd. Flow (perm)		1843	1583	512	1829		613	1828		1034	1853	
Peak-hour factor, PHF	0.81	0.81	0.81	0.96	0.96	0.96	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	12	312	254	44	80	11	129	272	39	49	631	24
RTOR Reduction (vph)	0	0	195	0	6	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	324	59	44	85	0	129	305	0	49	653	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		17.3	17.3	17.3	17.3		53.0	53.0		52.0	52.0	
Effective Green, g (s)		18.5	18.5	18.5	18.5		53.5	53.5		53.5	53.5	
Actuated g/C Ratio		0.23	0.23	0.23	0.23		0.67	0.67		0.67	0.67	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		426	366	118	422		409	1222		691	1239	
v/s Ratio Prot					0.05			0.17			c0.35	
v/s Ratio Perm		c0.18	0.04	0.09			0.21			0.05		
v/c Ratio		0.76	0.16	0.37	0.20		0.32	0.25		0.07	0.53	
Uniform Delay, d1		28.7	24.6	25.9	24.8		5.6	5.3		4.6	6.8	
Progression Factor		1.00	1.00	1.00	1.00		0.82	0.81		1.00	1.00	
Incremental Delay, d2		7.1	0.1	0.7	0.1		2.0	0.5		0.2	1.6	
Delay (s)		35.7	24.6	26.6	24.9		6.5	4.8		4.8	8.4	
Level of Service		D	C	C	C		A	A		A	A	
Approach Delay (s)		30.9			25.4			5.3			8.1	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	14	6	351	19	14	784
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.84	0.84	0.96	0.96
Hourly flow rate (vph)	17	7	418	23	15	817
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked	0.84					
vC, conflicting volume	1275	429			440	
vC1, stage 1 conf vol	429					
vC2, stage 2 conf vol	846					
vCu, unblocked vol	1233	429			440	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	99			99	
cM capacity (veh/h)	359	626			1119	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	24	440	15	817
Volume Left	17	0	15	0
Volume Right	7	23	0	0
cSH	411	1700	1119	1700
Volume to Capacity	0.06	0.26	0.01	0.48
Queue Length 95th (ft)	5	0	1	0
Control Delay (s)	14.3	0.0	8.3	0.0
Lane LOS	B		A	
Approach Delay (s)	14.3	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	66	47	323	18	47	751
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.84	0.84	0.96	0.96
Hourly flow rate (vph)	80	57	385	21	49	782
Pedestrians	4		20			30
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		2			3
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1299	429			410	
vC1, stage 1 conf vol	399					
vC2, stage 2 conf vol	900					
vCu, unblocked vol	1299	429			410	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	91			96	
cM capacity (veh/h)	343	608			1145	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	136	406	49	782
Volume Left	80	0	49	0
Volume Right	57	21	0	0
cSH	588	1700	1145	1700
Volume to Capacity	0.23	0.24	0.04	0.46
Queue Length 95th (ft)	22	0	3	0
Control Delay (s)	15.7	0.0	8.3	0.0
Lane LOS	C		A	
Approach Delay (s)	15.7	0.0	0.5	
Approach LOS	C			

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	319	9	3	108	23	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.77	0.77	0.71	0.71
Hourly flow rate (vph)	354	10	4	140	32	11
Pedestrians	3			23		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			2		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked			0.86		0.86	0.86
vC, conflicting volume			364		510	382
vC1, stage 1 conf vol					359	
vC2, stage 2 conf vol					151	
vCu, unblocked vol			183		352	204
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	98
cM capacity (veh/h)			1200		688	708

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	364	144	44
Volume Left	0	4	32
Volume Right	10	0	11
cSH	1700	1200	693
Volume to Capacity	0.21	0.00	0.06
Queue Length 95th (ft)	0	0	5
Control Delay (s)	0.0	0.2	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	0.2	10.5
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	87	1	2	86	12	1	0	16	14	0	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.80	0.80	0.80	0.71	0.71	0.71	0.61	0.61	0.61
Hourly flow rate (vph)	3	130	1	2	108	15	1	0	23	23	0	13
Pedestrians		17			3			1			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	126			132			288	268	135	285	261	135
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126			132			288	268	135	285	261	135
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	96	100	99
cM capacity (veh/h)	1457			1451			642	633	911	644	639	899

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	134	125	24	36
Volume Left	3	2	1	23
Volume Right	1	15	23	13
cSH	1457	1451	889	718
Volume to Capacity	0.00	0.00	0.03	0.05
Queue Length 95th (ft)	0	0	2	4
Control Delay (s)	0.2	0.2	9.2	10.3
Lane LOS	A	A	A	B
Approach Delay (s)	0.2	0.2	9.2	10.3
Approach LOS			A	B

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	338	0	0	0	115	169	0	0	498	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.25	0.25	0.25	0.78	0.78	0.78	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	376	0	0	0	147	217	0	0	553	11
Pedestrians											1	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1066	1065	553	1065	1065	218	553			217		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1066	1065	553	1065	1065	218	553			217		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	29	100	100	100	86			100		
cM capacity (veh/h)	178	190	532	52	190	821	1017			1353		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	381	0	147	217	0	0	553	11
Volume Left	6	0	147	0	0	0	0	0
Volume Right	376	0	0	0	0	0	0	11
cSH	540	1700	1017	1700	1700	1700	1700	1700
Volume to Capacity	0.71	0.00	0.14	0.13	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	140	0	13	0	0	0	0	0
Control Delay (s)	26.3	0.0	9.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	A	A					
Approach Delay (s)	26.3	0.0	3.7			0.0		
Approach LOS	D	A						

Intersection Summary				
Average Delay	8.7			
Intersection Capacity Utilization	53.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	111	136	32	208	26	238	501	51	68	253	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00		0.99	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1847	1533	1752	1825		1751	1832		1762	1826	
Flt Permitted		0.92	1.00	0.67	1.00		0.54	1.00		0.33	1.00	
Satd. Flow (perm)		1712	1533	1239	1825		995	1832		612	1826	
Peak-hour factor, PHF	0.98	0.98	0.98	0.81	0.81	0.81	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	20	113	139	40	257	32	259	545	55	82	305	36
RTOR Reduction (vph)	0	0	101	0	12	0	0	7	0	0	8	0
Lane Group Flow (vph)	0	133	38	40	277	0	259	593	0	82	333	0
Confl. Peds. (#/hr)	8		8	8		8	10		7	7		10
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		11.0	11.0	11.0	11.0		24.3	24.3		23.3	23.3	
Effective Green, g (s)		12.2	12.2	12.2	12.2		24.8	24.8		24.8	24.8	
Actuated g/C Ratio		0.27	0.27	0.27	0.27		0.55	0.55		0.55	0.55	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		464	415	335	494		548	1009		337	1006	
v/s Ratio Prot					c0.15			c0.32			0.18	
v/s Ratio Perm		0.08	0.02	0.03			0.26			0.13		
v/c Ratio		0.29	0.09	0.12	0.56		0.47	0.59		0.24	0.33	
Uniform Delay, d1		13.0	12.3	12.4	14.1		6.1	6.7		5.2	5.5	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0	0.1	0.9		2.9	2.5		1.7	0.9	
Delay (s)		13.1	12.3	12.4	15.0		9.0	9.2		6.9	6.4	
Level of Service		B	B	B	B		A	A		A	A	
Approach Delay (s)		12.7			14.7			9.2			6.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	12	12	742	20	10	428
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.86	0.86	0.96	0.96	0.90	0.90
Hourly flow rate (vph)	14	14	773	21	11	476
Pedestrians			10			38
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			3
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked						
vC, conflicting volume	1291	821			794	
vC1, stage 1 conf vol	783					
vC2, stage 2 conf vol	508					
vCu, unblocked vol	1291	821			794	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	96			99	
cM capacity (veh/h)	384	362			827	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	28	794	11	476
Volume Left	14	0	11	0
Volume Right	14	21	0	0
cSH	373	1700	827	1700
Volume to Capacity	0.07	0.47	0.01	0.28
Queue Length 95th (ft)	6	0	1	0
Control Delay (s)	15.4	0.0	9.4	0.0
Lane LOS	C		A	
Approach Delay (s)	15.4	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	69	62	700	89	57	383
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.86	0.86	0.96	0.96	0.90	0.90
Hourly flow rate (vph)	80	72	729	93	63	426
Pedestrians	10		20			5
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	1		2			0
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1358	791			832	
vC1, stage 1 conf vol	786					
vC2, stage 2 conf vol	572					
vCu, unblocked vol	1358	791			832	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	77	81			92	
cM capacity (veh/h)	356	385			794	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	152	822	63	426
Volume Left	80	0	63	0
Volume Right	72	93	0	0
cSH	676	1700	794	1700
Volume to Capacity	0.23	0.48	0.08	0.25
Queue Length 95th (ft)	22	0	6	0
Control Delay (s)	17.3	0.0	9.9	0.0
Lane LOS	C		A	
Approach Delay (s)	17.3	0.0	1.3	
Approach LOS	C			

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	213	13	12	217	29	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.90	0.90	0.69	0.69
Hourly flow rate (vph)	266	16	13	241	42	22
Pedestrians	2			14		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			1		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked						
vC, conflicting volume			282		544	288
vC1, stage 1 conf vol					274	
vC2, stage 2 conf vol					270	
vCu, unblocked vol			282		544	288
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		94	97
cM capacity (veh/h)			1280		661	742

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	282	254	64
Volume Left	0	13	42
Volume Right	16	0	22
cSH	1700	1280	687
Volume to Capacity	0.17	0.01	0.09
Queue Length 95th (ft)	0	1	8
Control Delay (s)	0.0	0.5	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	0.5	10.8
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	137	2	14	145	18	1	0	12	31	2	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.88	0.88	0.88	0.54	0.54	0.54	0.69	0.69	0.69
Hourly flow rate (vph)	9	171	2	16	165	20	2	0	22	45	3	25
Pedestrians		22			8						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		2			1						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	186			174			445	408	180	428	399	198
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	186			174			445	408	180	428	399	198
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	97	91	99	97
cM capacity (veh/h)	1387			1403			489	523	856	512	529	827

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	182	201	24	72
Volume Left	9	16	2	45
Volume Right	2	20	22	25
cSH	1387	1403	810	589
Volume to Capacity	0.01	0.01	0.03	0.12
Queue Length 95th (ft)	0	1	2	10
Control Delay (s)	0.4	0.7	9.6	12.0
Lane LOS	A	A	A	B
Approach Delay (s)	0.4	0.7	9.6	12.0
Approach LOS			A	B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	225	0	2	1	228	475	0	0	240	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.25	0.25	0.25	0.86	0.86	0.86	0.95	0.95	0.95
Hourly flow rate (vph)	5	1	259	0	8	4	265	552	0	0	253	8
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1344	1335	254	1337	1335	553	253			552		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1344	1335	254	1337	1335	553	253			552		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	67	100	93	99	80			100		
cM capacity (veh/h)	103	123	784	73	123	532	1313			1018		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	264	12	265	552	0	0	253	8
Volume Left	5	0	265	0	0	0	0	0
Volume Right	259	4	0	0	0	0	0	8
cSH	802	165	1313	1700	1700	1700	1700	1700
Volume to Capacity	0.33	0.07	0.20	0.32	0.00	0.00	0.15	0.00
Queue Length 95th (ft)	36	6	19	0	0	0	0	0
Control Delay (s)	12.5	28.6	8.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	D	A					
Approach Delay (s)	12.5	28.6	2.7			0.0		
Approach LOS	B	D						

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Capacity Worksheets: 2035 Background

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	276	227	45	82	10	123	255	35	45	590	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1859	1583	1770	1832		1770	1829		1770	1853	
Flt Permitted		0.99	1.00	0.29	1.00		0.33	1.00		0.55	1.00	
Satd. Flow (perm)		1841	1583	540	1832		608	1829		1030	1853	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	300	247	49	89	11	134	277	38	49	641	22
RTOR Reduction (vph)	0	0	191	0	6	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	312	56	49	94	0	134	309	0	49	662	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		17.0	17.0	17.0	17.0		53.3	53.3		52.3	52.3	
Effective Green, g (s)		18.2	18.2	18.2	18.2		53.8	53.8		53.8	53.8	
Actuated g/C Ratio		0.23	0.23	0.23	0.23		0.67	0.67		0.67	0.67	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		418	360	122	416		408	1230		692	1246	
v/s Ratio Prot					0.05			0.17			c0.36	
v/s Ratio Perm		c0.17	0.04	0.09			0.22			0.05		
v/c Ratio		0.75	0.16	0.40	0.23		0.33	0.25		0.07	0.53	
Uniform Delay, d1		28.8	24.7	26.3	25.2		5.5	5.2		4.5	6.7	
Progression Factor		1.00	1.00	1.00	1.00		0.85	0.88		1.00	1.00	
Incremental Delay, d2		6.2	0.1	0.8	0.1		2.1	0.5		0.2	1.6	
Delay (s)		35.0	24.8	27.1	25.3		6.8	5.0		4.7	8.3	
Level of Service		D	C	C	C		A	A		A	A	
Approach Delay (s)		30.5			25.9			5.5			8.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	15	5	388	20	15	862
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	5	422	22	16	937
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked	0.81					
vC, conflicting volume	1402	433			443	
vC1, stage 1 conf vol	433					
vC2, stage 2 conf vol	970					
vCu, unblocked vol	1379	433			443	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	99			99	
cM capacity (veh/h)	307	623			1117	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	22	443	16	937
Volume Left	16	0	16	0
Volume Right	5	22	0	0
cSH	352	1700	1117	1700
Volume to Capacity	0.06	0.26	0.01	0.55
Queue Length 95th (ft)	5	0	1	0
Control Delay (s)	15.9	0.0	8.3	0.0
Lane LOS	C		A	
Approach Delay (s)	15.9	0.0	0.1	
Approach LOS	C			

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	70	55	353	20	50	827
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	60	384	22	54	899
Pedestrians	4		20			30
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		2			3
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1426	429			409	
vC1, stage 1 conf vol	399					
vC2, stage 2 conf vol	1028					
vCu, unblocked vol	1426	429			409	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	90			95	
cM capacity (veh/h)	301	609			1146	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	136	405	54	899
Volume Left	76	0	54	0
Volume Right	60	22	0	0
cSH	538	1700	1146	1700
Volume to Capacity	0.25	0.24	0.05	0.53
Queue Length 95th (ft)	25	0	4	0
Control Delay (s)	16.8	0.0	8.3	0.0
Lane LOS	C		A	
Approach Delay (s)	16.8	0.0	0.5	
Approach LOS	C			

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	351	10	5	117	25	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	382	11	5	127	27	11
Pedestrians	3			23		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			2		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked			0.85		0.85	0.85
vC, conflicting volume			392		528	410
vC1, stage 1 conf vol					387	
vC2, stage 2 conf vol					141	
vCu, unblocked vol			203		362	224
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		96	98
cM capacity (veh/h)			1169		672	683

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	392	133	38
Volume Left	0	5	27
Volume Right	11	0	11
cSH	1700	1169	675
Volume to Capacity	0.23	0.00	0.06
Queue Length 95th (ft)	0	0	4
Control Delay (s)	0.0	0.4	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	95	0	0	95	15	0	0	20	15	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	103	0	0	103	16	0	0	22	16	0	11
Pedestrians		17			3			1			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	123			104			254	238	107	253	230	131
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	123			104			254	238	107	253	230	131
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	98	100	99
cM capacity (veh/h)	1461			1486			676	659	944	677	665	903

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	109	120	22	27
Volume Left	5	0	0	16
Volume Right	0	16	22	11
cSH	1461	1486	944	752
Volume to Capacity	0.00	0.00	0.02	0.04
Queue Length 95th (ft)	0	0	2	3
Control Delay (s)	0.4	0.0	8.9	10.0
Lane LOS	A		A	A
Approach Delay (s)	0.4	0.0	8.9	10.0
Approach LOS			A	A

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	26.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	371	0	0	0	127	185	0	0	545	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	403	0	0	0	138	201	0	0	592	11
Pedestrians											1	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1071	1070	592	1070	1070	202	592			201		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1071	1070	592	1070	1070	202	592			201		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	20	100	100	100	86			100		
cM capacity (veh/h)	177	190	506	36	190	838	983			1371		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	409	0	138	201	0	0	592	11
Volume Left	5	0	138	0	0	0	0	0
Volume Right	403	0	0	0	0	0	0	11
cSH	513	1700	983	1700	1700	1700	1700	1700
Volume to Capacity	0.80	0.00	0.14	0.12	0.00	0.00	0.35	0.01
Queue Length 95th (ft)	187	0	12	0	0	0	0	0
Control Delay (s)	34.4	0.0	9.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	A	A					
Approach Delay (s)	34.4	0.0	3.8			0.0		
Approach LOS	D	A						

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	124	150	30	227	30	263	550	55	75	280	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00		0.99	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1847	1533	1753	1823		1751	1832		1763	1828	
Flt Permitted		0.92	1.00	0.66	1.00		0.54	1.00		0.29	1.00	
Satd. Flow (perm)		1713	1533	1212	1823		1002	1832		538	1828	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	135	163	33	247	33	286	598	60	82	304	34
RTOR Reduction (vph)	0	0	120	0	12	0	0	6	0	0	7	0
Lane Group Flow (vph)	0	158	43	33	268	0	286	652	0	82	331	0
Confl. Peds. (#/hr)	8		8	8		8	10		7	7		10
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		10.8	10.8	10.8	10.8		24.5	24.5		23.5	23.5	
Effective Green, g (s)		12.0	12.0	12.0	12.0		25.0	25.0		25.0	25.0	
Actuated g/C Ratio		0.27	0.27	0.27	0.27		0.56	0.56		0.56	0.56	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		456	408	323	486		556	1017		298	1015	
v/s Ratio Prot					c0.15			c0.36			0.18	
v/s Ratio Perm		0.09	0.03	0.03			0.29			0.15		
v/c Ratio		0.35	0.11	0.10	0.55		0.51	0.64		0.28	0.33	
Uniform Delay, d1		13.3	12.5	12.4	14.2		6.2	6.9		5.2	5.4	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.1	0.8		3.4	3.1		2.3	0.9	
Delay (s)		13.5	12.5	12.5	14.9		9.6	10.0		7.5	6.3	
Level of Service		B	B	B	B		A	B		A	A	
Approach Delay (s)		13.0			14.7			9.9			6.5	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	15	15	813	20	10	470
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	16	884	22	11	511
Pedestrians			10			38
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			3
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked						
vC, conflicting volume	1437	933			905	
vC1, stage 1 conf vol	895					
vC2, stage 2 conf vol	543					
vCu, unblocked vol	1437	933			905	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	95			99	
cM capacity (veh/h)	344	313			751	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	33	905	11	511
Volume Left	16	0	11	0
Volume Right	16	22	0	0
cSH	327	1700	751	1700
Volume to Capacity	0.10	0.53	0.01	0.30
Queue Length 95th (ft)	8	0	1	0
Control Delay (s)	17.2	0.0	9.9	0.0
Lane LOS	C		A	
Approach Delay (s)	17.2	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	80	65	768	100	60	425
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	87	71	835	109	65	462
Pedestrians	10		20			5
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	1		2			0
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1512	904			953	
vC1, stage 1 conf vol	899					
vC2, stage 2 conf vol	612					
vCu, unblocked vol	1512	904			953	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	73	79			91	
cM capacity (veh/h)	318	331			715	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	158	943	65	462
Volume Left	87	0	65	0
Volume Right	71	109	0	0
cSH	577	1700	715	1700
Volume to Capacity	0.27	0.55	0.09	0.27
Queue Length 95th (ft)	28	0	8	0
Control Delay (s)	19.7	0.0	10.5	0.0
Lane LOS	C		B	
Approach Delay (s)	19.7	0.0	1.3	
Approach LOS	C			

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	234	15	15	237	30	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	254	16	16	258	33	16
Pedestrians	2			14		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			1		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked						
vC, conflicting volume			271		555	276
vC1, stage 1 conf vol					262	
vC2, stage 2 conf vol					292	
vCu, unblocked vol			271		555	276
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		95	98
cM capacity (veh/h)			1293		655	753

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	271	274	49
Volume Left	0	16	33
Volume Right	16	0	16
cSH	1700	1293	684
Volume to Capacity	0.16	0.01	0.07
Queue Length 95th (ft)	0	1	6
Control Delay (s)	0.0	0.6	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.6	10.7
Approach LOS			B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	150	0	15	160	20	0	0	15	35	0	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	163	0	16	174	22	0	0	16	38	0	22
Pedestrians		22			8						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		2			1						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	197			163			446	414	171	427	403	208
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	197			163			446	414	171	427	403	208
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	98	93	100	97
cM capacity (veh/h)	1375			1416			492	518	867	515	525	817

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	174	212	16	60
Volume Left	11	16	0	38
Volume Right	0	22	16	22
cSH	1375	1416	867	595
Volume to Capacity	0.01	0.01	0.02	0.10
Queue Length 95th (ft)	1	1	1	8
Control Delay (s)	0.5	0.7	9.2	11.7
Lane LOS	A	A	A	B
Approach Delay (s)	0.5	0.7	9.2	11.7
Approach LOS			A	B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	249	0	0	0	252	520	0	0	265	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	271	0	0	0	274	565	0	0	288	11
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1402	1401	289	1402	1401	566	288			565		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1402	1401	289	1402	1401	566	288			565		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	64	100	100	100	78			100		
cM capacity (veh/h)	98	110	749	63	110	523	1274			1007		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	276	0	274	565	0	0	288	11
Volume Left	5	0	274	0	0	0	0	0
Volume Right	271	0	0	0	0	0	0	11
cSH	764	1700	1274	1700	1700	1700	1700	1700
Volume to Capacity	0.36	0.00	0.22	0.33	0.00	0.00	0.17	0.01
Queue Length 95th (ft)	41	0	20	0	0	0	0	0
Control Delay (s)	13.1	0.0	8.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A	A					
Approach Delay (s)	13.1	0.0	2.8			0.0		
Approach LOS	B	A						

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	44.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection Capacity Worksheets: 2016 Background + Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	262	207	42	85	15	112	231	33	45	537	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1859	1583	1770	1820		1770	1828		1770	1853	
Flt Permitted		0.99	1.00	0.26	1.00		0.33	1.00		0.55	1.00	
Satd. Flow (perm)		1843	1583	488	1820		609	1828		1032	1853	
Peak-hour factor, PHF	0.81	0.81	0.81	0.96	0.96	0.96	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	12	323	256	44	89	16	132	272	39	53	632	24
RTOR Reduction (vph)	0	0	196	0	8	0	0	6	0	0	2	0
Lane Group Flow (vph)	0	335	60	44	97	0	132	305	0	53	654	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		17.6	17.6	17.6	17.6		52.7	52.7		51.7	51.7	
Effective Green, g (s)		18.8	18.8	18.8	18.8		53.2	53.2		53.2	53.2	
Actuated g/C Ratio		0.24	0.24	0.24	0.24		0.67	0.67		0.67	0.67	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		433	372	114	427		404	1215		686	1232	
v/s Ratio Prot					0.05			0.17			c0.35	
v/s Ratio Perm		c0.18	0.04	0.09			0.22			0.05		
v/c Ratio		0.77	0.16	0.39	0.23		0.33	0.25		0.08	0.53	
Uniform Delay, d1		28.6	24.3	25.7	24.7		5.7	5.4		4.7	6.9	
Progression Factor		1.00	1.00	1.00	1.00		0.84	0.84		1.00	1.00	
Incremental Delay, d2		7.7	0.1	0.8	0.1		2.1	0.5		0.2	1.6	
Delay (s)		36.3	24.4	26.5	24.8		6.9	5.0		5.0	8.6	
Level of Service		D	C	C	C		A	A		A	A	
Approach Delay (s)		31.1			25.3			5.6			8.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	31	8	395	25	15	839
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.84	0.84	0.96	0.96
Hourly flow rate (vph)	37	10	470	30	16	874
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked	0.84					
vC, conflicting volume	1390	485			500	
vC1, stage 1 conf vol	485					
vC2, stage 2 conf vol	905					
vCu, unblocked vol	1370	485			500	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	98			99	
cM capacity (veh/h)	329	582			1064	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	47	500	16	874
Volume Left	37	0	16	0
Volume Right	10	30	0	0
cSH	361	1700	1064	1700
Volume to Capacity	0.13	0.29	0.01	0.51
Queue Length 95th (ft)	11	0	1	0
Control Delay (s)	16.4	0.0	8.4	0.0
Lane LOS	C		A	
Approach Delay (s)	16.4	0.0	0.1	
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	71	52	368	19	54	816
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.84	0.84	0.96	0.96
Hourly flow rate (vph)	86	63	438	23	56	850
Pedestrians	4		20			30
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		2			3
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1436	483			465	
vC1, stage 1 conf vol	453					
vC2, stage 2 conf vol	982					
vCu, unblocked vol	1436	483			465	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	89			95	
cM capacity (veh/h)	310	567			1093	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	148	461	56	850
Volume Left	86	0	56	0
Volume Right	63	23	0	0
cSH	537	1700	1093	1700
Volume to Capacity	0.28	0.27	0.05	0.50
Queue Length 95th (ft)	28	0	4	0
Control Delay (s)	17.2	0.0	8.5	0.0
Lane LOS	C		A	
Approach Delay (s)	17.2	0.0	0.5	
Approach LOS	C			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	350	9	4	133	26	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.77	0.77	0.71	0.71
Hourly flow rate (vph)	389	10	5	173	37	18
Pedestrians	3			23		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			2		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			399		580	417
vC1, stage 1 conf vol					394	
vC2, stage 2 conf vol					186	
vCu, unblocked vol			234		442	254
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		94	97
cM capacity (veh/h)			1160		649	669

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	399	178	55
Volume Left	0	5	37
Volume Right	10	0	18
cSH	1700	1160	656
Volume to Capacity	0.23	0.00	0.08
Queue Length 95th (ft)	0	0	7
Control Delay (s)	0.0	0.3	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	11.0
Approach LOS			B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	3	94	1	2	91	23	1	0	16	29	0	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.80	0.80	0.80	0.71	0.71	0.71	0.61	0.61	0.61
Hourly flow rate (vph)	4	140	1	2	114	29	1	0	23	48	0	21
Pedestrians		17			3			1			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	146			143			322	302	145	312	288	148
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	146			143			322	302	145	312	288	148
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	97	92	100	98
cM capacity (veh/h)	1433			1439			602	606	899	618	617	884

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	146	145	24	69
Volume Left	4	2	1	48
Volume Right	1	29	23	21
cSH	1433	1439	874	681
Volume to Capacity	0.00	0.00	0.03	0.10
Queue Length 95th (ft)	0	0	2	8
Control Delay (s)	0.3	0.1	9.2	10.9
Lane LOS	A	A	A	B
Approach Delay (s)	0.3	0.1	9.2	10.9
Approach LOS			A	B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	25.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	375	0	0	0	141	169	0	0	498	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.25	0.25	0.25	0.78	0.78	0.78	0.90	0.90	0.90
Hourly flow rate (vph)	6	0	417	0	0	0	181	217	0	0	553	11
Pedestrians											1	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1133	1132	553	1132	1132	218	553			217		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1133	1132	553	1132	1132	218	553			217		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	22	100	100	100	82			100		
cM capacity (veh/h)	155	167	532	34	167	821	1017			1353		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	422	0	181	217	0	0	553	11
Volume Left	6	0	181	0	0	0	0	0
Volume Right	417	0	0	0	0	0	0	11
cSH	540	1700	1017	1700	1700	1700	1700	1700
Volume to Capacity	0.78	0.00	0.18	0.13	0.00	0.00	0.33	0.01
Queue Length 95th (ft)	181	0	16	0	0	0	0	0
Control Delay (s)	31.9	0.0	9.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	D	A	A					
Approach Delay (s)	31.9	0.0	4.2			0.0		
Approach LOS	D	A						

Intersection Summary			
Average Delay	10.9		
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	55	28	348	72	1	785
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	30	378	78	1	853
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						386
pX, platoon unblocked	0.82					
vC, conflicting volume	1273	417			457	
vC1, stage 1 conf vol	417					
vC2, stage 2 conf vol	855					
vCu, unblocked vol	1222	417			457	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	95			100	
cM capacity (veh/h)	358	635			1104	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	90	457	1	853
Volume Left	60	0	1	0
Volume Right	30	78	0	0
cSH	420	1700	1104	1700
Volume to Capacity	0.21	0.27	0.00	0.50
Queue Length 95th (ft)	20	0	0	0
Control Delay (s)	15.9	0.0	8.3	0.0
Lane LOS	C		A	
Approach Delay (s)	15.9	0.0	0.0	
Approach LOS	C			

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	322	18	37	122	0	22	0	37	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	350	20	40	133	0	24	0	40	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		335										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	133			370			573	573	360	603	583	133
vC1, stage 1 conf vol							360	360		213	213	
vC2, stage 2 conf vol							213	213		390	370	
vCu, unblocked vol	133			161			402	402	150	438	414	133
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	100	95	100	100	100
cM capacity (veh/h)	1452			1197			631	581	757	564	557	917

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	370	40	133	64	0
Volume Left	0	0	40	0	24	0
Volume Right	0	20	0	0	40	0
cSH	1700	1700	1197	1700	705	1700
Volume to Capacity	0.00	0.22	0.03	0.08	0.09	0.00
Queue Length 95th (ft)	0	0	3	0	7	0
Control Delay (s)	0.0	0.0	8.1	0.0	10.6	0.0
Lane LOS			A		B	A
Approach Delay (s)	0.0		1.9		10.6	0.0
Approach LOS					B	A

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	8	79	0	7	87
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	86	0	8	95
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	196	86			86	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196	86			86	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	789	973			1510	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	86	102
Volume Left	0	0	8
Volume Right	9	0	0
cSH	973	1700	1510
Volume to Capacity	0.01	0.05	0.01
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.7	0.0	0.6
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	0.6
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	73	0	1	6	5	82
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	79	0	1	7	5	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	59	50	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	59	50	95			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	100	100			
cM capacity (veh/h)	948	1018	1499			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	79	8	95
Volume Left	79	1	0
Volume Right	0	0	89
cSH	948	1499	1700
Volume to Capacity	0.08	0.00	0.06
Queue Length 95th (ft)	7	0	0
Control Delay (s)	9.1	1.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	0	33	3	2	2	20	0	5	5	0	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	36	3	2	2	22	0	5	5	0	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4			36			61	44	18	48	61	3
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			36			61	44	18	48	61	3
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	99	99	100	98
cM capacity (veh/h)	1617			1575			913	842	1061	942	824	1081

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	43	8	27	24
Volume Left	8	3	22	5
Volume Right	36	2	5	18
cSH	1617	1575	939	1046
Volume to Capacity	0.00	0.00	0.03	0.02
Queue Length 95th (ft)	0	0	2	2
Control Delay (s)	1.3	3.1	8.9	8.5
Lane LOS	A	A	A	A
Approach Delay (s)	1.3	3.1	8.9	8.5
Approach LOS			A	A

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	3	0	37	13	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	3	0	40	14	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	54	14	14			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	54	14	14			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	954	1066	1604			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	5	40	14
Volume Left	2	0	0
Volume Right	3	0	0
cSH	1018	1604	1700
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.6	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.6	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	3	1	36	16	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	3	1	39	17	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	59	17	17			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	59	17	17			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	948	1061	1600			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	40	17
Volume Left	1	1	0
Volume Right	3	0	0
cSH	1030	1600	1700
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.5	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	7	12	0	22	8	15	8	8	11	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	8	13	0	24	9	16	9	9	12	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	91	72	12	75	67	21	12			25		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91	72	12	75	67	21	12			25		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	99	100	98	99			99		
cM capacity (veh/h)	865	810	1069	901	814	1057	1607			1589		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	8	37	34	21
Volume Left	0	13	9	9
Volume Right	8	24	9	0
cSH	1069	996	1607	1589
Volume to Capacity	0.01	0.04	0.01	0.01
Queue Length 95th (ft)	1	3	0	0
Control Delay (s)	8.4	8.8	1.9	3.1
Lane LOS	A	A	A	A
Approach Delay (s)	8.4	8.8	1.9	3.1
Approach LOS	A	A		

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	18.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	4	1	26	29	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	4	1	28	32	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	62	32	33			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	62	32	33			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	943	1042	1579			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	10	29	33
Volume Left	5	1	0
Volume Right	4	0	1
cSH	984	1579	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.7	0.3	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	0.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	10	5	21	32	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	5	23	35	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	70	36	37			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70	36	37			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	932	1037	1574			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	28	37
Volume Left	0	5	0
Volume Right	11	0	2
cSH	1037	1574	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.5	1.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	1.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	53	91	81	6	3	52
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	99	88	7	3	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	214	32	60			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	214	32	60			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	91	94			
cM capacity (veh/h)	730	1042	1544			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	157	95	60
Volume Left	58	88	0
Volume Right	99	0	57
cSH	901	1544	1700
Volume to Capacity	0.17	0.06	0.04
Queue Length 95th (ft)	16	5	0
Control Delay (s)	9.8	7.0	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	7.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	0	17	3	0	0	8	0	1	0	2	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	18	3	0	0	9	0	1	0	2	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	22	22	4	40	23	1	5			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	22	22	4	40	23	1	5			1		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	100	100	100	99			100		
cM capacity (veh/h)	987	867	1080	943	865	1084	1616			1622		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	26	3	10	5
Volume Left	8	3	9	0
Volume Right	18	0	1	3
cSH	1051	943	1616	1622
Volume to Capacity	0.02	0.00	0.01	0.00
Queue Length 95th (ft)	2	0	0	0
Control Delay (s)	8.5	8.8	6.4	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.5	8.8	6.4	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	17.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	118	138	32	214	29	239	502	51	72	256	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00		0.99	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1848	1533	1752	1822		1751	1832		1763	1826	
Flt Permitted		0.92	1.00	0.67	1.00		0.54	1.00		0.33	1.00	
Satd. Flow (perm)		1717	1533	1231	1822		987	1832		604	1826	
Peak-hour factor, PHF	0.98	0.98	0.98	0.81	0.81	0.81	0.92	0.92	0.92	0.83	0.83	0.83
Adj. Flow (vph)	20	120	141	40	264	36	260	546	55	87	308	36
RTOR Reduction (vph)	0	0	102	0	13	0	0	7	0	0	8	0
Lane Group Flow (vph)	0	140	39	40	287	0	260	594	0	87	336	0
Confl. Peds. (#/hr)	8		8	8		8	10		7	7		10
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		11.3	11.3	11.3	11.3		24.0	24.0		23.0	23.0	
Effective Green, g (s)		12.5	12.5	12.5	12.5		24.5	24.5		24.5	24.5	
Actuated g/C Ratio		0.28	0.28	0.28	0.28		0.54	0.54		0.54	0.54	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		476	425	341	506		537	997		328	994	
v/s Ratio Prot					c0.16			c0.32			0.18	
v/s Ratio Perm		0.08	0.03	0.03			0.26			0.14		
v/c Ratio		0.29	0.09	0.12	0.57		0.48	0.60		0.27	0.34	
Uniform Delay, d1		12.8	12.0	12.1	13.9		6.3	6.9		5.5	5.7	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.0	0.1	0.9		3.1	2.6		2.0	0.9	
Delay (s)		12.9	12.1	12.2	14.8		9.4	9.5		7.4	6.6	
Level of Service		B	B	B	B		A	A		A	A	
Approach Delay (s)		12.5			14.5			9.5			6.8	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	21	13	790	35	12	464
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.86	0.86	0.96	0.96	0.90	0.90
Hourly flow rate (vph)	24	15	823	36	13	516
Pedestrians			10			38
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			3
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked						
vC, conflicting volume	1393	879			859	
vC1, stage 1 conf vol	841					
vC2, stage 2 conf vol	552					
vCu, unblocked vol	1393	879			859	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	95			98	
cM capacity (veh/h)	358	336			782	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	40	859	13	516
Volume Left	24	0	13	0
Volume Right	15	36	0	0
cSH	349	1700	782	1700
Volume to Capacity	0.11	0.51	0.02	0.30
Queue Length 95th (ft)	9	0	1	0
Control Delay (s)	16.6	0.0	9.7	0.0
Lane LOS	C		A	
Approach Delay (s)	16.6	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	72	68	757	94	61	424
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.86	0.86	0.96	0.96	0.90	0.90
Hourly flow rate (vph)	84	79	789	98	68	471
Pedestrians	10		20			5
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	1		2			0
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1474	852			896	
vC1, stage 1 conf vol	848					
vC2, stage 2 conf vol	627					
vCu, unblocked vol	1474	852			896	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	78			91	
cM capacity (veh/h)	328	355			751	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	163	886	68	471
Volume Left	84	0	68	0
Volume Right	79	98	0	0
cSH	639	1700	751	1700
Volume to Capacity	0.25	0.52	0.09	0.28
Queue Length 95th (ft)	25	0	7	0
Control Delay (s)	18.9	0.0	10.3	0.0
Lane LOS	C		B	
Approach Delay (s)	18.9	0.0	1.3	
Approach LOS	C			

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	233	16	17	245	30	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.90	0.90	0.69	0.69
Hourly flow rate (vph)	291	20	19	272	43	26
Pedestrians	2			14		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			1		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked						
vC, conflicting volume			311		613	315
vC1, stage 1 conf vol					301	
vC2, stage 2 conf vol					312	
vCu, unblocked vol			311		613	315
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		93	96
cM capacity (veh/h)			1249		627	717

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	311	291	70
Volume Left	0	19	43
Volume Right	20	0	26
cSH	1700	1249	658
Volume to Capacity	0.18	0.02	0.11
Queue Length 95th (ft)	0	1	9
Control Delay (s)	0.0	0.6	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	0.6	11.1
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	141	2	14	151	32	1	0	12	40	2	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.88	0.88	0.88	0.54	0.54	0.54	0.69	0.69	0.69
Hourly flow rate (vph)	15	176	2	16	172	36	2	0	22	58	3	29
Pedestrians		22			8						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		2			1						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	209			179			482	448	186	460	431	213
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	209			179			482	448	186	460	431	213
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	97	88	99	96
cM capacity (veh/h)	1361			1397			458	494	851	485	505	811

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	194	224	24	90
Volume Left	15	16	2	58
Volume Right	2	36	22	29
cSH	1361	1397	798	559
Volume to Capacity	0.01	0.01	0.03	0.16
Queue Length 95th (ft)	1	1	2	14
Control Delay (s)	0.7	0.6	9.6	12.7
Lane LOS	A	A	A	B
Approach Delay (s)	0.7	0.6	9.6	12.7
Approach LOS			A	B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1	248	0	2	1	261	475	0	0	240	8
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.25	0.25	0.25	0.86	0.86	0.86	0.95	0.95	0.95
Hourly flow rate (vph)	5	1	285	0	8	4	303	552	0	0	253	8
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1421	1412	254	1414	1412	553	253			552		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1421	1412	254	1414	1412	553	253			552		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	99	64	100	92	99	77			100		
cM capacity (veh/h)	88	106	784	60	106	532	1313			1018		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	291	12	303	552	0	0	253	8
Volume Left	5	0	303	0	0	0	0	0
Volume Right	285	4	0	0	0	0	0	8
cSH	800	145	1313	1700	1700	1700	1700	1700
Volume to Capacity	0.36	0.08	0.23	0.32	0.00	0.00	0.15	0.00
Queue Length 95th (ft)	42	7	22	0	0	0	0	0
Control Delay (s)	12.9	32.1	8.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	D	A					
Approach Delay (s)	12.9	32.1	3.0			0.0		
Approach LOS	B	D						

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	36	14	742	61	3	440
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	15	807	66	3	478
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						386
pX, platoon unblocked	0.94					
vC, conflicting volume	1324	840			873	
vC1, stage 1 conf vol	840					
vC2, stage 2 conf vol	485					
vCu, unblocked vol	1313	840			873	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	96			100	
cM capacity (veh/h)	370	365			773	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	54	873	3	478
Volume Left	39	0	3	0
Volume Right	15	66	0	0
cSH	369	1700	773	1700
Volume to Capacity	0.15	0.51	0.00	0.28
Queue Length 95th (ft)	13	0	0	0
Control Delay (s)	16.4	0.0	9.7	0.0
Lane LOS	C		A	
Approach Delay (s)	16.4	0.0	0.1	
Approach LOS	C			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	225	12	34	241	0	14	0	24	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	245	13	37	262	0	15	0	26	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		335										
pX, platoon unblocked												
vC, conflicting volume	262			258			587	587	251	607	593	262
vC1, stage 1 conf vol							251	251		336	336	
vC2, stage 2 conf vol							336	336		271	258	
vCu, unblocked vol	262			258			587	587	251	607	593	262
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			97	100	97	100	100	100
cM capacity (veh/h)	1302			1307			587	559	788	559	548	777

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	258	37	262	41	0
Volume Left	0	0	37	0	15	0
Volume Right	0	13	0	0	26	0
cSH	1700	1700	1307	1700	700	1700
Volume to Capacity	0.00	0.15	0.03	0.15	0.06	0.00
Queue Length 95th (ft)	0	0	2	0	5	0
Control Delay (s)	0.0	0.0	7.8	0.0	10.5	0.0
Lane LOS			A		B	A
Approach Delay (s)	0.0		1.0		10.5	0.0
Approach LOS					B	A

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	6	69	0	5	56
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	7	75	0	5	61
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	147	75			75	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	147	75			75	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	843	986			1524	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	7	75	66
Volume Left	0	0	5
Volume Right	7	0	0
cSH	986	1700	1524
Volume to Capacity	0.01	0.04	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.7	0.0	0.6
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	0.6
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	63	1	0	6	6	50
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	1	0	7	7	54
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	40	34	61			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	40	34	61			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	971	1040	1542			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	70	7	61
Volume Left	68	0	0
Volume Right	1	0	54
cSH	972	1542	1700
Volume to Capacity	0.07	0.00	0.04
Queue Length 95th (ft)	6	0	0
Control Delay (s)	9.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	13.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	2	30	6	1	5	24	0	10	3	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	2	33	7	1	5	26	0	11	3	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	7			35			78	71	18	79	84	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	7			35			78	71	18	79	84	4
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	100	99	100	100	99
cM capacity (veh/h)	1614			1577			893	808	1060	891	794	1080

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	51	13	37	13
Volume Left	16	7	26	3
Volume Right	33	5	11	10
cSH	1614	1577	937	1025
Volume to Capacity	0.01	0.00	0.04	0.01
Queue Length 95th (ft)	1	0	3	1
Control Delay (s)	2.4	3.7	9.0	8.6
Lane LOS	A	A	A	A
Approach Delay (s)	2.4	3.7	9.0	8.6
Approach LOS			A	A

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	14.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	3	47	31	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	3	51	34	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	92	35	36			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	92	35	36			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	906	1038	1575			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	54	36
Volume Left	1	3	0
Volume Right	1	0	2
cSH	967	1575	1700
Volume to Capacity	0.00	0.00	0.02
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.7	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	0.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	2	3	49	31	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	2	3	53	34	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	94	34	35			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	94	34	35			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	904	1039	1577			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	3	57	35
Volume Left	1	3	0
Volume Right	2	0	1
cSH	990	1577	1700
Volume to Capacity	0.00	0.00	0.02
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.6	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.6	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	5	28	0	31	6	21	13	18	15	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	5	30	0	34	7	23	14	20	16	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	132	105	16	104	98	30	16			37		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	132	105	16	104	98	30	16			37		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	96	100	97	100			99		
cM capacity (veh/h)	803	772	1063	861	779	1045	1601			1574		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	5	64	43	36
Volume Left	0	30	7	20
Volume Right	5	34	14	0
cSH	1063	949	1601	1574
Volume to Capacity	0.01	0.07	0.00	0.01
Queue Length 95th (ft)	0	5	0	1
Control Delay (s)	8.4	9.1	1.1	4.0
Lane LOS	A	A	A	A
Approach Delay (s)	8.4	9.1	1.1	4.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	2	4	38	43	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	4	41	47	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	99	49	52			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	99	49	52			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	897	1019	1554			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	46	52
Volume Left	2	4	0
Volume Right	2	0	5
cSH	954	1554	1700
Volume to Capacity	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.8	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	13	11	33	49	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	14	12	36	53	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	114	54	54			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	114	54	54			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	876	1013	1551			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	48	54
Volume Left	2	12	0
Volume Right	14	0	1
cSH	993	1551	1700
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (ft)	1	1	0
Control Delay (s)	8.7	1.9	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	1.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	34	55	71	4	6	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	60	77	4	7	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	187	28	50			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	187	28	50			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	94	95			
cM capacity (veh/h)	762	1047	1557			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	97	82	50
Volume Left	37	77	0
Volume Right	60	0	43
cSH	916	1557	1700
Volume to Capacity	0.11	0.05	0.03
Queue Length 95th (ft)	9	4	0
Control Delay (s)	9.4	7.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	7.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	0	8	2	0	0	15	2	3	0	1	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	0	9	2	0	0	16	2	3	0	1	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	41	42	4	49	44	4	8			5		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	41	42	4	49	44	4	8			5		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	100	99			100		
cM capacity (veh/h)	956	841	1079	936	839	1080	1613			1616		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	13	2	22	8
Volume Left	4	2	16	0
Volume Right	9	0	3	7
cSH	1034	936	1613	1616
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	8.5	8.9	5.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.5	8.9	5.5	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection Capacity Worksheets: 2035 Background + Project

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	285	228	45	90	14	125	255	35	48	591	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.98		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1859	1583	1770	1826		1770	1829		1770	1853	
Flt Permitted		0.99	1.00	0.28	1.00		0.32	1.00		0.55	1.00	
Satd. Flow (perm)		1841	1583	518	1826		603	1829		1028	1853	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	310	248	49	98	15	136	277	38	52	642	22
RTOR Reduction (vph)	0	0	191	0	7	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	322	57	49	106	0	136	309	0	52	663	0
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		17.3	17.3	17.3	17.3		53.0	53.0		52.0	52.0	
Effective Green, g (s)		18.5	18.5	18.5	18.5		53.5	53.5		53.5	53.5	
Actuated g/C Ratio		0.23	0.23	0.23	0.23		0.67	0.67		0.67	0.67	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		425	366	119	422		403	1223		687	1239	
v/s Ratio Prot					0.06			0.17			c0.36	
v/s Ratio Perm		c0.17	0.04	0.09			0.23			0.05		
v/c Ratio		0.76	0.16	0.41	0.25		0.34	0.25		0.08	0.53	
Uniform Delay, d1		28.7	24.5	26.1	25.1		5.7	5.3		4.6	6.8	
Progression Factor		1.00	1.00	1.00	1.00		0.87	0.90		1.00	1.00	
Incremental Delay, d2		6.7	0.1	0.8	0.1		2.2	0.5		0.2	1.7	
Delay (s)		35.4	24.6	27.0	25.2		7.2	5.2		4.8	8.5	
Level of Service		D	C	C	C		A	A		A	A	
Approach Delay (s)		30.7			25.7			5.8			8.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	32	7	432	26	16	917
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	8	470	28	17	997
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked	0.80					
vC, conflicting volume	1515	484			498	
vC1, stage 1 conf vol	484					
vC2, stage 2 conf vol	1032					
vCu, unblocked vol	1519	484			498	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	99			98	
cM capacity (veh/h)	281	583			1066	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	42	498	17	997
Volume Left	35	0	17	0
Volume Right	8	28	0	0
cSH	309	1700	1066	1700
Volume to Capacity	0.14	0.29	0.02	0.59
Queue Length 95th (ft)	12	0	1	0
Control Delay (s)	18.5	0.0	8.4	0.0
Lane LOS	C		A	
Approach Delay (s)	18.5	0.0	0.1	
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	58.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	75	60	398	21	57	892
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	65	433	23	62	970
Pedestrians	4		20			30
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	0		2			3
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1562	478			459	
vC1, stage 1 conf vol	448					
vC2, stage 2 conf vol	1113					
vCu, unblocked vol	1562	478			459	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	89			94	
cM capacity (veh/h)	271	571			1098	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	147	455	62	970
Volume Left	82	0	62	0
Volume Right	65	23	0	0
cSH	488	1700	1098	1700
Volume to Capacity	0.30	0.27	0.06	0.57
Queue Length 95th (ft)	31	0	4	0
Control Delay (s)	18.7	0.0	8.5	0.0
Lane LOS	C		A	
Approach Delay (s)	18.7	0.0	0.5	
Approach LOS	C			

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	382	10	6	142	28	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	415	11	7	154	30	16
Pedestrians	3			23		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			2		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked			0.86		0.86	0.86
vC, conflicting volume			426		591	444
vC1, stage 1 conf vol					421	
vC2, stage 2 conf vol					170	
vCu, unblocked vol			245		438	266
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		95	97
cM capacity (veh/h)			1130		639	649

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	426	161	47
Volume Left	0	7	30
Volume Right	11	0	16
cSH	1700	1130	642
Volume to Capacity	0.25	0.01	0.07
Queue Length 95th (ft)	0	0	6
Control Delay (s)	0.0	0.4	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	0.4	11.0
Approach LOS			B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	102	0	0	100	26	0	0	20	30	0	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	111	0	0	109	28	0	0	22	33	0	16
Pedestrians		17			3			1			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	140			112			281	265	115	274	251	143
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140			112			281	265	115	274	251	143
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	98	95	100	98
cM capacity (veh/h)	1440			1477			645	636	934	655	647	890

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	117	137	22	49
Volume Left	7	0	0	33
Volume Right	0	28	22	16
cSH	1440	1477	934	718
Volume to Capacity	0.00	0.00	0.02	0.07
Queue Length 95th (ft)	0	0	2	5
Control Delay (s)	0.5	0.0	8.9	10.4
Lane LOS	A		A	B
Approach Delay (s)	0.5	0.0	8.9	10.4
Approach LOS			A	B

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	408	0	0	0	153	185	0	0	545	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	443	0	0	0	166	201	0	0	592	11
Pedestrians											1	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											4.0	
Percent Blockage											0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1127	1126	592	1126	1126	202	592			201		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1127	1126	592	1126	1126	202	592			201		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	12	100	100	100	83			100		
cM capacity (veh/h)	158	170	506	20	170	838	983			1371		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	449	0	166	201	0	0	592	11
Volume Left	5	0	166	0	0	0	0	0
Volume Right	443	0	0	0	0	0	0	11
cSH	512	1700	983	1700	1700	1700	1700	1700
Volume to Capacity	0.88	0.00	0.17	0.12	0.00	0.00	0.35	0.01
Queue Length 95th (ft)	240	0	15	0	0	0	0	0
Control Delay (s)	44.0	0.0	9.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	E	A	A					
Approach Delay (s)	44.0	0.0	4.3			0.0		
Approach LOS	E	A						

Intersection Summary			
Average Delay	15.0		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	55	28	387	72	1	863
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	30	421	78	1	938
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						386
pX, platoon unblocked	0.80					
vC, conflicting volume	1400	460			499	
vC1, stage 1 conf vol	460					
vC2, stage 2 conf vol	940					
vCu, unblocked vol	1375	460			499	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	95			100	
cM capacity (veh/h)	319	601			1065	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	90	499	1	938
Volume Left	60	0	1	0
Volume Right	30	78	0	0
cSH	379	1700	1065	1700
Volume to Capacity	0.24	0.29	0.00	0.55
Queue Length 95th (ft)	23	0	0	0
Control Delay (s)	17.4	0.0	8.4	0.0
Lane LOS	C		A	
Approach Delay (s)	17.4	0.0	0.0	
Approach LOS	C			

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	355	18	37	133	0	22	0	37	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	386	20	40	145	0	24	0	40	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		335										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	145			405			621	621	396	651	630	145
vC1, stage 1 conf vol							396	396		225	225	
vC2, stage 2 conf vol							225	225		426	405	
vCu, unblocked vol	145			199			455	455	187	491	466	145
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	100	94	100	100	100
cM capacity (veh/h)	1438			1155			602	558	719	534	533	903

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	405	40	145	64	0
Volume Left	0	0	40	0	24	0
Volume Right	0	20	0	0	40	0
cSH	1700	1700	1155	1700	670	1700
Volume to Capacity	0.00	0.24	0.03	0.09	0.10	0.00
Queue Length 95th (ft)	0	0	3	0	8	0
Control Delay (s)	0.0	0.0	8.2	0.0	10.9	0.0
Lane LOS			A		B	A
Approach Delay (s)	0.0		1.8		10.9	0.0
Approach LOS					B	A

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	8	79	0	7	87
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	86	0	8	95
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	196	86			86	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196	86			86	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	789	973			1510	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	9	86	102
Volume Left	0	0	8
Volume Right	9	0	0
cSH	973	1700	1510
Volume to Capacity	0.01	0.05	0.01
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.7	0.0	0.6
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	0.6
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	73	0	1	6	5	82
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	79	0	1	7	5	89
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	59	50	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	59	50	95			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	100	100			
cM capacity (veh/h)	948	1018	1499			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	79	8	95
Volume Left	79	1	0
Volume Right	0	0	89
cSH	948	1499	1700
Volume to Capacity	0.08	0.00	0.06
Queue Length 95th (ft)	7	0	0
Control Delay (s)	9.1	1.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	1.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	0	35	5	2	2	20	0	5	5	0	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	38	5	2	2	22	0	5	5	0	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	4			38			67	49	19	54	67	3
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			38			67	49	19	54	67	3
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	99	99	100	98
cM capacity (veh/h)	1617			1572			905	835	1059	934	817	1081

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	10	27	24
Volume Left	8	5	22	5
Volume Right	38	2	5	18
cSH	1617	1572	932	1043
Volume to Capacity	0.00	0.00	0.03	0.02
Queue Length 95th (ft)	0	0	2	2
Control Delay (s)	1.2	4.1	9.0	8.5
Lane LOS	A	A	A	A
Approach Delay (s)	1.2	4.1	9.0	8.5
Approach LOS			A	A

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	14.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	3	0	41	16	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	3	0	45	17	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	62	17	17			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	62	17	17			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	944	1061	1600			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	5	45	17
Volume Left	2	0	0
Volume Right	3	0	0
cSH	1011	1600	1700
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.6	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.6	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	3	1	40	19	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	3	1	43	21	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	66	21	21			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	21	21			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	938	1057	1595			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	45	21
Volume Left	1	1	0
Volume Right	3	0	0
cSH	1025	1595	1700
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.5	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	7	15	0	25	8	16	10	10	12	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	8	16	0	27	9	17	11	11	13	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	102	80	13	83	75	23	13			28		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	102	80	13	83	75	23	13			28		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	98	100	97	99			99		
cM capacity (veh/h)	848	800	1067	890	805	1054	1605			1585		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	8	43	37	24
Volume Left	0	16	9	11
Volume Right	8	27	11	0
cSH	1067	986	1605	1585
Volume to Capacity	0.01	0.04	0.01	0.01
Queue Length 95th (ft)	1	3	0	1
Control Delay (s)	8.4	8.8	1.7	3.3
Lane LOS	A	A	A	A
Approach Delay (s)	8.4	8.8	1.7	3.3
Approach LOS	A	A		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	4	1	29	33	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	4	1	32	36	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	70	36	37			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70	36	37			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	934	1036	1574			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	10	33	37
Volume Left	5	1	0
Volume Right	4	0	1
cSH	977	1574	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.7	0.2	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	0.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	10	7	25	35	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	8	27	38	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	82	39	40			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	82	39	40			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	916	1032	1569			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	11	35	40
Volume Left	0	8	0
Volume Right	11	0	2
cSH	1032	1569	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (ft)	1	0	0
Control Delay (s)	8.5	1.6	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	1.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	53	91	81	6	3	52
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	58	99	88	7	3	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	214	32	60			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	214	32	60			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	91	94			
cM capacity (veh/h)	730	1042	1544			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	157	95	60
Volume Left	58	88	0
Volume Right	99	0	57
cSH	901	1544	1700
Volume to Capacity	0.17	0.06	0.04
Queue Length 95th (ft)	16	5	0
Control Delay (s)	9.8	7.0	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	7.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	0	17	3	0	0	8	0	1	0	2	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	0	18	3	0	0	9	0	1	0	2	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	22	22	4	40	23	1	5			1		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	22	22	4	40	23	1	5			1		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	98	100	100	100	99			100		
cM capacity (veh/h)	987	867	1080	943	865	1084	1616			1622		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	26	3	10	5
Volume Left	8	3	9	0
Volume Right	18	0	1	3
cSH	1051	943	1616	1622
Volume to Capacity	0.02	0.00	0.01	0.00
Queue Length 95th (ft)	2	0	0	0
Control Delay (s)	8.5	8.8	6.4	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.5	8.8	6.4	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	17.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	131	152	30	233	33	264	551	55	79	283	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00	0.97	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00	1.00	0.99	1.00		0.99	1.00		1.00	1.00	
Frt		1.00	0.85	1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1848	1533	1753	1821		1751	1832		1764	1828	
Flt Permitted		0.92	1.00	0.65	1.00		0.54	1.00		0.29	1.00	
Satd. Flow (perm)		1717	1533	1204	1821		993	1832		531	1828	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	142	165	33	253	36	287	599	60	86	308	34
RTOR Reduction (vph)	0	0	120	0	13	0	0	6	0	0	7	0
Lane Group Flow (vph)	0	165	45	33	276	0	287	653	0	86	335	0
Confl. Peds. (#/hr)	8		8	8		8	10		7	7		10
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		8			4			6			2	
Permitted Phases	8		8	4			6			2		
Actuated Green, G (s)		11.0	11.0	11.0	11.0		24.3	24.3		23.3	23.3	
Effective Green, g (s)		12.2	12.2	12.2	12.2		24.8	24.8		24.8	24.8	
Actuated g/C Ratio		0.27	0.27	0.27	0.27		0.55	0.55		0.55	0.55	
Clearance Time (s)		5.2	5.2	5.2	5.2		4.5	4.5		5.5	5.5	
Vehicle Extension (s)		2.0	2.0	2.0	2.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		465	415	326	493		547	1009		292	1007	
v/s Ratio Prot					c0.15			c0.36			0.18	
v/s Ratio Perm		0.10	0.03	0.03			0.29			0.16		
v/c Ratio		0.35	0.11	0.10	0.56		0.52	0.65		0.29	0.33	
Uniform Delay, d1		13.2	12.3	12.3	14.1		6.4	7.0		5.4	5.6	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2	0.0	0.0	0.8		3.6	3.2		2.6	0.9	
Delay (s)		13.4	12.4	12.3	14.9		10.0	10.2		8.0	6.4	
Level of Service		B	B	B	B		A	B		A	A	
Approach Delay (s)		12.9			14.6			10.2			6.7	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	24	16	861	35	12	506
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	26	17	936	38	13	550
Pedestrians			10			38
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			4.0			4.0
Percent Blockage			1			3
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						836
pX, platoon unblocked						
vC, conflicting volume	1541	993			974	
vC1, stage 1 conf vol	955					
vC2, stage 2 conf vol	586					
vCu, unblocked vol	1541	993			974	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	94			98	
cM capacity (veh/h)	320	288			708	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	43	974	13	550
Volume Left	26	0	13	0
Volume Right	17	38	0	0
cSH	307	1700	708	1700
Volume to Capacity	0.14	0.57	0.02	0.32
Queue Length 95th (ft)	12	0	1	0
Control Delay (s)	18.7	0.0	10.2	0.0
Lane LOS	C		B	
Approach Delay (s)	18.7	0.0	0.2	
Approach LOS	C			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	64.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	83	71	825	105	64	466
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	90	77	897	114	70	507
Pedestrians	10		20			5
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	4.0		4.0			4.0
Percent Blockage	1		2			0
Right turn flare (veh)		6				
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)			1287			
pX, platoon unblocked						
vC, conflicting volume	1629	969			1021	
vC1, stage 1 conf vol	964					
vC2, stage 2 conf vol	666					
vCu, unblocked vol	1629	969			1021	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	69	75			90	
cM capacity (veh/h)	293	304			674	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	167	1011	70	507
Volume Left	90	0	70	0
Volume Right	77	114	0	0
cSH	544	1700	674	1700
Volume to Capacity	0.31	0.59	0.10	0.30
Queue Length 95th (ft)	32	0	9	0
Control Delay (s)	21.8	0.0	11.0	0.0
Lane LOS	C		B	
Approach Delay (s)	21.8	0.0	1.3	
Approach LOS	C			

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	254	18	20	265	31	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	276	20	22	288	34	20
Pedestrians	2			14		
Lane Width (ft)	12.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	0			1		
Right turn flare (veh)						
Median type	TWLTL			None		
Median storage veh)	2					
Upstream signal (ft)	667					
pX, platoon unblocked						
vC, conflicting volume			296		619	300
vC1, stage 1 conf vol					286	
vC2, stage 2 conf vol					334	
vCu, unblocked vol			296		619	300
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			98		95	97
cM capacity (veh/h)			1266		622	731

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	296	310	53
Volume Left	0	22	34
Volume Right	20	0	20
cSH	1700	1266	658
Volume to Capacity	0.17	0.02	0.08
Queue Length 95th (ft)	0	1	7
Control Delay (s)	0.0	0.7	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	0.7	10.9
Approach LOS			B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	154	0	15	166	34	0	0	15	44	0	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	167	0	16	180	37	0	0	16	48	0	25
Pedestrians		22			8						1	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		2			1						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	218			167			479	451	175	457	433	222
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	218			167			479	451	175	457	433	222
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	98	90	100	97
cM capacity (veh/h)	1350			1410			464	492	862	491	504	802

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	184	234	16	73
Volume Left	16	16	0	48
Volume Right	0	37	16	25
cSH	1350	1410	862	567
Volume to Capacity	0.01	0.01	0.02	0.13
Queue Length 95th (ft)	1	1	1	11
Control Delay (s)	0.8	0.6	9.3	12.3
Lane LOS	A	A	A	B
Approach Delay (s)	0.8	0.6	9.3	12.3
Approach LOS			A	B

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	0	272	0	0	0	285	520	0	0	265	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	296	0	0	0	310	565	0	0	288	11
Pedestrians								1			1	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			0	
Right turn flare (veh)			4									
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1474	1473	289	1474	1473	566	288			565		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1474	1473	289	1474	1473	566	288			565		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	61	100	100	100	76			100		
cM capacity (veh/h)	85	96	749	51	96	523	1274			1007		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	301	0	310	565	0	0	288	11
Volume Left	5	0	310	0	0	0	0	0
Volume Right	296	0	0	0	0	0	0	11
cSH	763	1700	1274	1700	1700	1700	1700	1700
Volume to Capacity	0.39	0.00	0.24	0.33	0.00	0.00	0.17	0.01
Queue Length 95th (ft)	47	0	24	0	0	0	0	0
Control Delay (s)	13.6	0.0	8.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	B	A	A					
Approach Delay (s)	13.6	0.0	3.1			0.0		
Approach LOS	B	A						

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	36	14	816	61	3	482
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	15	887	66	3	524
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)						386
pX, platoon unblocked	0.94					
vC, conflicting volume	1451	920			953	
vC1, stage 1 conf vol	920					
vC2, stage 2 conf vol	530					
vCu, unblocked vol	1447	920			953	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	95			100	
cM capacity (veh/h)	338	328			721	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	54	953	3	524
Volume Left	39	0	3	0
Volume Right	15	66	0	0
cSH	335	1700	721	1700
Volume to Capacity	0.16	0.56	0.00	0.31
Queue Length 95th (ft)	14	0	0	0
Control Delay (s)	17.8	0.0	10.0	0.0
Lane LOS	C		B	
Approach Delay (s)	17.8	0.0	0.1	
Approach LOS	C			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	248	12	34	262	0	14	0	24	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	270	13	37	285	0	15	0	26	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (ft)		335										
pX, platoon unblocked				0.98			0.98	0.98	0.98	0.98	0.98	
vC, conflicting volume	285			283			635	635	276	654	641	285
vC1, stage 1 conf vol							276	276		359	359	
vC2, stage 2 conf vol							359	359		296	283	
vCu, unblocked vol	285			260			619	619	254	639	625	285
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			97	100	97	100	100	100
cM capacity (veh/h)	1277			1281			567	542	771	540	531	754

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	0	283	37	285	41	0
Volume Left	0	0	37	0	15	0
Volume Right	0	13	0	0	26	0
cSH	1700	1700	1281	1700	681	1700
Volume to Capacity	0.00	0.17	0.03	0.17	0.06	0.00
Queue Length 95th (ft)	0	0	2	0	5	0
Control Delay (s)	0.0	0.0	7.9	0.0	10.6	0.0
Lane LOS			A		B	A
Approach Delay (s)	0.0		0.9		10.6	0.0
Approach LOS					B	A

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	6	69	0	5	56
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	7	75	0	5	61
Pedestrians			4			
Lane Width (ft)			12.0			
Walking Speed (ft/s)			4.0			
Percent Blockage			0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	151	75			75	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151	75			75	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	835	986			1524	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	7	75	66
Volume Left	0	0	5
Volume Right	7	0	0
cSH	986	1700	1524
Volume to Capacity	0.01	0.04	0.00
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.7	0.0	0.6
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	0.6
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	17.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	63	1	0	6	6	50
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	1	0	7	7	54
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	40	34	61			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	40	34	61			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	100	100			
cM capacity (veh/h)	971	1040	1542			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	70	7	61
Volume Left	68	0	0
Volume Right	1	0	54
cSH	972	1542	1700
Volume to Capacity	0.07	0.00	0.04
Queue Length 95th (ft)	6	0	0
Control Delay (s)	9.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	13.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	2	30	5	1	5	30	0	10	3	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	2	33	5	1	5	33	0	11	3	0	10
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	7			35			76	68	18	77	82	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	7			35			76	68	18	77	82	4
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			96	100	99	100	100	99
cM capacity (veh/h)	1614			1577			897	811	1060	894	797	1080

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	51	12	43	13
Volume Left	16	5	33	3
Volume Right	33	5	11	10
cSH	1614	1577	933	1026
Volume to Capacity	0.01	0.00	0.05	0.01
Queue Length 95th (ft)	1	0	4	1
Control Delay (s)	2.4	3.3	9.0	8.6
Lane LOS	A	A	A	A
Approach Delay (s)	2.4	3.3	9.0	8.6
Approach LOS			A	A

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	15.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	1	3	48	36	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	1	3	52	39	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	99	40	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	99	40	41			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	898	1031	1568			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	2	55	41
Volume Left	1	3	0
Volume Right	1	0	2
cSH	960	1568	1700
Volume to Capacity	0.00	0.00	0.02
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.8	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	2	3	50	36	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	2	3	54	39	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	101	40	40			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	101	40	40			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	896	1032	1569			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	3	58	40
Volume Left	1	3	0
Volume Right	2	0	1
cSH	982	1569	1700
Volume to Capacity	0.00	0.00	0.02
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.7	0.4	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	0.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	5	30	0	30	6	23	15	20	18	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	5	33	0	33	7	25	16	22	20	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	142	117	20	115	109	33	20			41		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	142	117	20	115	109	33	20			41		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	96	100	97	100			99		
cM capacity (veh/h)	791	759	1058	846	767	1040	1597			1568		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	5	65	48	41
Volume Left	0	33	7	22
Volume Right	5	33	16	0
cSH	1058	933	1597	1568
Volume to Capacity	0.01	0.07	0.00	0.01
Queue Length 95th (ft)	0	6	0	1
Control Delay (s)	8.4	9.1	1.0	3.9
Lane LOS	A	A	A	A
Approach Delay (s)	8.4	9.1	1.0	3.9
Approach LOS	A	A		

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	22.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	2	4	42	48	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	4	46	52	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	109	55	58			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	109	55	58			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	885	1012	1547			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	4	50	58
Volume Left	2	4	0
Volume Right	2	0	5
cSH	944	1547	1700
Volume to Capacity	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0
Control Delay (s)	8.8	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	15.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	13	10	39	54	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	14	11	42	59	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	123	59	60			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	123	59	60			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	866	1006	1544			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	53	60
Volume Left	2	11	0
Volume Right	14	0	1
cSH	985	1544	1700
Volume to Capacity	0.02	0.01	0.04
Queue Length 95th (ft)	1	1	0
Control Delay (s)	8.7	1.5	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	1.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	19.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	34	55	71	4	6	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	60	77	4	7	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	187	28	50			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	187	28	50			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	94	95			
cM capacity (veh/h)	762	1047	1557			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	97	82	50
Volume Left	37	77	0
Volume Right	60	0	43
cSH	916	1557	1700
Volume to Capacity	0.11	0.05	0.03
Queue Length 95th (ft)	9	4	0
Control Delay (s)	9.4	7.1	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	7.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	0	9	2	0	0	15	2	3	0	1	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	0	10	2	0	0	16	2	3	0	1	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	41	42	4	51	44	4	8			5		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	41	42	4	51	44	4	8			5		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	100	99			100		
cM capacity (veh/h)	956	841	1079	933	839	1080	1613			1616		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	14	2	22	8
Volume Left	4	2	16	0
Volume Right	10	0	3	7
cSH	1038	933	1613	1616
Volume to Capacity	0.01	0.00	0.01	0.00
Queue Length 95th (ft)	1	0	1	0
Control Delay (s)	8.5	8.9	5.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.5	8.9	5.5	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	17.8%	ICU Level of Service	A
Analysis Period (min)	15		