


# EXISTING AND PROJECTED CONDITIONS

*Technical Memorandum*

**FINAL**

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**Appendix A: Existing Intersection Levels of Service (LOS)**

**Appendix B: Bozeman Committed Projects**

**Appendix C: Projected Intersection Levels of Service (LOS)**

# Abbreviations / Acronyms

| | |
|---|---|
| **AADT** | Annual Average Daily Traffic |
| **ACS** | American Community Survey |
| **ASMSU** | Associated Students of Montana State University |
| **AWS** | All-way Stop |
| **BABAB** | Bozeman Area Bicycle Advisory Board |
| **BNSF** | BNSF Railway |
| **CIP** | Capital Improvement Plan |
| **DHV** | Design Hourly Vehicle |
| **ECB** | Exceeds Computational Bounds |
| **FRA** | Federal Railroad Administration |
| **GIS** | Geographic Information System |
| **GVLT** | Gallatin Valley Land Trust |
| **HRDC** | Human Resource Development Council |
| **lbs** | Pounds |
| **LOS** | Level of Service |
| **LTS** | Level of Traffic Stress |
| **MDT** | Montana Department of Transportation |
| **mph** | miles per hour |
| **MRL** | Montana Rail Link |
| **MSU** | Montana State University |

| | |
|---|---|
| **NHTS** | National Household Travel Survey |
| **PDO** | Property Damage Only |
| **RPA** | Robert Peccia and Associates |
| **sec** | Seconds |
| **TAZ** | Transportation Analysis Zone |
| **TMP** | Transportation Master Plan |
| **TWS** | Two-way Stop |
| **TWLTL** | Two-way Left-Turn Lane |
| **v/c** | Volume to Capacity Ratio |
| **VMT** | Vehicle Miles Traveled |
| **vpd** | Vehicles per day |

# Existing and Projected Conditions

## 1.0. INTRODUCTION

To clearly understand a transportation network, it is important to evaluate the existing and projected conditions and the potential problem areas that may exist. To achieve this task for the Bozeman network, it was necessary to collect information on many aspects of the transportation system. Existing traffic data were used to establish existing conditions on major road segments within the study area. The existing data were forecasted out to the year 2040 using growth rates derived from a travel demand model built for Gallatin County. Utilizing the existing and projected data, the operational characteristics and potential traffic issues over the planning horizon were determined. A variety of data were used to help evaluate the system, including:

- Existing functional classification,
- Existing traffic data,
- Existing bicycle and pedestrian data,
- Existing roadway corridor size,
- Current intersection turning movement counts,
- Current traffic signal operation information,
- Existing intersection and roadway configurations, and
- Historic crash data.

## 2.0. EXISTING TRANSPORTATION SYSTEM

Current information about the transportation system was analyzed to establish the existing traffic conditions and to determine potential problem areas. Existing data were provided by the Montana Department of Transportation (MDT) and the City of Bozeman. Additional data were collected in the fall of 2015 to supplement the available information. Using a combination of the supplied and collected data, the existing operational characteristics of the transportation network was determined.

# 2.1. Transportation Network

## 2.1.1. Major Street Network

In order to understand a community's existing transportation system, it is necessary to first identify which roadways will be evaluated as part of the larger planning effort. A community's transportation system is made up of a hierarchy or roadways, with each roadway being classified according to certain parameters including, but not limited to, geometric configuration, traffic volumes, spacing in the community's transportation grid, speed, and adjacent land use. Functional classification is a method of classifying roads by the service they provide as part of the overall roadway network. Most travel involves movement through a network of roads. Functional classification defines the nature of traveling within a network in a logical and efficient manner by defining the part that any particular road or street should play in serving the flow of trips through the entire network.

For this evaluation, emphasis was placed on roadways that are functionally classified as collectors, minor arterials, or principal arterials within the study area. These functional classifications are not limited to the "urban" or "rural" settings. The local streets, the lowest ranking roadways, are not examined due to the assumption that if the major street network (i.e. collectors and above) is functioning to an acceptable level, the local roadways are not being used beyond their intended function. However, if problems begin to occur on the major street network, then the resulting issues will begin to infiltrate neighborhood routes (i.e. local streets). As such, the overall health of a community's transportation system can be characterized by the health of the major street network.

Included in the current study area are roadways with functional classifications of interstate system, principal arterial, minor arterial, collector routes, and local streets. Rural roadways in the study area generally carry a smaller volume than their urban counterparts. Although traffic volumes may differ on urban and rural sections of a roadway, it is important to maintain coordinated right-of-way standards to allow for efficient operation and urban development. The following list provides general descriptions of these functional classifications:



Interstate Highway – I-90

**Interstate Highways**

The main purpose of an interstate highway is to provide for regional and interstate transportation of people and goods. Primary users are all types, including local residents, commuters, travelers, and freight operators. Interstate highways are characterized by having fully controlled access (provided by a limited number of interchanges), high design speeds, and a high level of driver comfort and safety. The interstate system has been designed as a high-speed facility with all road intersections being grade separated. Interstate 90 traverses the study area as a four-lane divided highway.



Principal Arterial – 19th Avenue

## Principal Arterial System

The purpose of the principal arterial is to serve the major centers of activity, the highest traffic volume corridors, and the longest trip distances in an area. This classification of roadway carries a high proportion of the total traffic. Most of the vehicles entering and leaving the area utilize principal arterials. Significant intra-area travel, such as between central business districts and outlying residential areas and between major suburban centers, is served by principal arterials.

The spacing between principal arterials may vary from less than one mile in highly developed areas, to five miles or more on the urban fringes. Principal arterials connect to other principal arterials or to the interstate system. The major purpose of the principal arterial is to provide expedient movement of traffic, not access to abutting lands.



Minor Arterial – Durston Road

## Minor Arterial Street System

The minor arterial street system interconnects with and augments the principal arterial system. They accommodate trips of moderate length at a somewhat lower level of travel mobility as compared to principal arterials, and they distribute travel to smaller geographic areas. With an emphasis on traffic mobility, minor arterials include all arterials not classified as principal arterials while providing some access to adjacent lands.

The spacing of minor arterial streets may vary from several blocks to half a mile in highly developed areas of a town, to several miles in the urban fringes. They are normally spaced more than one mile apart in fully developed areas.



Collector Street – Ferguson Avenue

## Collector Street System

The collector street network serves a joint purpose – provide equal priority to the movement of traffic and to access residential, business, and industrial areas. This type of roadway differs from those of the arterial system in that collector roadways may traverse residential neighborhoods. The collector system distributes trips from the arterials to the user's ultimate destinations. The collector streets also collect traffic from local streets in the residential neighborhoods, and channel the traffic to the arterial system.

The actual location of collectors should be flexible to best serve developing areas and the public. The collector street system should intersect arterial streets at a uniform spacing of one-half to



Local Street – Sanders Avenue

one-quarter mile in order to maintain good progression on the arterial network. Ideally, collectors should be no longer than one to two miles and should be continuous for their entire length.

**Local Street System**

The local street network comprises all facilities not included in the higher systems. The primary purpose of local streets is to permit direct access to abutting lands and connections to higher systems. Usually service to through-traffic movements is intentionally discouraged either through low speed limits or other traffic calming measures.

**Figures 2.1** and **2.2** present the major street network as contained in the adopted *Greater Bozeman Area Transportation Plan (2007 Update)*. The figures show existing roadway classifications along with future extensions of major streets. Note that the functional classifications shown in the figures may not represent the "Federally approved" functional classification system, rather, they show the locally adopted classifications. These classifications are used for planning purposes and may not be representative of actual conditions.

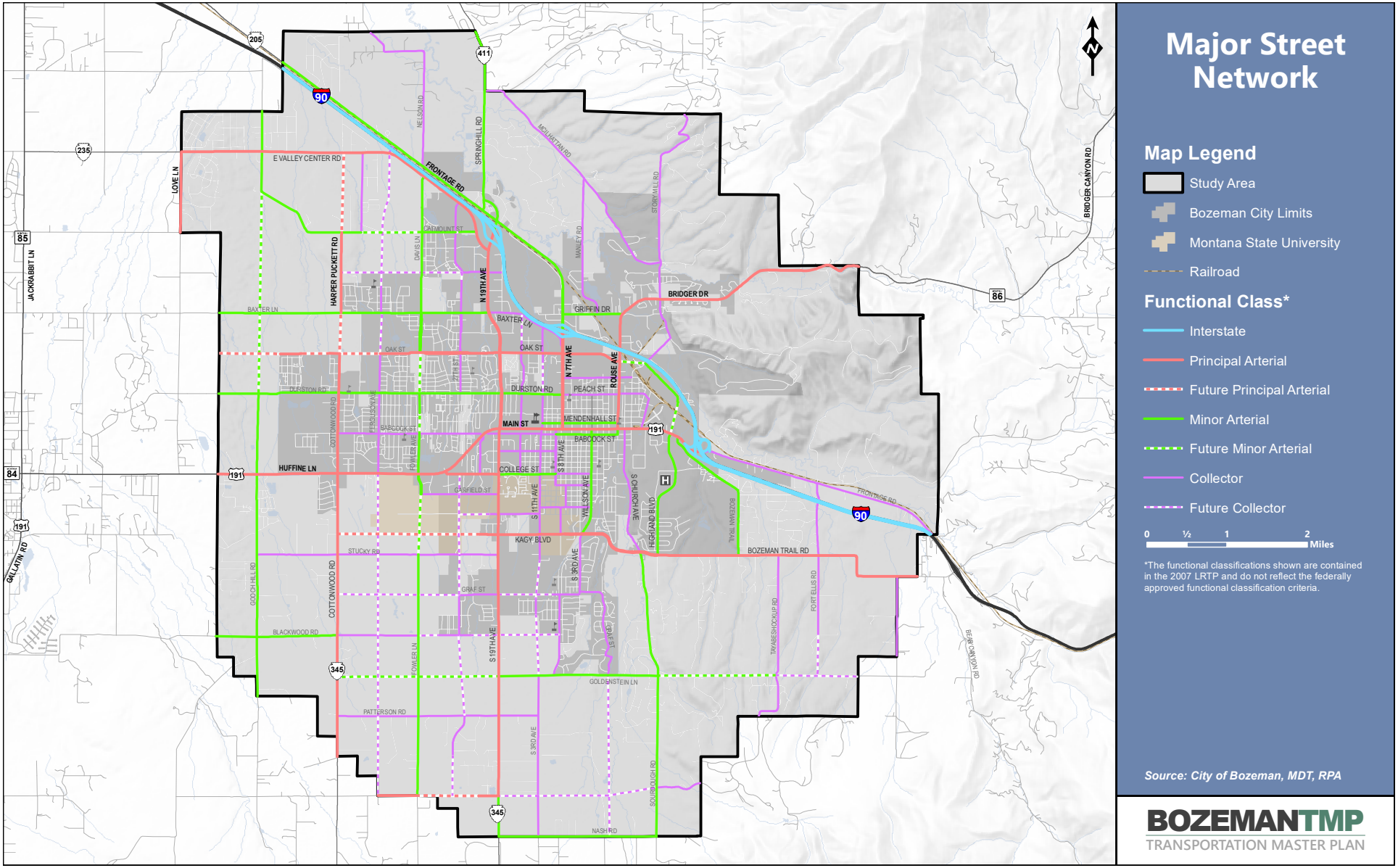



Figure 2.1: Major Street Network

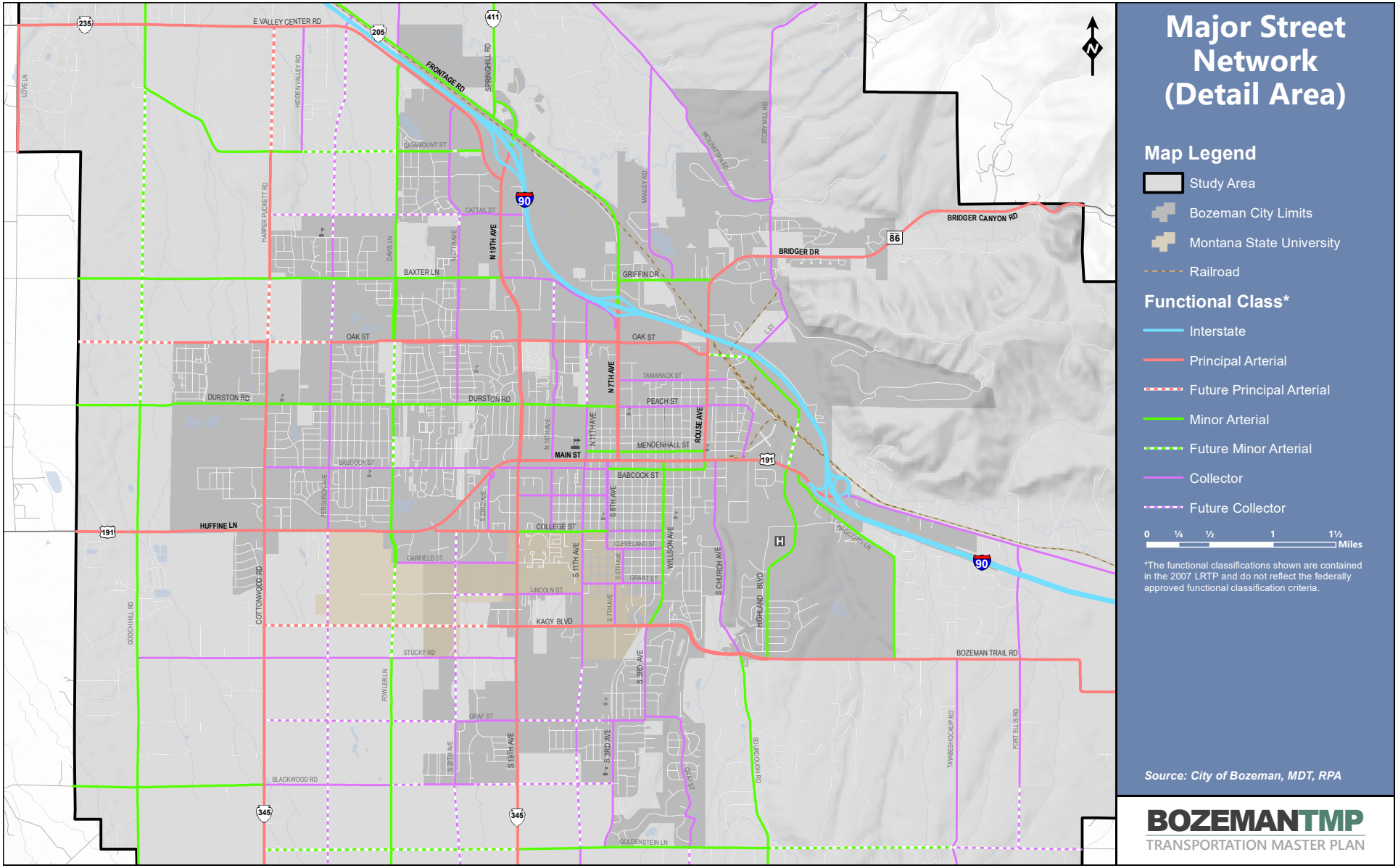



Figure 2.2: Major Street Network (Detail Area)

## 2.1.2. Active Transportation Network

### *2.1.2.1 Bicycle Facilities*

The City of Bozeman has made great progress on its active transportation network since the *Greater Bozeman Area Transportation Plan (2007 Update)* and the *2007 Parks, Recreations, and Open Space Plan*. All facility types have approximately doubled or more in this intervening period. The increase in facilities has likely resulted in measured increases in bicycling in Bozeman. Bicycle commuting mode share increased from 4.7 percent of commute trips to 6.3 percent of commute trips between 2000 and 2010. The City of Bozeman measured an instantaneous increase in bicycling and walking along West Babcock Street in 2007 of 256 percent when bike lanes and sidewalks were installed. **Figure 2.3** shows recent increases in bicycle facilities by type. For the unpaved trails, 2007 baseline data was not available so 2005 data was utilized.

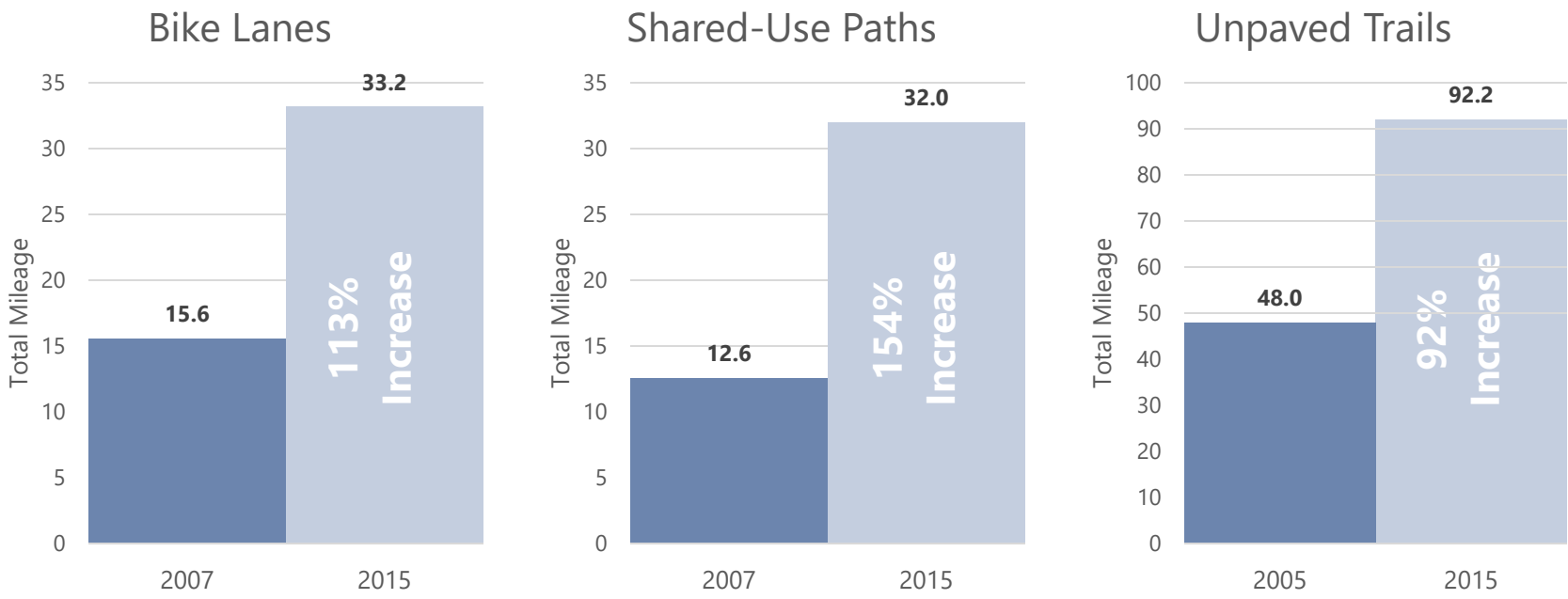



**Figure 2.3: Increase in Bicycle Facilities**

The following list describes the various bicycle facilities found in Bozeman and other cities. **Figure 2.4** shows the existing bicycle facilities within the TMP study area.




**Bike Route Signage – Grand Avenue**

## Bike Routes

Bike routes include paved shoulders and shared roadways where bicyclists and cars operate within the same travel lane, either side by side or in single file depending on roadway configuration. The most basic type of bikeway is a signed shared roadway. This facility is used to connect other bikeways – usually bike lanes - or designate preferred routes through high-demand corridors. Bozeman has a network of signed bike routes that operate both as shared roadways and, in some instances, with paved shoulders. Some of these roadways, such as Mendenhall Street, have shared lane markings installed which raise the visibility of bicycling and promote safer behavior by both bicyclists and motorists. Bozeman has approximately 18 miles of bike routes officially designated through signage.

## Bike Lanes

Bike lanes are a type of separated bikeway that uses signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movement by both bicyclists and motorists. Bozeman has approximately 33 miles of on-street bike lanes.



**Bike Lane – Peach Street**



Shared-use Path – College Street

**Shared-use Paths**

Shared-use paths are off-street paved trails that are designated for the use of bicyclists, pedestrians, and other non-motorized users such as skateboarders and rollerbladers. Examples include the Oak Street shared-use path and the College Street to Huffine Lane pathway. Bozeman has approximately 32 miles of shared-use paths.

**Natural Surface Trails**

Natural surface trails are present in nearly every part of Bozeman. These facilities link neighborhoods, provide connections along streams (West Side Trail) and follow old railroad alignments like the Gallagator Trail and Story Mill Spur. These facilities fulfill, along with the rest of the sidewalk and shared use path network, both transportation and recreational functions. Bozeman has an extensive network that is constantly being expanded through developer built trails and other initiatives led by the City of Bozeman and Gallatin Valley Land Trust (GVLT). Much of the trail system has wayfinding and kiosks with maps and other information. Bozeman has approximately 92 miles of unpaved natural surface trails.



Natural Surface Trail – Gallatin Valley Regional Park



Bicycle Boulevard – Minneapolis, MN

**Bicycle Boulevards**

While not fully developed in Bozeman, bicycle boulevards are streets that are comfortable for most bicyclists to ride on due to low motorized traffic volumes and speeds. They are designated and designed to give bicycle travel priority. Bicycle boulevards are designated with signs, pavement markings, and wayfinding elements. Additionally, they create safe, convenient bicycle crossings of busy arterial streets. If necessary, they can also employ speed or volume management techniques to keep them comfortable for bicyclists by reducing speeds and cut-through traffic. The City of Bozeman has not officially designated any streets as bicycle boulevards, however, there are many streets that currently have many of these features including pavement markings, wayfinding signage, and even a diverter (South 6th Avenue).

**Separated Bike Lanes**

While not currently found in Bozeman, separated bike lanes combine the user experience of a separate path with the on-street infrastructure of conventional bike lanes through various forms of physical separation from adjacent traffic. Two such facilities are currently in place in Missoula.




Separated Bike Lane – Missoula, MT

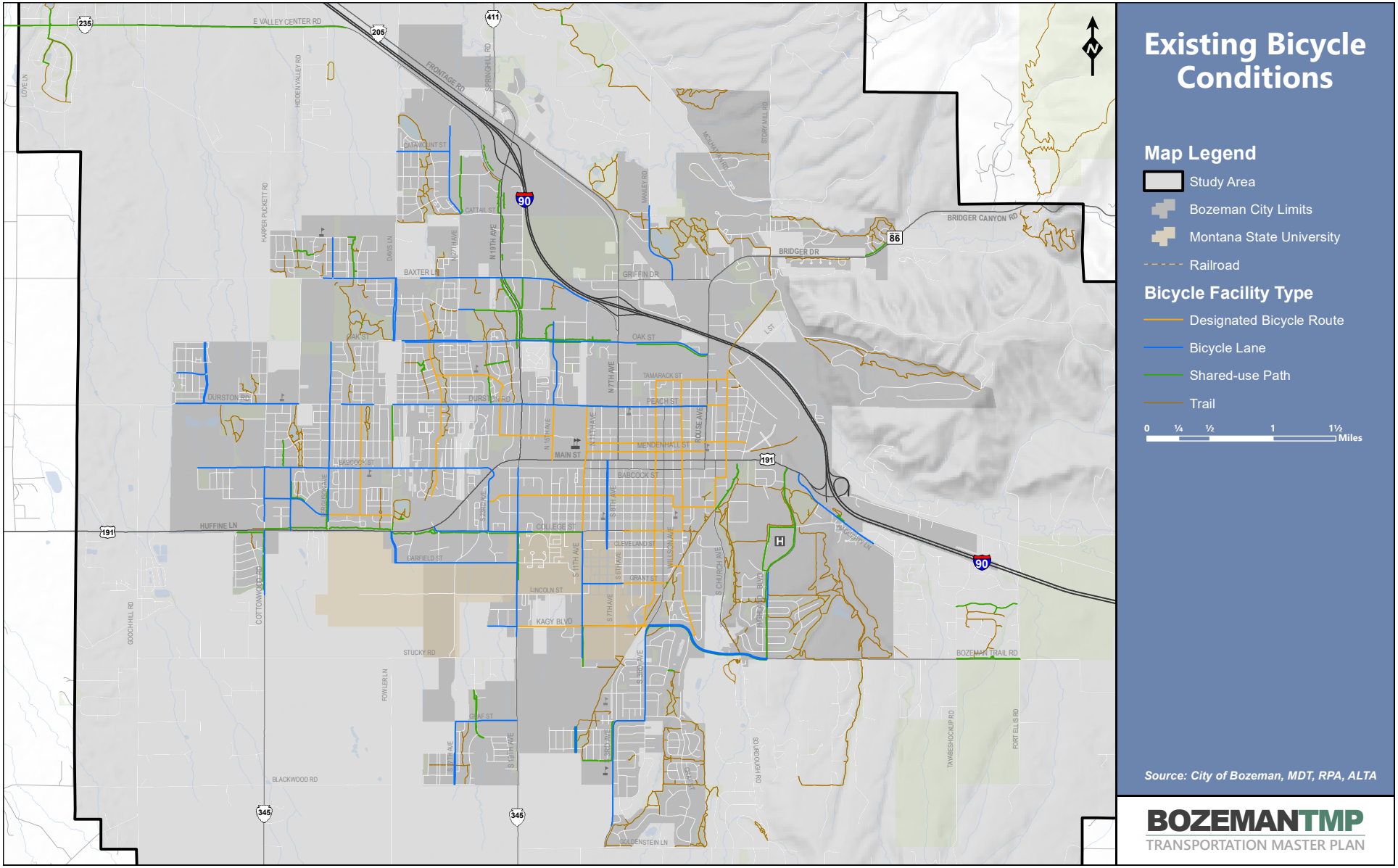



Figure 2.4: Existing Bicycle Conditions

### 2.1.2.2 Pedestrian Facilities

Bozeman's pedestrian facilities are generally good, with plentiful sidewalks that are typically in good condition. The City does have several challenges to achieving a fully connected pedestrian network. The following list describes these challenges. **Figure 2.5** presents the existing pedestrian network within the TMP study area.



Street Lacking Sidewalk

**Neighborhoods Lacking Sidewalks**

Many County subdivisions and some City neighborhoods lack sidewalks completely. Most of these areas were constructed in the 1970s and 1980s. The City has made attempts to bring sidewalks to some of these neighborhoods and met resistance from some of the residents.

**Incomplete Subdivisions**

The responsibility to construct sidewalks currently lies at the individual lot level when the lot is developed. This has resulted in piecemeal sidewalk connectivity in subdivisions that have not yet been fully built out. Developers are required to construct the sidewalks after three years if the lots are not developed. However, the economic down-turn of 2008 through 2013 left many developers bankrupt and resulted in significant gaps in the sidewalk network. This deficiency is not shown in **Figure 2.5** as it is fluid and changing regularly.



Gap in Pedestrian Network



Missing Sidewalk on Collector Street

**Arterials and Collectors**

Several of Bozeman's arterials and collectors were originally constructed to County standards many years ago. As the city has grown, many of these streets have been reconstructed to newer standards to include sidewalks. Many streets, such as West Babcock Street from 11th to 19th Avenues, have never been reconstructed.

**Old Infrastructure**

Many of Bozeman's older neighborhoods still have their original sidewalks, some of which have been in place for more than a century. While many are in good condition, some are cracked, heaved by tree roots, or lack accessible ramps at street corners. The City has been addressing these issues and making steady annual progress, however, there is a backlog that will still require many years of effort. According to section 12.20.035 of the Bozeman Municipal Code, the City may notify property owners that repairs are necessary and the property owner has 30 days for repair or replacement.



Root Heaving on Old Infrastructure



Flashing Beacons at Crosswalk

**Crossings**

Many of Bozeman's signalized and unsignalized pedestrian crossings could benefit from enhancements which would make the crossing more visible to motorists and more comfortable to pedestrians and trail users. Many key pedestrian desire lines, such as mid-block trail crossings, are not accommodated.

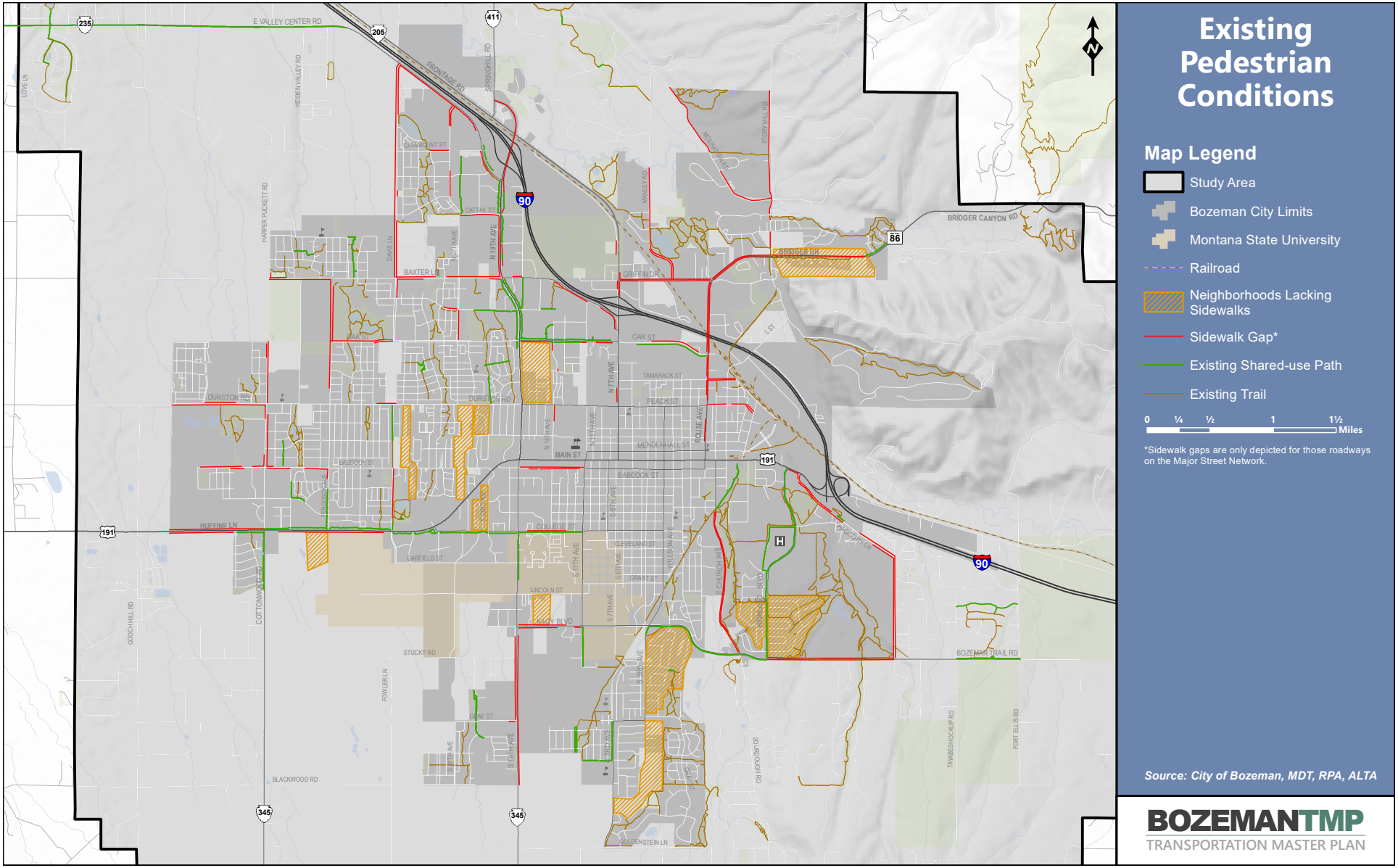



Figure 2.5: Existing Pedestrian Conditions

### 2.1.2.3 Transit Facilities

Streamline provides fixed route public transportation in Bozeman, Belgrade, and Livingston. Streamline began as a partnership between the Human Resource Development Council (HRDC), District IX, and the Associated Students of Montana State University (ASMSU). The partnership now includes the cities of Bozeman and Belgrade and the President's Office at Montana State University. Streamline was recently honored as one of five urban transit systems throughout the nation to be awarded an Outstanding Service Award by the Federal Transit Administration.



Streamline Bus

Riders are overwhelmingly MSU students, faculty, and staff. This is both because universities tend to generate significant ridership, and because Streamline's service is MSU-centric with routes and schedules designed to serve MSU students and employees. Streamline is fare free for all routes. Current routes provided by Streamline are described below[1]:

- **Daytime (Fixed Route):** Three daytime routes service Bozeman on one-hour headways between 6:30 AM and 7:15 PM, Monday through Friday. During the MSU school year, two routes are run at half-hour headways during the AM, between 6:30 AM and 9:30 AM, and PM, between 4:00 PM and 6:30 PM, peak hours.
- **Latenight (Deviated Fixed Route):** The Latenight routes were added in FY 2008. These two routes run between 9:00 PM and 2:30 AM, Thursday, Friday, and Saturday only when MSU is in session. One route provides half-hour service between MSU and downtown, while the other route provides one-hour service to a wider service area including Valley West and other areas north of Main Street. To ensure the safety of those on the bus, a security individual rides on all Latenight busses.
- **Bridger Bowl/Bohart Ranch (Deviated Fixed Route, Seasonal):** Operated during ski season, the Bridger Bowl/Bohart Ranch routes provide rides to and from Bridger Bowl and Bohart ranch between 8:00 AM and 4:45 PM on weekends only. This route is intended to address parking and congestion issues at the respective ski areas. A park-and-ride lot is available at the Gallatin County Fairgrounds.

[1] Streamline, Routes & Schedules, http://www.streamlinebus.com/routes-schedules/, accessed 03/29/2016.

- **Saturday Service (Fixed Route):** Saturday service is provided for the same four in town routes as the Daytime service from 7:30 AM to 6:15 PM on Saturdays. All routes operate at one-hour headways.
- **Livingston Commuter (Fixed Route):** The Livingston Commuter route consists of an AM and PM route to/from Livingston. The AM route departs Bozeman at 5:50 AM and returns at 7:30. The PM route picks up passengers around Bozeman between 4:35 and 5:25 PM before traveling to Livingston for a 6:10 PM stop.
- **Belgrade Commuter (Fixed Route):** The Belgrade Commuter route, called the Greenline Express, was created to meet increasing demand for public commuter service between Belgrade and Bozeman. Beginning in Belgrade every weekday, the first bus leaves from Belgrade at 6:35 AM and heads into Bozeman with several stops along the way before reaching MSU. The Greenline makes six trips a day – two in the morning, two in the afternoon, and two in the evening – with the last stop in Belgrade at 7:00 PM.

**Streamline Ridership Trends**

Ridership data are collected by the drivers when a passenger boards the bus. Monthly ridership data for all routes between fiscal year 2007 and 2015 were provided by Streamline. These data do not provide information for boardings and alightings at specific stops, rather the data are categorized as daytime, late night, Livingston, Bridger Bowl/Bohart Ranch, and Gardner/Mammoth. The Bridger Bowl/Bohart Ranch line runs on weekends during the ski season, approximately from early December to early April. The Gardner/Mammoth route was tested in fiscal year 2011, however, due to low ridership the route was canceled. Both the Bridger Bowl/Bohart Ranch and Gardner/Mammoth routes are not included in the following analysis. Furthermore, fiscal year 2010 was the first year to have weekday, Saturday, late night, and Livingston service, as such, the following analysis will include data from fiscal year 2010 to 2015.

Streamline ridership trends can be summarized on a year-to-year and a month-to-month basis. Data show that total ridership has increased year-to-year from 2010 until 2014. A slight decrease in ridership was seen in 2015. The average annual growth rate based on simple compound growth is 7.5 percent. **Figure 2.6** presents the total combined ridership for the weekday, Saturday, late night, and Livingston routes. Individually, the Saturday and late night categories showed increasing ridership in fiscal year 2015.

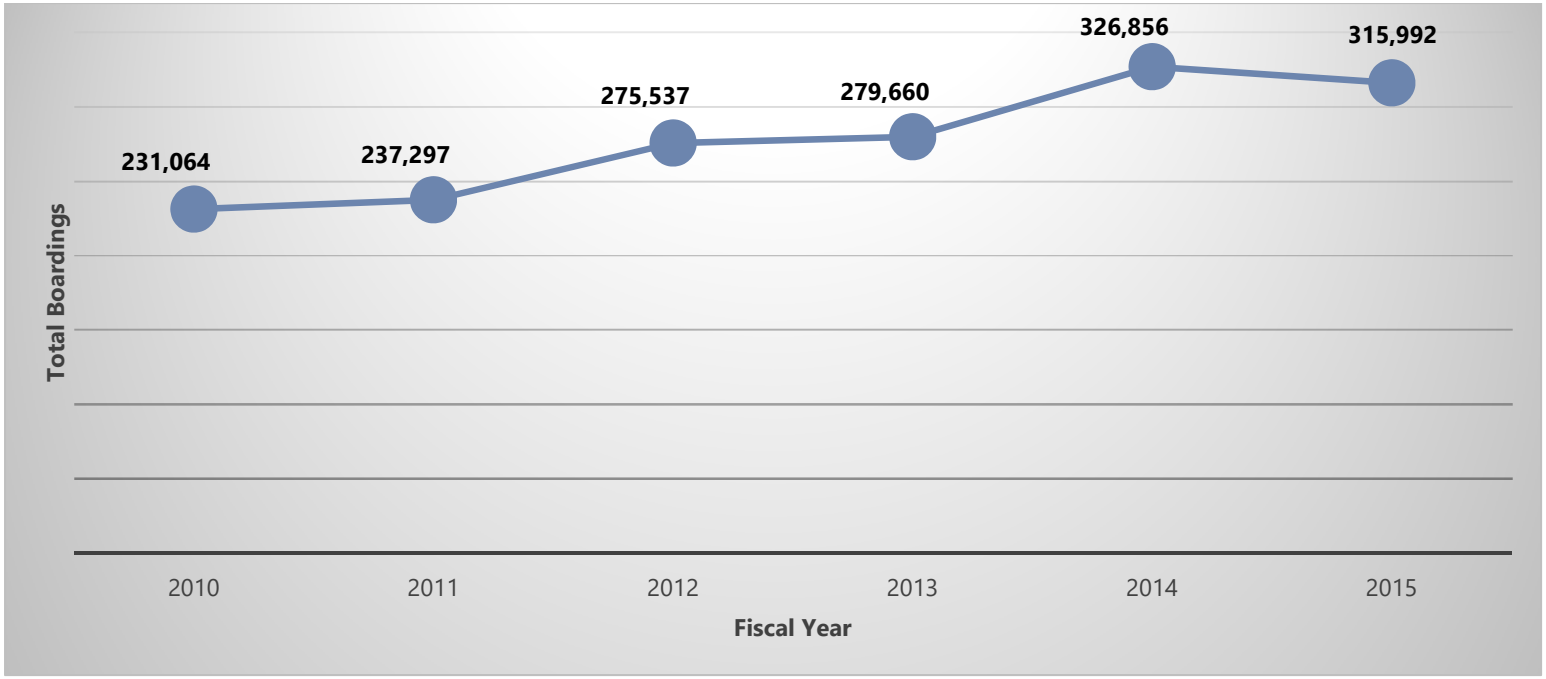



**Figure 2.6: Yearly Ridership**

On a month-by-month basis, seasonal variation in ridership can be seen with winter months generally having greater ridership as compared to summer months. It can also be seen that ridership in December decreases as compared to November and January. This trend could be attributed to the holiday season and university students returning home for winter break. The daytime, Saturday, and Livingston categories show less seasonal variation, possible due to more non-university users. The late night category shows the greatest variation throughout the year with peaks in April and October and a low in July. Weather and availability of other transportation modes may also contribute seasonal variation of ridership. **Figure 2.7** shows the average percentage of boardings for each month.

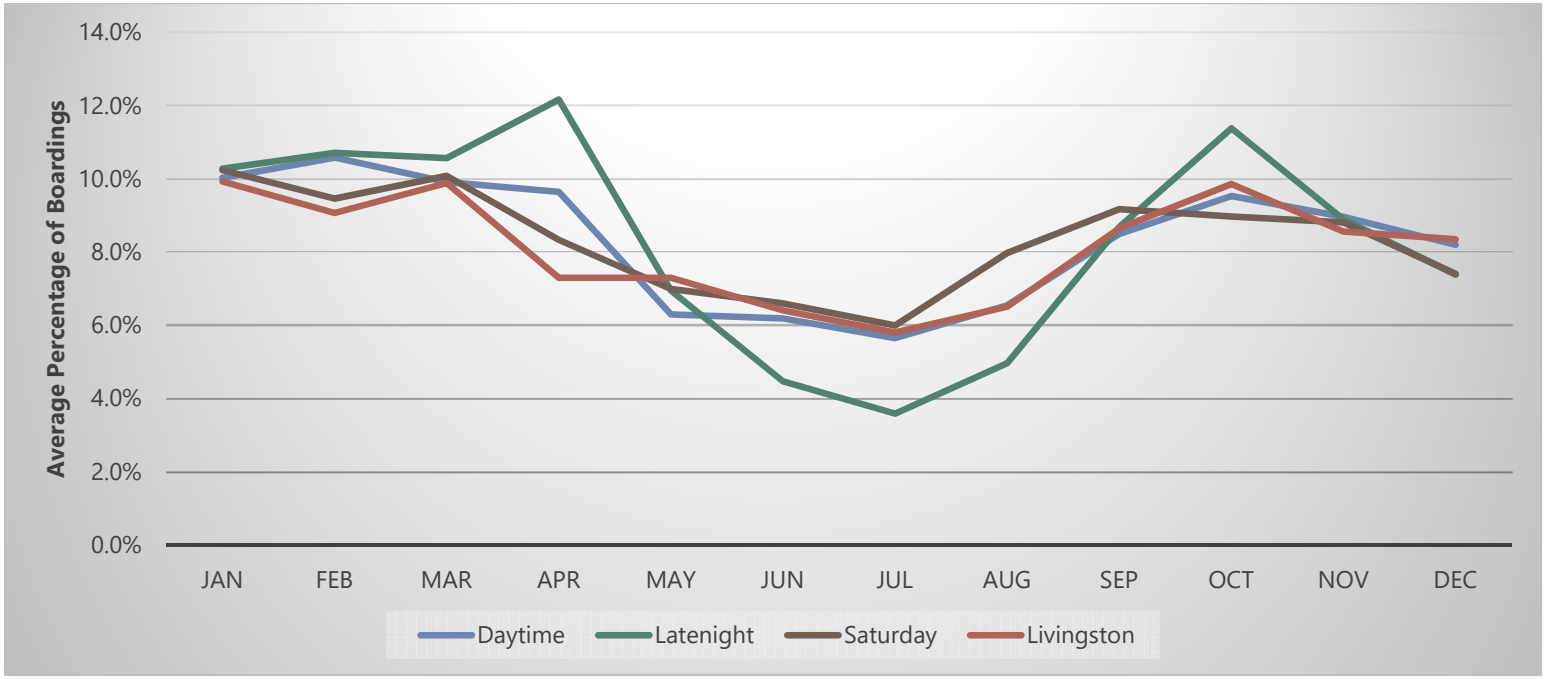



**Figure 2.7: Monthly Ridership**

**Pedestrian and Bicycle Connectivity to Transit**

Streamline's five weekday lines are all one-way loops and have been adjusted over the years to become more efficient and beneficial to the community. Bus stop amenities are varied and range from high-quality custom designed shelters with benches and information to simple bus stop signs with a route timetable. Walking and bicycling are natural compliments to transit use. Transit use can be improved by high-quality pedestrian and bicycle facilities that can fill in the "first or last mile" of transit journeys. For the most part pedestrian amenities are present along bus routes, with some exceptions, such as along collector or arterial roads that have not fully been built out yet.

#### 2.1.2.4 Active Transportation Facility Maintenance

Active transportation facilities are maintained in different ways by different departments and groups within the City of Bozeman. The following describes current maintenance activities for active transportation facilities:

- **On-Street Pavement Markings:** Bike lane and crosswalk striping is replaced in conjunction with the overall pavement marking replacement. The City of Bozeman contracts restriping annually. Some pavement markings have been installed as recessed thermoplastic which lasts much longer. For example, when South 3rd Avenue was chip sealed in 2013, the existing thermoplastic pavement markings that were applied in the late 1990s were still in good condition. Streets are snow plowed by MDT and City crews. The City of Bozeman has worked in recent years to improve plowing of bike lanes so that they are functional during the winter months and to sweep them clear of debris in the spring.

- **Paved Shared-Use Paths:** Most of Bozeman's asphalt shared-use paths are under 15 years old, however, some are reaching the point where surface preservation is needed. One of the issues faced is the varying quality of construction as many of these facilities were built by developers. There are multiple examples of asphalt trails deteriorating due to improper construction. The City of Bozeman has responded to some spot location for repairs, however, there is no substantial funding or program in place to conduct maintenance. Parks and Recreation and the Streets Departments have worked together to manage the inventory of asphalt shared-use paths. Various departments including Streets, Forestry, Cemetery, and Parks and Recreation have plowing responsibilities. Parks has taken a larger role and has received additional equipment from the Streets Department.

- **Natural Surface Trails:** Natural surface trails are a cost effective facility type with nearly 100 miles of facilities in place. The City's Parks and Recreation Department has a "Trail Boss" position which organizes and conducts maintenance on 67 miles of natural surface trail – including 66 bridges. Additionally, the City of Bozeman partners with the GVLT for maintenance. GVLT maintains trails that are in the County and organizes volunteer work days on City trails. Natural surface trails are not maintained during the winter months.

#### 2.1.2.5 Active Transportation Programs and Events

Since 2007, there have been many new programs created and sustained by a variety of groups within Bozeman. **Table 2.1** summarizes these programs.

**Table 2.1: Active Transportation Programs and Events**

| Program | Summary | Group/Agency |
|---|---|---|
| **Bike Counts** | Each September since 2011 the Bozeman Area Bicycle Advisory Board (BABAB) has organized volunteers to count bicycles at 15 locations around Bozeman. The counts are conducted in accordance with the National Bicycle and Pedestrian Documentation Project. | BABAB |
| **Bike Swap** | Each May the Gallatin Valley Fairgrounds are utilized to sell used bicycle equipment. The event is well attended each year. | Gallatin Valley Bike Club |
| **Bike to Work Week** | Each May volunteers and local businesses work together to encourage and reward individuals for biking to work. "Energizer Stations" each morning provide free coffee and breakfast treats to participating bicyclists. Additionally, other bicycle themed events are organized. | BABAB, MSU |
| **Bike Training/Education** | Classes involving teaching the rules of the road, proper riding technique and bicycle safety are periodically taught at a variety of venues. | BABAB, MSU, Bike Kitchen |
| **Bozeman Biking Website** | The City of Bozeman hosts a website (http://www.bozeman.net/bicycles) that has some materials in development including the recommendations from the League of American Bicyclists. There are two other websites that could cause redundancy and confusion among users. | BABAB |
| **Community Bikes** | Complete bicycles are provided to individuals who are endorsed by a selection of participating local community organizations. | Bike Kitchen, Human Resource Development Council, Gallatin Valley Food Bank, Thrive, Haven, etc. |
| **Community Shop** | The Bike Kitchen has open tools and repair stands available any time during regular hours for members of the public to conduct and learn bicycle repair. | Bike Kitchen |
| **Discovery Walks** | In 2015, there were 15 community walks with a theme: art, history, bird watching, etc. The program reached 267 participants over 38 free guided walks. This has resulted in getting more people to know the trail system. | GVLT |
| **Earn a Bike** | Volunteers at the Bike Kitchen can pick out a bike frame and build a complete bicycle from it after 16 hours of volunteer time. | Bike Kitchen |
| **High School Driver's Education and Safety** | BABAB developed a presentation aimed at raising awareness of bicycling issues for the Bozeman High School Driver's Education class. The program was initiated in 2013. Furthermore, BABAB has a high school ambassador who has organized events targeted at Bozeman High students. | BABAB |
| **Speed Enforcement** | Mobile speed trailers are relocated frequently around Bozeman to remind drivers of the speed limit. Permanent radar speed signs are installed near most of the city's elementary schools. | Bozeman Police Department |
| **Tail/Bike Maps** | Both GVLT and the BABAB publish a hard copy paper map of the City of Bozeman. The maps contain similar information, with the GVLT map costing $3 and focusing on the trail system. The BABAB map focuses more on bicycle facilities and is free. There is no user friendly on-line map as of 2015. | GVLT, BABAB |

| Program | Summary | Group/Agency |
|---|---|---|
| **Trail Ambassadors** | handing out dog bags and leashes. In 2015, there were 225 hours of patrols and 2,748 contacts made with | GVLT |
| **Trail Volunteers** | GVLT organizes volunteers to help maintain the trail system. GVLT oversees the work and the City provides materials. In fiscal year 2015, there were 753 volunteers amassing 2,823 volunteer hours. | GVLT, City of Bozeman |
| **Trail Wayfinding** | In 2015, GVLT added or replaced 575 signs for the trail wayfinding totems. GVLT has also installed 25 | GVLT |
| **Trails Rx** | In 2015, 15 health providers "prescribed" physical activity on the trail system. GVLT has provided the providers with trail maps, handouts, etc. | GVLT |

### 2.1.1. Freight and Rail Network

**Freight and Heavy Vehicles**

The City of Bozeman is situated near the junction of Interstate 90 (I-90), US Highway 191 (US 191), and State Highway 84. I-90 connects Bozeman with Billings and Interstate 94 to the east and Butte and Interstate 15 to the west. US 191 extends south to West Yellowstone were it connects to US Highway 20. State Highway 84 travels west to its junction with US Highway 287 in Norris. Each of these routes serve regional, national, and international trade. As such, it is important that delivery vehicles are able to travel through the area in a safe and effective manner.

Within the study area, of major concern is the volume of heavy vehicle traffic in downtown Bozeman. A 2015 study found that of the approximately 300 heavy vehicles that use Main Street on a typical weekday, approximately 39 percent are through trips.[2] No truck routes are designated within the City of Bozeman. Roadway capacity, functional classification, and geography generally dictate which routes heavy vehicles use. Heavy vehicle traffic on major roadways within the study area is summarized in **Table 2.2**.

[2] *Understanding Commercial Truck Traffic Through Downtown Bozeman*, Prepared for the Downtown Bozeman Partnership by the Western Transportation Institute, June 2015

**Table 2.2: Heavy Vehicle Traffic at Select Locations**

| Location | 2014 AADT | Percent Heavy Vehicles | 2014 Heavy Vehicles (per day average) |
|---|---|---|---|
| **I-90 east of Main St.** | 15,330 | 14.2 | 2,178 |
| **I-90 btwn Main St and 7th Ave** | 16,820 | 12.5 | 2,097 |
| **I-90 btwn 7th Ave and 19th Ave** | 17,940 | 12.6 | 2,257 |
| **I-90 west of 19th Ave** | 19,050 | 11.8 | 2,257 |
| **Main St east of Highland Blvd*** | 12,680 | 3.1 | 392 |
| **Main St west of 19th Ave*** | 22,920 | 1.7 | 476 |
| **Huffine Ln west of Cottonwood Road*** | 23,000 | 2.1 | 476 |
| **19th Ave north of Baxter Ln*** | 25,030 | 1.9 | 260 |
| **7th Ave north of Oak St*** | 21,190 | 1.5 | 312 |
| **Oak St west of 7th Ave*** | 16.300 | 1.8 | 295 |
| **Durston Rd west of 7th Ave*** | 11,170 | 1.2 | 139 |
| **19th Ave north of College St*** | 17,120 | 1.5 | 254 |
| **Kagy Blvd east of 19th Ave*** | 13,560 | 1.1 | 150 |

** MDT does not collect classification data at these locations due to heavy traffic. Heavy vehicle percentages are derived based on adjustment formulas.*

The specific location of trucking activity centers can greatly affect the transportation network as a whole. For example, if a business wishes to receive daily deliveries from heavy vehicles, they would need to ensure that the trucks have a safe location to unload goods. If a loading dock or large parking area were not available, it is possible the truck would have to stop in the roadway while unloading (note that the latter does occur in some areas of Bozeman's downtown). This would block traffic and may create a safety hazard. Many businesses that generate a high volume of truck traffic tend to be located in industrial or commercial areas that allow for large unloading areas. While not exhaustive, **Figure 2.8** presents the locations of trucking activity centers located within the study area boundary.

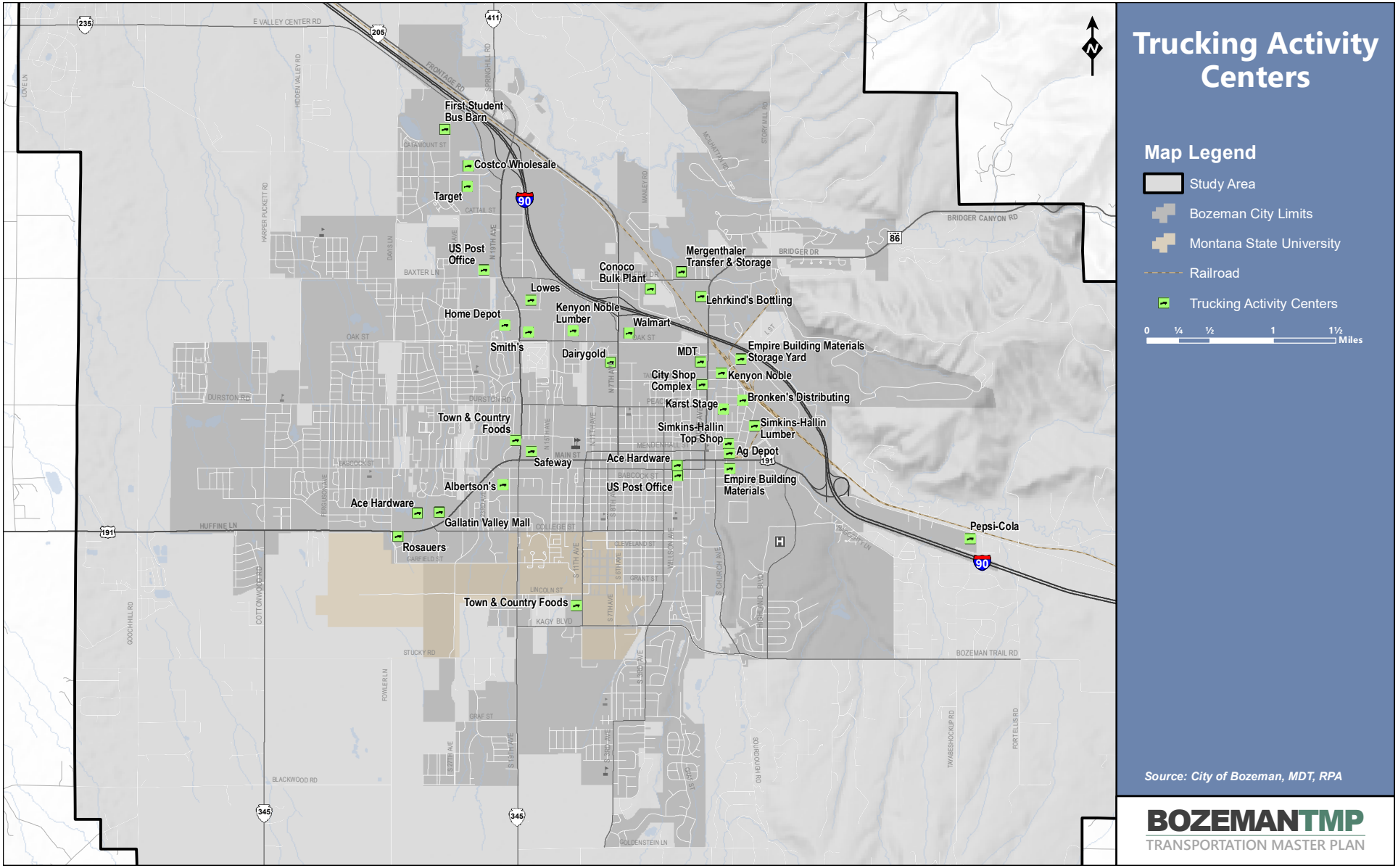



Figure 2.8: Trucking Activity Centers

**Rail**

The main rail line through Bozeman is currently owned by BNSF Railway (BNSF) and is leased to Montana Rail Link (MRL). The line is designated as Subdivision Two – Spurling to Helena. Speed limits range from 10 to 45 miles per hour on the main track and 10 to 35 miles per hour on turnouts, sidings, and other track. The section of track through Bozeman is designated as a Federal Railroad Administration Excepted Track, effectively limiting operations to a maximum of 10 miles per hour.

Data on the current number of daily trains through Bozeman are unavailable, however, in 2006, a total of 5,669 trains passed through Bozeman for an average of 16 trains per day[3]. MRL operates one local train from Livingston to Logan and back to Livingston Monday through Friday. This local train accounts for 520 trains per year. The number of cars in the local train is dictated by lumber pickups in Bozeman but averages about five cars per train. Through trains average approximately 110 cars per train

In Bozeman, railroad siding locations for loading and offloading (including local car gathering) currently only exist at the Idaho Pole site on North Wallace Street. The prospective Mandeville industrial park would include the second site.

A total of nine at grade crossings exist within the study area. Traffic control at these sites varies and includes crossbucks, gates, or post with flashing lights. **Figure 2.9** displays the location and traffic control for each at-grade rail crossing within the study area.

[3] *Mandeville Industrial Park Railroad Feasibility Study*, Prepared for the City of Bozeman by Great West Engineering, March 27, 2007

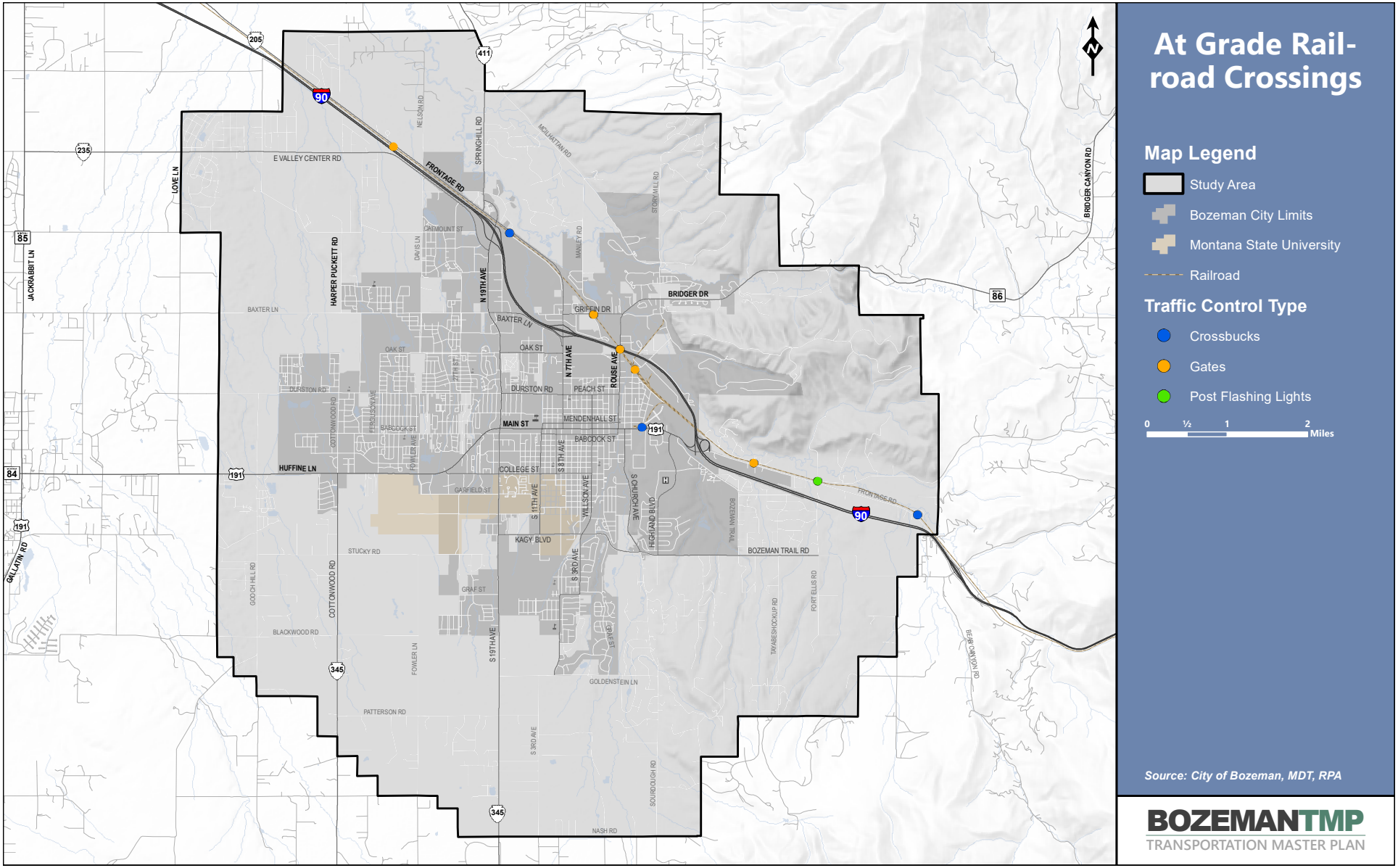



Figure 2.9: At Grade Railroad Crossings

## 2.2. Transportation Conditions

### 2.2.1. Existing Roadway Volumes and Capacity

Existing roadway traffic data were collected by MDT and the City of Bozeman. The data were used to establish traffic conditions and to provide reliable data on historic traffic volumes. Average annual daily traffic (AADT) counts for the year 2014 were used to represent existing conditions. The existing facility size for the major street network is presented in **Figure 2.10**. The existing AADT along the major street network is presented in **Figure 2.11**.

The capacity of the roadways is of critical importance when looking at the growth of the community. As traffic volumes increase, vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, users experience congestion and vehicle delay. As such, it is important to investigate the size and configuration of the existing roadways and to determine if these roads need to be expanded to accommodate the existing or projected traffic demands. The capacity of a roadway is based on a number of features including the number of lanes, intersection function, access and intersection spacing, vehicle fleet mix, roadway geometrics, and vehicle speeds. Individual roadway capacity varies greatly and should be calculated on an individual basis. However, for planning and comparison purposes, theoretical roadway capacities were developed based on simplistic roadway configurations. **Table 2.3** presents the capacities that have been used for this work. The values given in **Table 2.3** are not intended to be used to set any thresholds for roadway performance, but rather provide general information to be used for comparison purposes.

**Table 2.3: Theoretical Roadway Capacity**

| Road Configuration | Capacity (vpd)* |
|---|---|
| **2 Lane** | 12,000 |
| **2 Lane – Divided/TWLTL†** | 18,000 |
| **4 Lane** | 24,000 |
| **4 Lane – Divided/TWLTL†** | 32,000 |
| **Interstate** | 68,000 |

** Values represent planning level daily capacities developed for this TMP and are intended for comparison purposes only. Actual physical roadway capacity can vary greatly depending on roadway design features and access control.*
*† Two-way Left-turn Lane*

A roadway's capacity, and volume-to-capacity (v/c) ratio, can be used as a comparison tool when looking at the transportation system. The v/c ratio of a roadway is defined as the traffic volume on the roadway divided by the capacity of the roadway. **Figure 2.12** presents the resultant v/c ratios for the existing major street network. The v/c ratios help identify potential capacity deficiencies on the transportation system.

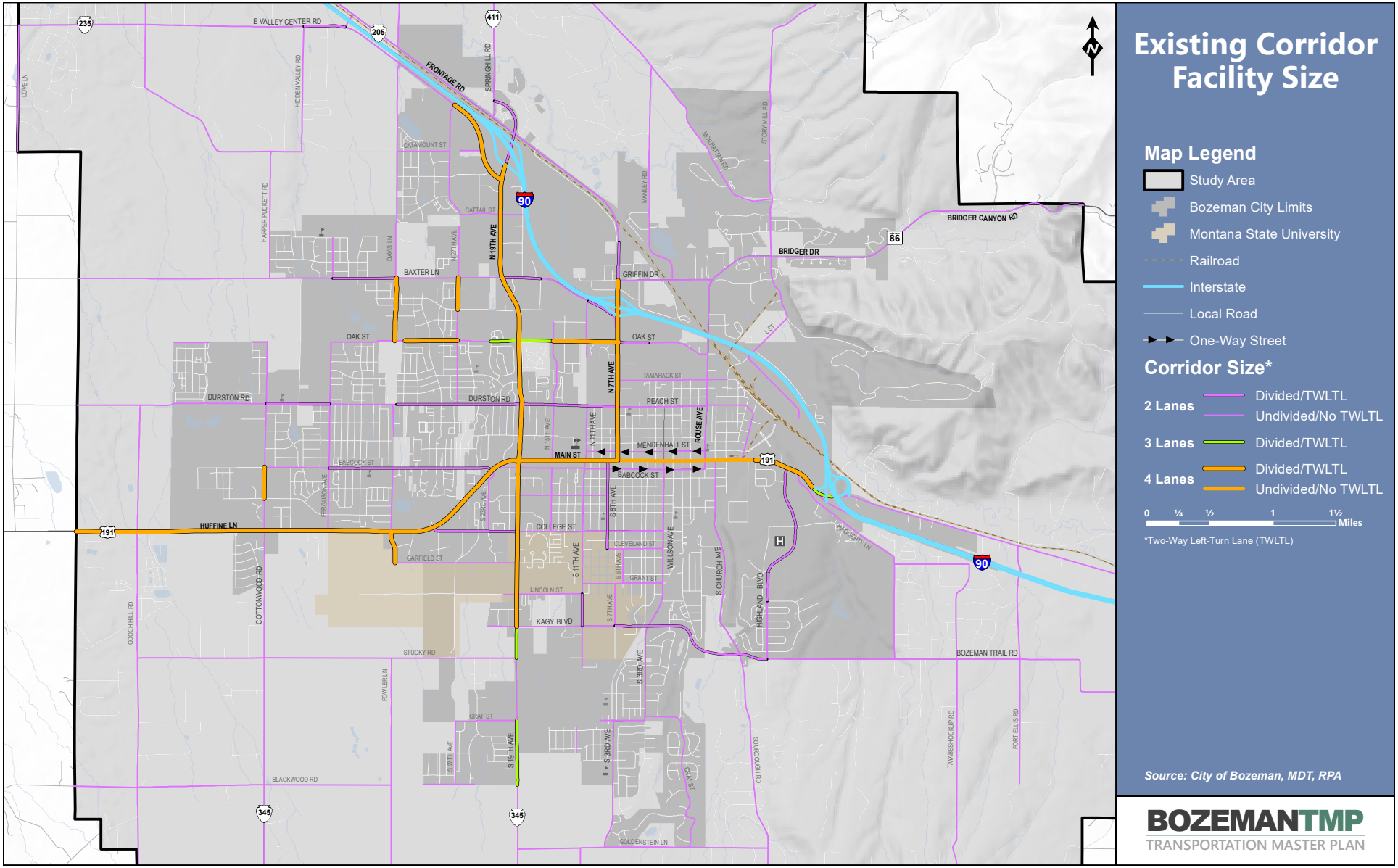



Figure 2.10: Existing Corridor Facility Size

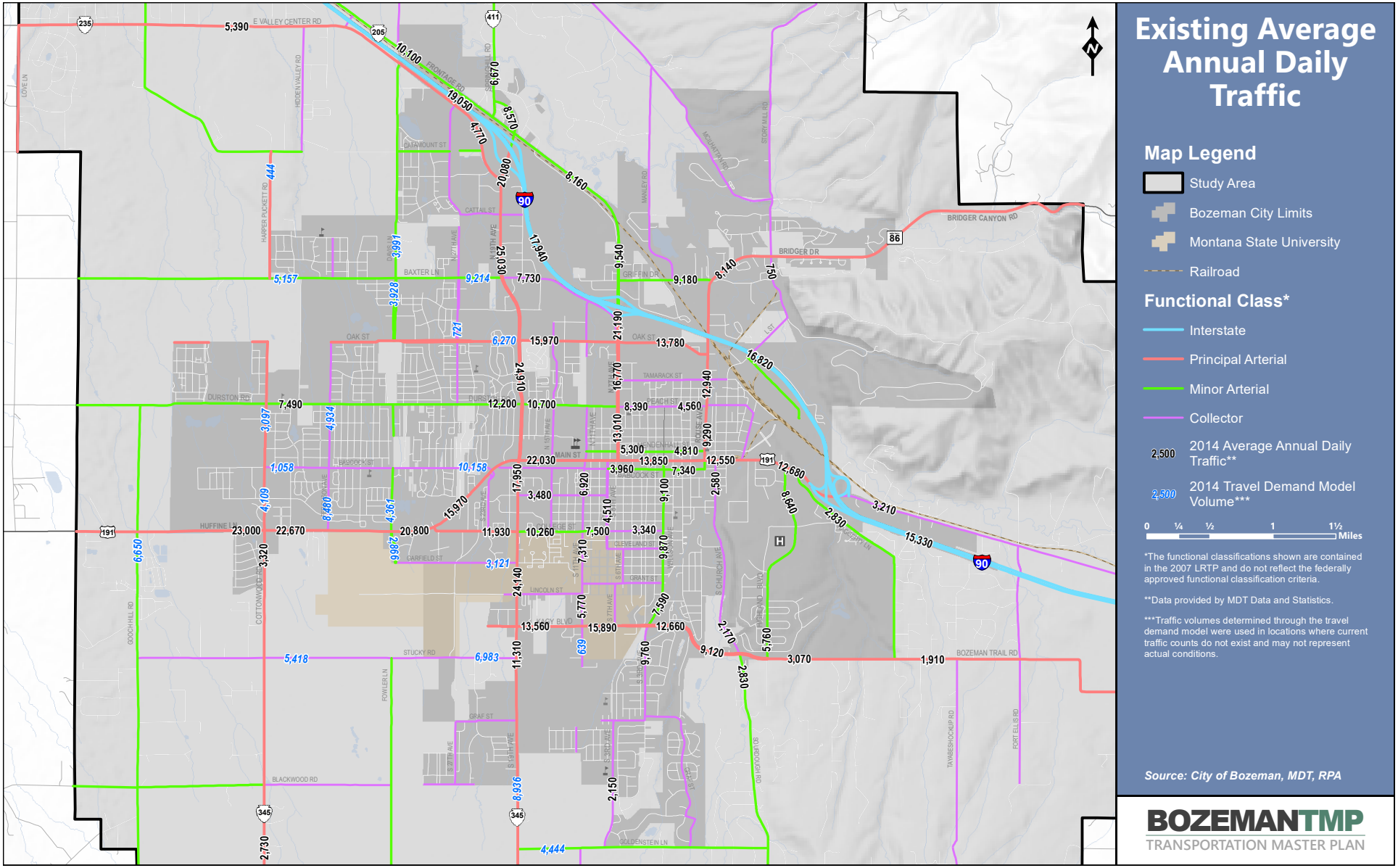



Figure 2.11: Existing Average Annual Daily Traffic

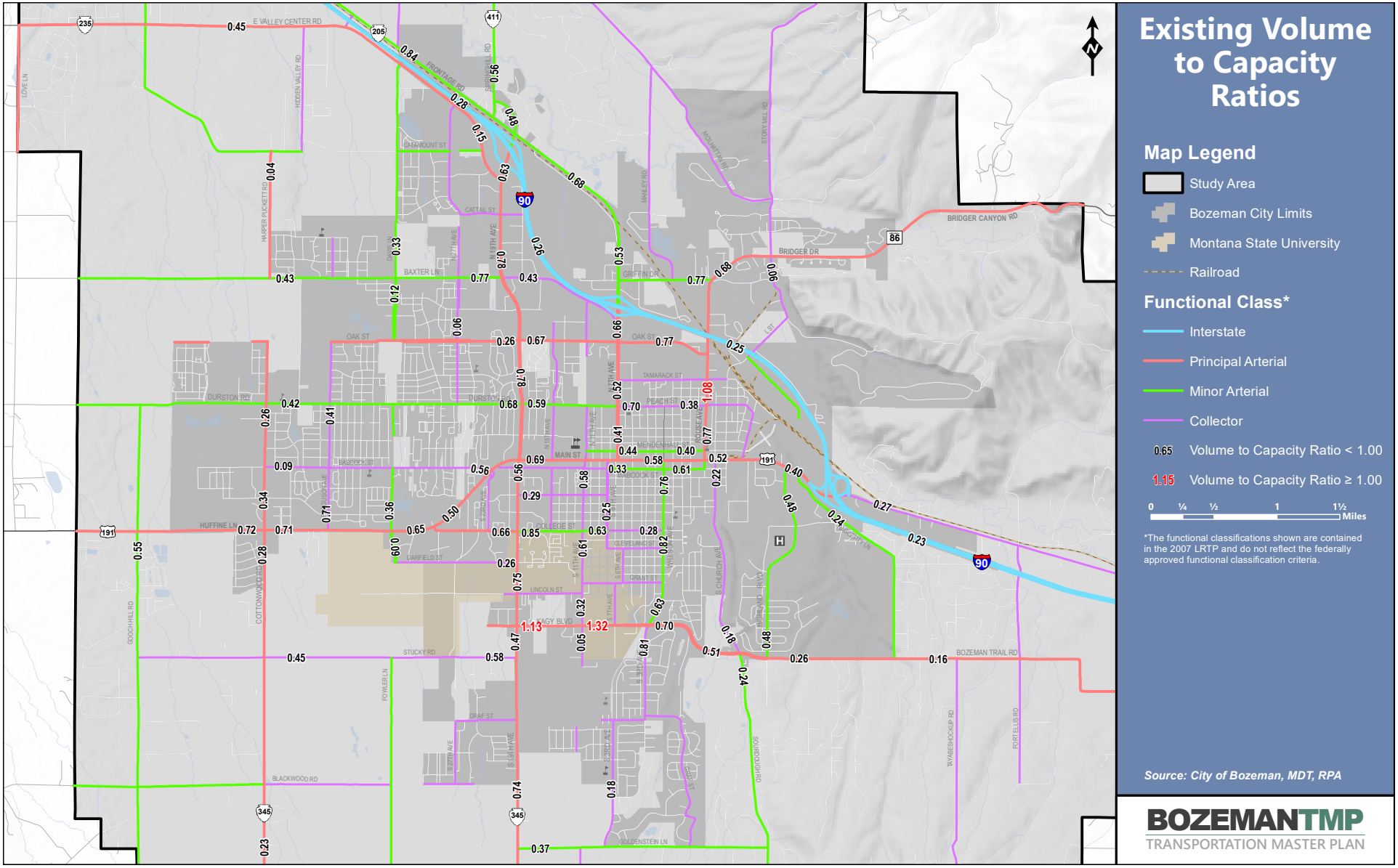



Figure 2.12: Existing Volume to Capacity Ratios

## 2.2.2. Active Transportation Data

Providing an accurate picture of pedestrian and bicycle activity within any community is difficult. Data are typically not available or not comprehensive enough to form a complete picture of active transportation behavior. Data for vehicles is, by comparison, more readily available. Both MDT and the City of Bozeman have collected regular pedestrian and bicyclist data for years, allowing long-term trends to be understood. Overall, Bozeman exhibits high levels of walking and bicycling by national standards. Bozeman is comparable to Missoula within the State of Montana. The following subsections summarize available data pertaining to active transportation.

### *2.2.2.1 Journey to Work/Commuting (ACS) 2010-2014 Data*

The US Census has long been one of the only readily available sources of data to measure general levels of transportation choices. The data are limited to commute based trips to work and do not reflect the spectrum of potential trip types available. The American Community Survey (ACS) has supplemented the 10-year cycle of the US Census to provide additional annual data. For communities the size of Bozeman, annual data are not statistically valid, therefore five-year averages are used. This method provides some insight, however, it is slow to note changes over time. For walking and bicycling, the margins of error are over one percent. **Table 2.4** compares the City of Bozeman to Gallatin County and the State of Montana. City of Bozeman data are visualized in **Figure 2.13** by census block to show how patterns of resident commuting change depending on location. Neighborhoods near the historic core of Bozeman and those near MSU exhibit high overall active transportation modes, totaling over half of all commute trips south of Main Street. These levels reduce to approximately 30 and 15 percent as the census block generally gets farther away from downtown. It should be noted that the Valley West Area census block, defined by neighborhoods north of Huffine Lane and west of 19th Avenue, shows much lower levels of active transportation based on commuting. This could indicate needs with infrastructure or encouragement as the majority of this area is not any farther away from major destinations in Bozeman.

**Table 2.4: Commute Mode Share and Travel Time**

| Mode Share | State of Montana | Gallatin County | City of Bozeman |
|---|---|---|---|
| **Walking*** | 4.8% | 6.0% | 9.5% |
| **Biking*** | 1.3% | 3.1% | 5.5% |
| **Driving†** | 85.6% | 81.7% | 77.9% |
| ***Drove Alone*** | *75.3%* | *73.0%* | *71.3%* |
| **Transit** | 0.9% | 0.9% | 1.3% |
| **Travel Time to Work (mean)** | 18.0 min | 16.8 min | 14.6 min |

*Data: American Community Survey (ACS) Five Year Estimates, 2010-2015*
** Due to small sample sizes the margin of error is approximately 1.2 percent for walking and 1.4 percent for bicycling*
*† Driving mode share combines single occupancy vehicles and carpools*

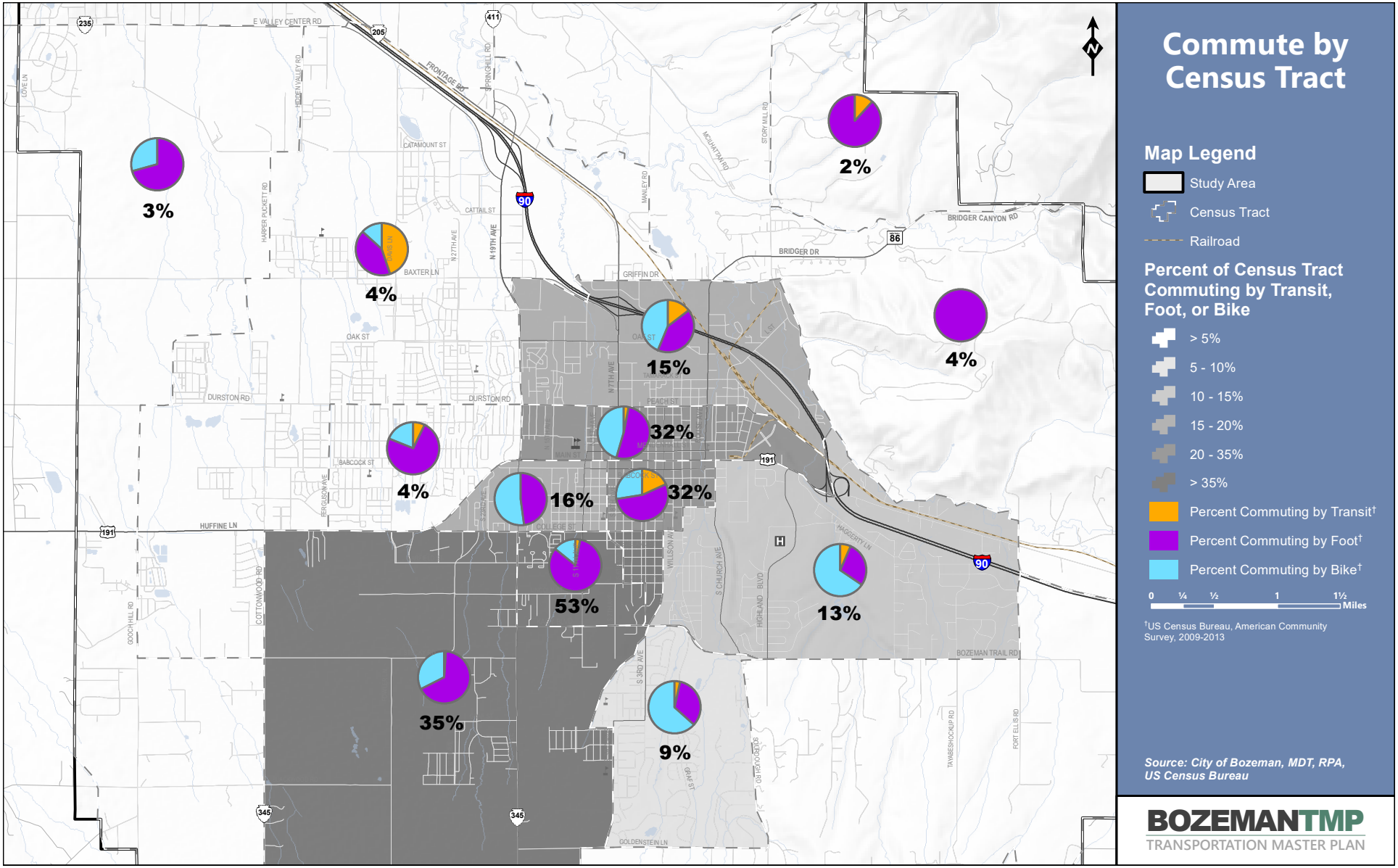



Figure 2.13: Commute by Census Tract

Commuting patterns have changed slightly when compared with those of the 2000 Census. While the margin for error inherent in the ACS is significant, it is likely that walking has gone down slightly or is statistically similar to the year 2000. A decrease could be due to a larger number of households being constructed at a greater distance to destinations over the interceding years. Bicycling has increased slightly and transit use has fluctuated between 1.3 to 2.0 percent over the past several years within the five-year ACS averages. Overall, active forms of transportation have seen a slight increase over the past 15 years. **Figure 2.14** compares the year 2000 mode shares against the ACS years 2010-2014 shares.

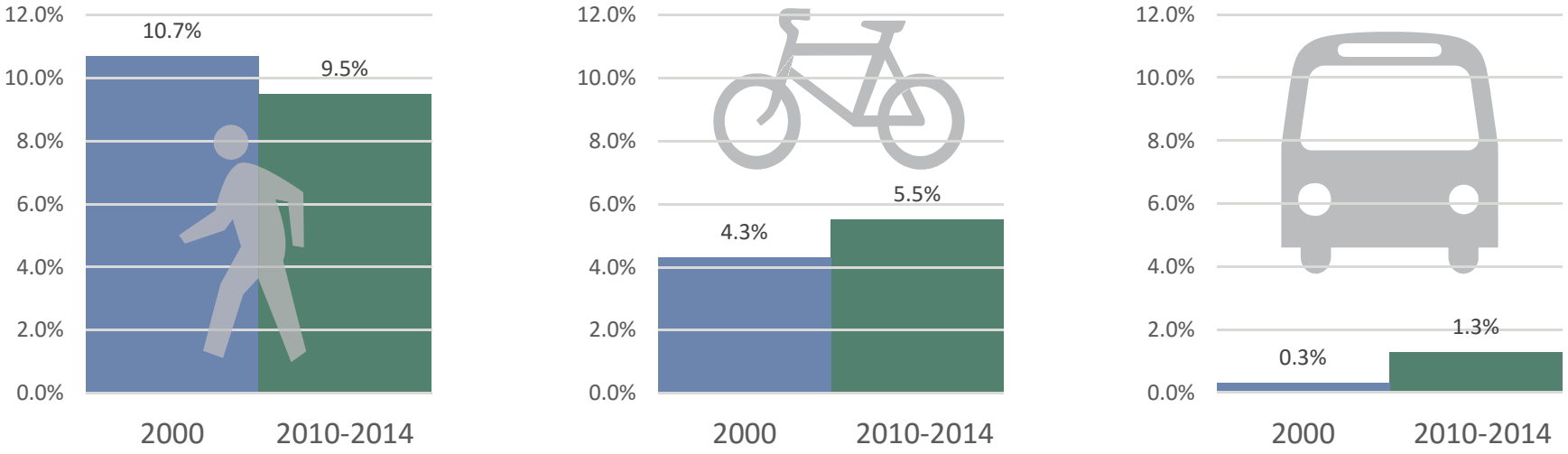



**Figure 2.14: Commute Mode Share Changes from Year 2000**

It is interesting to compare commute mode share from Bozeman with other peer cities. Each of the cities depicted in **Figure 2.15** are college towns in a northern climate. Davis, California was included as a similar city that has invested heavily in active transportation since the 1960s.

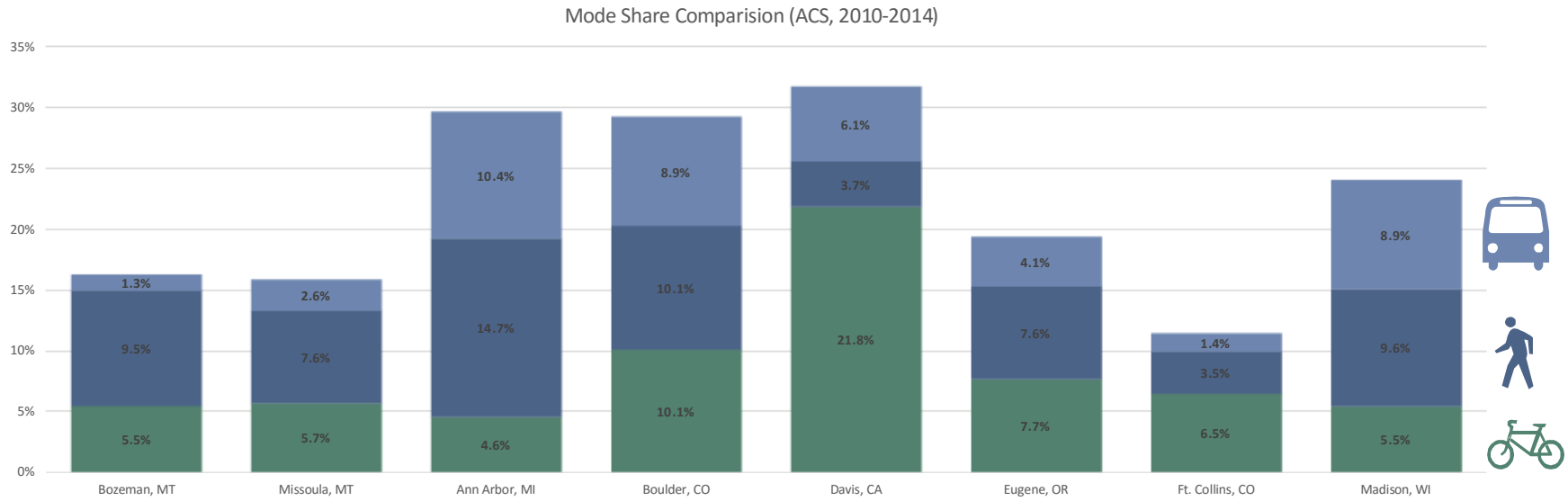



**Figure 2.15: Peer Cities Commute Mode Share**

### 2.2.2.2 National Household Travel Survey (NHTS) 2009 Data

Data from the National Household Travel Survey (NHTS) provides mode share data aggregated at the national level for all trips and not just commute to work trips. For example, NHTS indicates that for every one bike to work trip, there are another 1.6 utilitarian bike trips (shopping, personal trips, transporting others, medical or dental visits, meals, or other reasons), 0.5 bike to school trips, and 4.8 social or recreational trips. Overall bike to work trips represent only approximately 7.5 percent of all bike trips nationally. It should be noted that approximately 41 percent of bike trips counted by NHTS are return home trips, indicating many bicyclists perform part of their round trip by other means. While it is likely that travel patterns in Bozeman, particularly recreational based travel, do not match the national averages, it is very likely that the ACS commute mode share noted in **Table 2.2** under represents overall mode share and the overall levels of walking and bicycling in Bozeman.

### 2.2.2.3 Bozeman Bike Counts

The Bozeman Bicycle Advisory Board (BABAB) has organized annual volunteer based counts at 15 locations throughout Bozeman during the second week of September. This has allowed annual comparisons of locations, however, the weather and air quality can have a profound impact on the observed numbers. During the 2012 count for example, Bozeman was experiencing poor air quality due to area and regional fires and the counts were lower. In 2014 and 2015, the count week overlapped with significant rain on all three days. Numbers from these

efforts yielded approximately 40 to 60 percent fewer bicyclists counted. Due to the limited number of days, weather variability, and short count period, it is difficult to make conclusions about overall trends in bicycle use. Some of the numbers, however, are interesting. For example, on Tuesday, September 10th, 2013 volunteers counted 2,500 bicyclists from 5:00 to 7:00 PM across the 15 count locations. When considering the many other locations throughout Bozeman that were not counted, it stands to reason that many thousands of bicycle trips were taken that day. One relationship that can be visualized is the impact good or bad weather has on bicycling in Bozeman. Current weather was recorded for each count day. These temperature data are plotted against the number of bicyclists counted (including some interpolation for missing data) in **Figure 2.16**. The weather is noted in the data points to show that low temperatures and rain depress count numbers while warmer temperatures increase these numbers. Significant wind seems to potentially have the ability to also impact count numbers. Smoke from local fires had only a minor impact on counts as compared to similar temperature days.

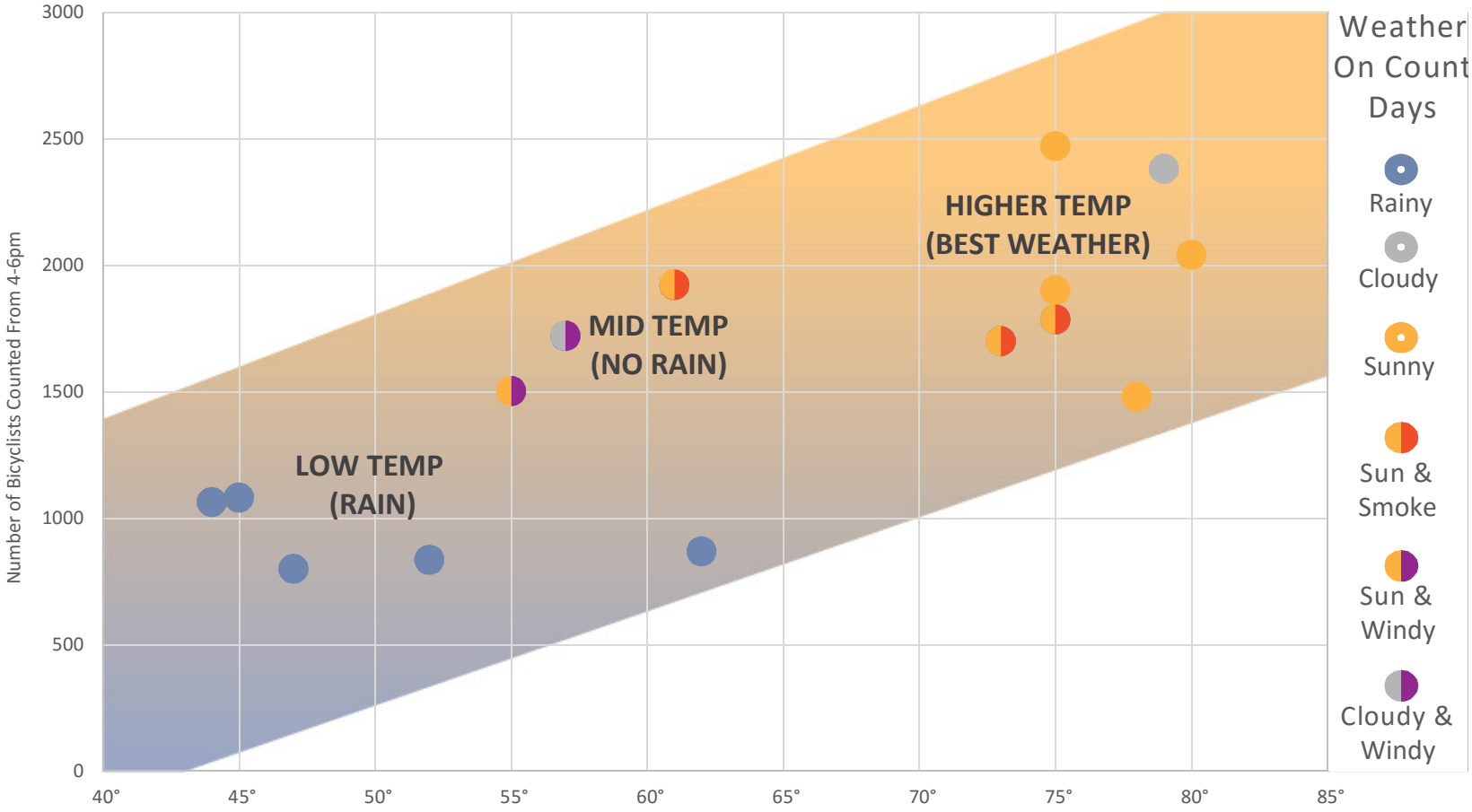



**Figure 2.16: Annual Bozeman Bike Counts (2011-2015)**

### *2.2.2.4 Seasonal Variation*

Climates like Bozeman experience variable seasonal conditions characterized by long winter and shoulder seasons and a short summer. Data from cities in similar climates show significant differences in walking and bicycling rates throughout the year. **Figure 2.17** shows data taken in Missoula in 2015 with a continuous automatic counter near the University of Montana. Bicycling rates peak sharply from June through September before dropping off in the winter months. Walking rates are more consistent over the year indicating less sensitivity to cold and snow conditions than bicycling.

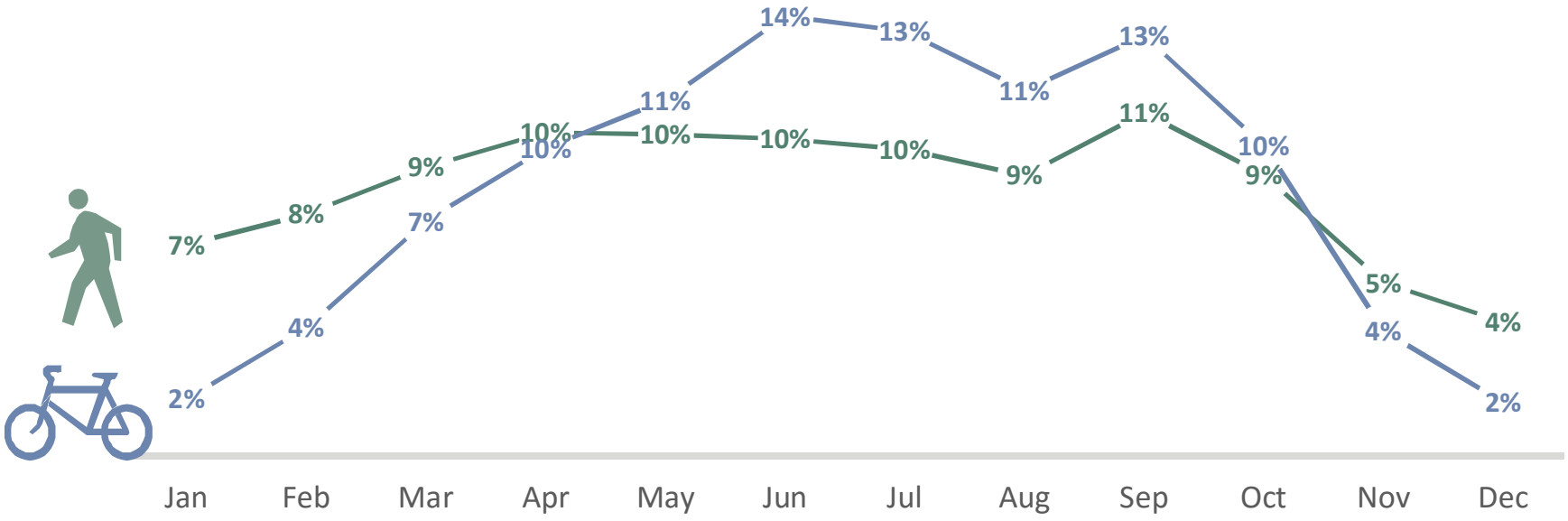



**Figure 2.17: Seasonal Variations in Walking and Bicycling (Missoula – 2015)**

Traffic counts conducted as part of the data collection phase of this TMP included pedestrian and bicyclists. While these data are not comprehensive or city-wide, they do provide a snapshot of mode share at intersections and the variability in mode share around the city. Mode share at four intersections is presented in **Figure 2.18**.

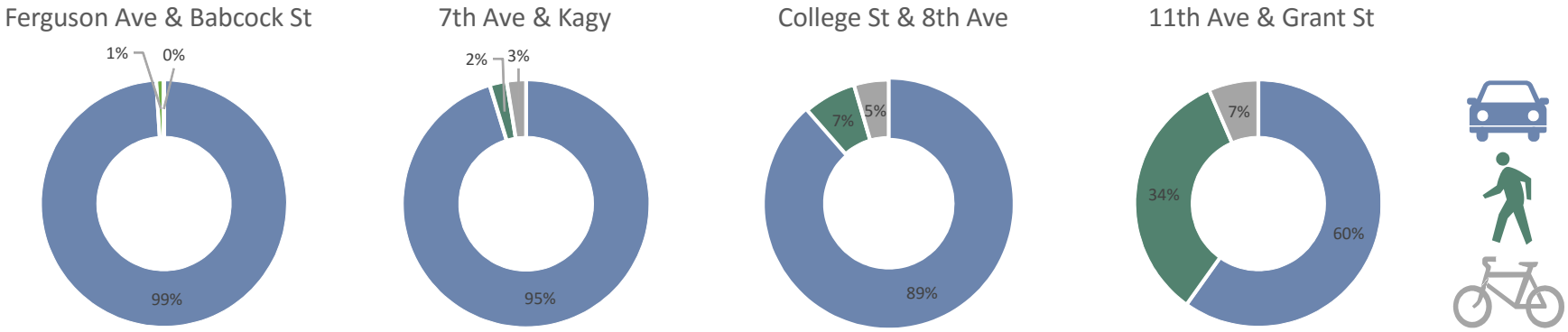



**Figure 2.18: Mode Share at Select Intersections**

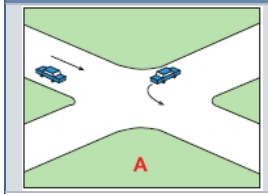
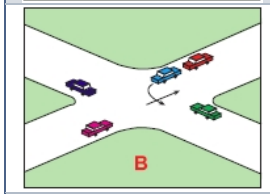
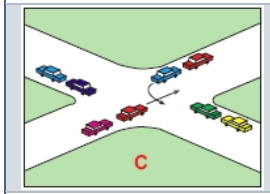
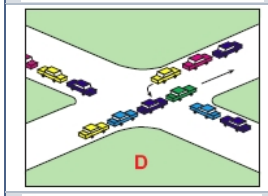
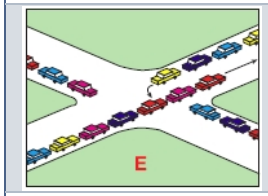
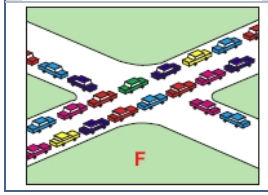
### 2.2.3. Intersection Operations

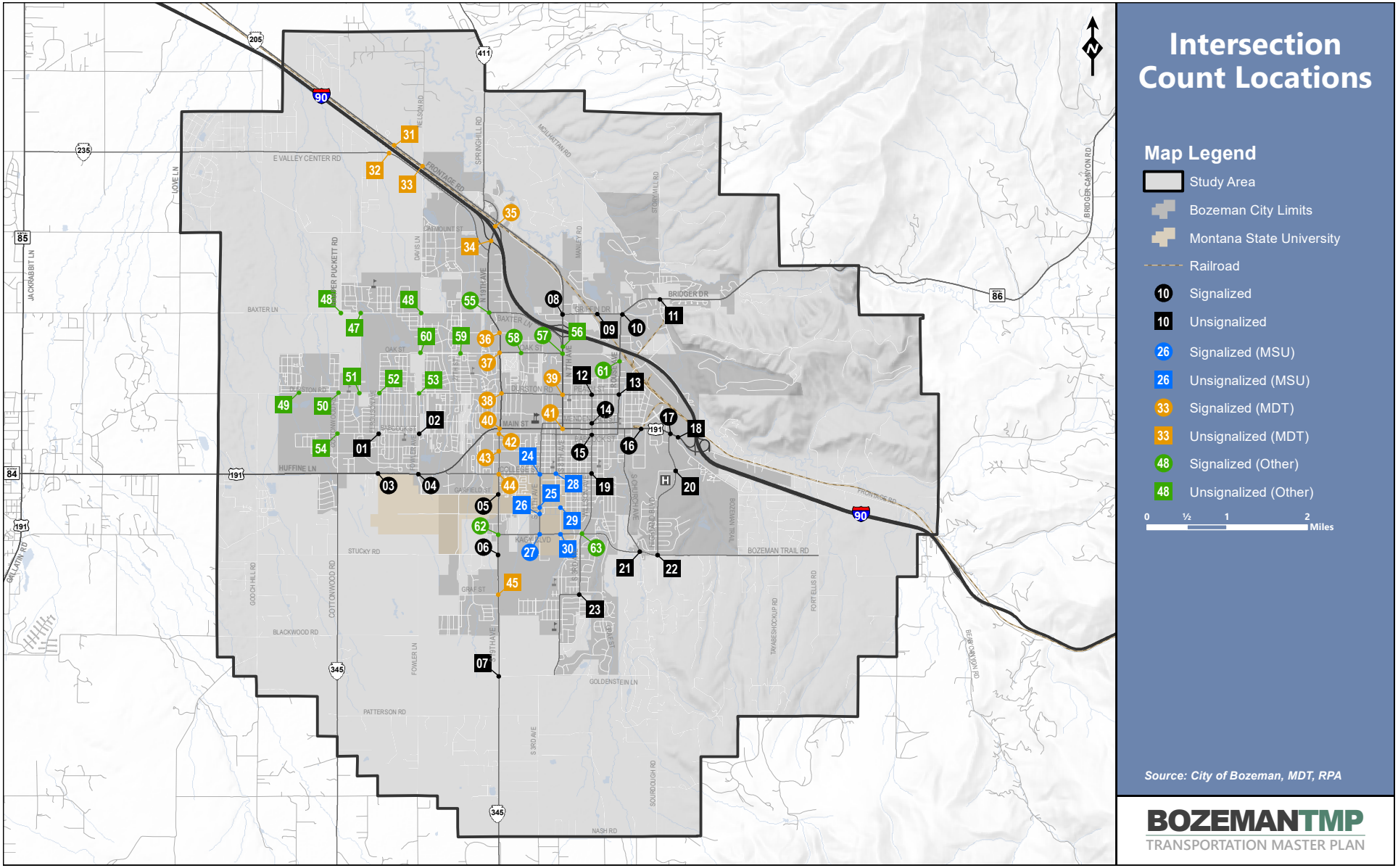
Urban road systems are ultimately controlled by the efficiency of the major intersection. High amounts of vehicle delay at major intersections directly reduces the number of vehicles that can be accommodated along the road during peak hours. As a result of this strong impact on corridor function, intersection improvements can be a cost-effective means of increasing a corridor's traffic volume capacity. In some circumstances, corridor expansion projects may be able to be delayed with targeted intersection improvements. Due to the significant portion of total expense for road construction projects used for project design, construction mobilization, and adjacent area rehabilitation, a careful analysis must be made of the expected service life from intersection improvements. If adequate design life can be achieved with only improvements to the intersections, then a corridor expansion may not be the most effective solution. With that in mind, it is important to determine how well the major intersections are functioning by evaluating their performance.

Intersection performance is evaluated in terms of vehicle delay. The amount of vehicle delay experienced at an intersection correlates to a measure called level of service (LOS). LOS is used as a means for identifying intersections that are experiencing operational difficulties, as well as a means to compare multiple intersections. The LOS scale represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using the intersection. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion. **Table 2.5** portrays a graphical representation of LOS.

The LOS at 63 intersections within the study area was calculated. Data were collected during the fall of 2015 at 30 of the 63 intersections (11 signalized and 19 unsignalized locations). Each intersection was counted during the peak hours, defined as 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Additionally, peak hour turning movement counts were obtained from MDT for 15 study intersections (10 signalized and 5 unsignalized locations). Data at these locations were collected on various dates over the past few years. The remaining intersection counts were provided by various sources and were collected as part of recent planning efforts. Intersections where peak hour turning data were collected are presented in **Figure 2.19**.

## Table 2.5: Intersection LOS Descriptions

| LOS | Description | Average Delay per Veh. (sec) | |
|---|---|---|---|
| | | Signalized | Unsignalized |
|   | Traffic moves freely, low volumes accompany the free flow condition. At signalized intersections, progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. At unsignalized intersections, nearly all drivers find freedom of operation with very little time spent waiting for an acceptable gap. Very seldom is there more than one vehicle in queue. | < 10 | <10 |
|   | Traffic moves fairly freely, volumes are somewhat low. At signalized intersections, there is good progression and/or short cycle lengths. Vehicles generally clear on one green phase. At unsignalized intersections, some drivers begin to consider the average control delay an inconvenience, but acceptable gaps are still very easy to find. Occasionally there is more than one vehicle in queue. | 10 to 20 | 10 to 15 |
|   | Traffic moves smoothly, volumes are beginning to increase. At signalized intersections, higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping. At unsignalized intersections, average control delay becomes noticeable to most drivers, even though acceptable gaps are found on a regular basis. It is not uncommon for an arriving driver to find a standing queue of at least one additional vehicle. | 20 to 35 | 15 to 25 |
|   | Traffic approaching unstable flow, the influence of congestion becomes more noticeable. At signalized intersections, longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable. At unsignalized intersections, average control delay is long enough to be an irritation to most drivers. Acceptable gaps are hard to find because there is a standing queue of vehicles already waiting when the driver arrives | 35 to 50 | 25 to 35 |
|   | Unstable traffic flow, volumes at or near capacity. At signalized intersections, the high delays generally indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences. At unsignalized intersections, drivers find the length of the average control delay approaching intolerable levels. Acceptable gaps are hard to find because there is a standing queue of vehicle already waiting when the driver arrives. | 50 to 80 | 35 to 50 |
|   | Saturation condition, volumes are over capacity. This is considered to be unacceptable to most drivers. This condition occurs with oversaturation. At signalized intersections, it may occur at high volume/capacity ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values. At unsignalized intersections, delays are high because acceptable gaps are hard to find. Acceptable gaps are hard to find because there is a standing queue of vehicles already waiting when the driver arrives. | > 80 | > 50 |


Intersection Count Locations
Map Legend
Study Area
Bozeman City Limits
Montana State University
Railroad
10 Signalized
10 Unsignalized
26 Signalized (MSU)
26 Unsignalized (MSU)
33 Signalized (MDT)
33 Unsignalized (MDT)
48 Signalized (Other)
48 Unsignalized (Other)
0 ½ 1 2 Miles
Source: City of Bozeman, MDT, RPA
BOZEMANTMP
TRANSPORTATION MASTER PLAN
E VALLEY CENTER RD
FRONTAGE RD
BRIDGER DR
MAIN ST
DURSTON RD
BAXTER LN
OAK ST
COLLEGE ST
GARFIELD ST
KAGY BLVD
HUFFINE LN
STUCKY RD
BLACKWOOD RD
PATTERSON RD
GOLDENSTEIN LN
NASH RD
BOZEMAN TRAIL RD
SPRINGHILL RD
MCILRATH RD
STORY MILL RD
BRIDGER CANYON RD
JACKRABBIT LN
LOVE LN
NELSON RD
DAVIS LN
MANLEY RD
GOOCH HILL RD
COTTONWOOD RD
FOWLER LN
GRAF ST
SOURDOUGH RD
TAYABESHOCKUP RD
FORT ELLIS RD
GALLATIN RD
CHURCH AVE
WILLSON AVE
ROUSE AVE
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#### 2.2.3.1 Signalized Intersections

For signalized intersections, the LOS is based on the average stopped delay per vehicle. The relationship between LOS and average stopped delay per vehicle was previously identified in **Table 2.5**. The procedures used to evaluate signalized intersections use detailed information on geometry, lane use, signal timing, peak hour volumes, arrival types, and other parameters. An intersection is determined to be functioning adequately if it is operating at LOS C or better. **Table 2.6** presents the LOS and average vehicle delay for the signalized intersections during the AM and PM peak hours. The existing intersection LOS is shown in **Figure 2.20**. Detailed results for individual turning movements are provided in **Appendix A**.

## Table 2.6: Existing Signalized Intersection Level of Service

| ID | Intersection | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|
| | | Delay (sec) | LOS | Delay (sec) | LOS |
| 03 | Ferguson Avenue and Huffine Lane | 15.4 | B | 13.6 | B |
| 04 | Fowler Avenue and Huffine Lane | 25.8 | C | 26.5 | C |
| 05 | 19th Avenue and Garfield Street | 13.0 | B | 12.6 | B |
| 06 | 19th Avenue and Stucky Road | 12.2 | B | 12.6 | B |
| 08 | 7th Avenue and Griffin Drive | 13.4 | B | 24.9 | C |
| 10 | Rouse Avenue and Griffin Drive | 12.9 | B | 13.7 | B |
| 14 | Willson Avenue and Mendenhall Street | 13.5 | B | 18.0 | B |
| 15 | Willson Avenue and Babcock Street | 11.9 | B | 12.5 | B |
| 16 | Broadway Avenue and Main Street | 7.8 | A | 9.7 | A |
| 17 | Highland Boulevard and Main Street | 14.1 | B | 36.7 | D |
| 27 | 11th Avenue and Kagy Boulevard | 22.6 | C | 28.5 | C |
| 35 | 19th Avenue and I-90 WB Ramp | 12.7 | B | 15.5 | B |
| 36 | 19th Avenue and Tschache Way | 27.5 | C | 14.5 | B |
| 37 | 19th Avenue and Oak Street | 27.6 | C | 24.5 | C |
| 38 | 19th Avenue and Durston Road | 20.8 | C | 27.6 | C |
| 39 | 7th Avenue and Durston Road/Peach Street | 28.1 | C | 32.7 | C |
| 40 | 19th Avenue and Main Street | 44.6 | D | 53.2 | D |
| 41 | 7th Avenue and Main Street | 14.4 | B | 12.7 | B |
| 42 | 19th Avenue and Babcock Street | *Data Unavailable* | | 23.4 | C |
| 43 | 19th Avenue and Koch Street | 9.6 | A | 10.4 | B |
| 44 | 19th Avenue and College Street | 20.5 | C | 20.8 | C |
| 50 | Cottonwood Road and Durston Road | 19.4 | B | 18.7 | B |
| 55 | 19th Avenue and Baxter Lane | 24.0 | C | 24.5 | C |
| 57 | 7th Avenue and Oak Street | 21.9 | C | 44.6 | D |
| 58 | 15th Avenue and Oak Street | 18.1 | B | 16.9 | B |
| 61 | Rouse Avenue and Oak Street | 14.5 | B | 13.2 | B |
| 62 | 19th Avenue and Kagy Boulevard | 14.8 | B | 18.5 | B |
| 63 | Willson Avenue/3rd Avenue and Kagy Boulevard | 27.0 | C | 24.7 | C |

#### 2.2.3.2 Unsignalized intersections

LOS for two-way stop (TWS) controlled intersections are based on the delay experienced by each movement individually within the intersections, rather than on the average stopped delay per vehicle at the intersection. This difference from the method used for signalized intersections is necessary since the operating characteristics of stop-controlled intersection are substantially different. Driver expectation and perceptions are entirely different. For two-way stop-controlled intersections, the through traffic on the major (uncontrolled) street experiences no delay at the intersection. Conversely, vehicles turning left from the minor street experience more delay than other movements and at time can experience significant delay. Vehicles on the minor street which are turning right or going across the major street experience less delay than those turning left from the same approach. Due to this situation, the LOS is based on the average delay incurred at the worst performing movement.

For all-way stop (AWS) and roundabout controlled intersections, LOS is based on average vehicle delay experienced at the intersection. This methodology is similar to that of signalized intersections. The results of the LOS analysis for the unsignalized intersections are presented in **Table 2.7**. The existing intersection LOS is shown in **Figures 2.20**. Detailed results for individual turning movements are provided in **Appendix A**.

## Table 2.7: Unsignalized Intersection Level of Service

| ID | Intersection | Traffic Control | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|---|
| | | | Delay (sec) | LOS | Delay (sec) | LOS |
| 01 | Ferguson Avenue and Babcock Street | TWS | 50.6 | F | 67.4 | F |
| 02 | Fowler Avenue and Babcock Street | TWS | 20.5 | C | 45.0 | E |
| 07 | 19th Avenue and Goldenstein Lane | TWS | 21.4 | C | 18.1 | C |
| 09 | Manely Road and Griffin Drive | TWS | 28.3 | D | 20.3 | C |
| 11 | Story Mill Road and Bridger Drive | TWS | 17.6 | C | 18.0 | C |
| 12 | Willson Avenue and Peach Street | TWS | 14.5 | B | 18.9 | C |
| 13 | Rouse Avenue and Peach Street | TWS | 81.0 | F | 74.4 | F |
| 18 | Haggerty Lane and Main Street | TWS | 78.9 | F | 519.4 | F |
| 19 | Willson Avenue and College Street | TWS | 45.4 | E | 56.1 | F |
| 20 | Highland Boulevard and Ellis Street | TWS | 35.1 | E | 93.0 | F |
| 21 | Sourdough Road and Kagy Boulevard | TWS | 78.2 | F | 103.4 | F |
| 22 | Highland Boulevard and Kagy Boulevard | TWS | 72.7 | F | 59.8 | F |
| 23 | Wagon Wheel Road and 3rd Avenue | AWS | 15.3 | C | 9.1 | A |
| 24 | 11th Avenue and College Street | Roundabout | 8.3 | A | 14.8 | B |
| 25 | 11th Avenue and Grant Street | AWS | 10.6 | B | 15.8 | C |
| 26 | 11th Avenue and Lincoln Street | AWS | 11.2 | B | 14.4 | B |
| 28 | 8th Avenue and College Street | AWS | 12.9 | B | 17.9 | C |
| 29 | 7th Avenue and Grant Street | AWS | 9.2 | A | 10.3 | B |
| 30 | 7th Avenue and Kagy Boulevard | TWS | 87.2 | F | 71.1 | F |
| 31 | Valley Center Spur and Frontage Road | TWS | 15.9 | C | 25.0 | C |
| 32 | Valley Center Spur and Valley Center Road | TWS | 18.8 | C | 19.7 | C |
| 33 | Nelson Road and Frontage Road | TWS | 19.4 | C | 19.7 | C |
| 34 | 19th Avenue and I-90 EB Ramp | TWS | 41.5 | E | 91.8 | F |
| 45 | 19th Avenue and Graf Street | TWS | 17.4 | C | 16.1 | C |
| 46 | Harper Puckett Road and Baxter Lane | TWS | 11.0 | B | 11.2 | B |
| 47 | Flanders Mill Road and Baxter Lane | TWS | 13.7 | B | 16.0 | C |
| 48 | Davis Lane and Baxter Lane | AWS | 54.6 | F | 32.8 | D |
| 49 | Laurel Parkway and Durston Road | AWS | 10.6 | B | 11.2 | B |
| 51 | Flanders Mill Road and Durston Road | TWS | 26.3 | D | 34.8 | D |
| 52 | Ferguson Avenue and Durston Road | AWS | 17.9 | C | 25.4 | D |
| 53 | Fowler Avenue and Durston Road | TWS | 14.6 | B | 16.8 | C |
| 54 | Cottonwood Road and Babcock Street | TWS | 17.0 | C | 23.9 | C |
| 56 | 7th Avenue and Baxter Lane | TWS | 25.4 | D | 23.5 | C |
| 59 | 27th Avenue and Oak Street | TWS | 25.9 | D | 34.1 | D |
| 60 | Davis Street and Oak Street | TWS | 46.6 | E | 26.5 | D |

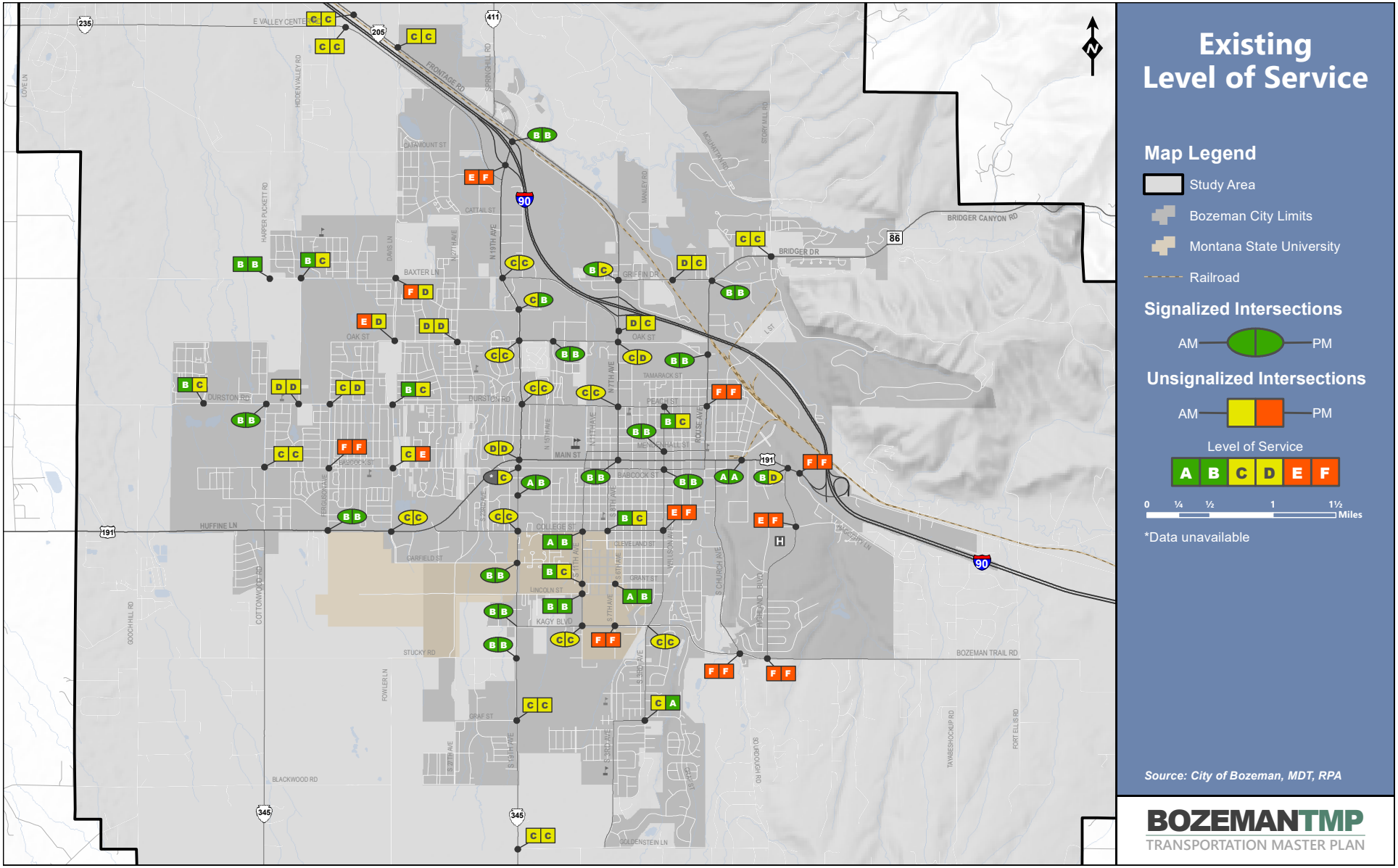



Figure 2.20: Existing Intersection Level of Service

### 2.2.4. Bicycle Operations

Vehicular LOS has been a standard metric to evaluate transportation networks for decades. Transportation professionals have struggled over the years to develop a comparable means of evaluation for pedestrians and bicyclists. For these modes, it is the qualitative metrics, or how a street feels that may determine how it performs. As shown previously in **Figure 2.13**, levels of walk and bicycle commuting varies around Bozeman. Particularly notable is the area of Bozeman north of Huffine Lane and west of 19th Avenue. Despite being within a generally comfortable distance for bicycling, the bike to work rate in this area is 0.5 percent (less than the national average of 0.6 percent). One explanation for this disparity with other parts of Bozeman may be found by examining how the streets feel to many of the residents. One tool to analyze the level of traffic stress has been outlined in the *Mineta Transportation Institute Report 11-19*[4]. A level of traffic stress (LTS) for bicyclists is determined based on factors including posted speed limit, street width, and the presence and character of bicycles lanes. The combinations of these criteria separates the bicycle network into one of four scores:

**LTS 1:** Low-stress roadway suitable for all ages and abilities,
**LTS 2:** Roadway comfortably ridden by the mainstream adult population,
**LTS 3:** Roadway ridden by the "enthused and confident" cyclists, and
**LTS 4:** Roadway ridden by the "strong and fearless" cyclists.

In general, a separated bicycle facility would qualify as a low-stress (LTS 1) bikeway, while a roadway shared with motor vehicle traffic operating at high speed would receive a higher stress score. The results of the LTS analysis help identify existing areas with a high level of stress as well as focus areas for improvement. Local streets with low traffic and low volume can be quite comfortable to most bicyclists despite being a shared lane environment. The LTS analysis is specifically focused on the street environment. Adjacent shared-use offer a more comfortable facility type that is not reflected in the LTS score. The results of the LTS analysis are presented in **Figure 2.21.**

LTS provides an intuitive framework to describe the benefits of bicycling infrastructure and to demonstrate that some roadways may require more intervention than others to provide a truly comfortable experience. For example, the only time a standard bike lane is considered an LTS 1 facility is a six-foot wide facility on a roadway with a posted speed limit of 30 miles per hour or lower. The best LTS score achievable on a roadway with four or more travel lanes without installing a separated bike lane is LTS 3. Newer areas of Bozeman typically are surrounded by wider and faster roadways. Nineteenth Avenue and Huffine Lane essentially create a barrier around Valley West that discourages many people from choosing to travel by bicycle. Incomplete roadways such as Durston Road, Oak Street, and Baxter Lane also create impediments for many residents.

[4] Mineta Transportation Institute, Report 11-19, Low-stress Bicycling and Network Connectivity, May 2012
http://transweb.sjsu.edu/PDFs/research/1005-low-stress-bicycling-network-connectivity.pdf

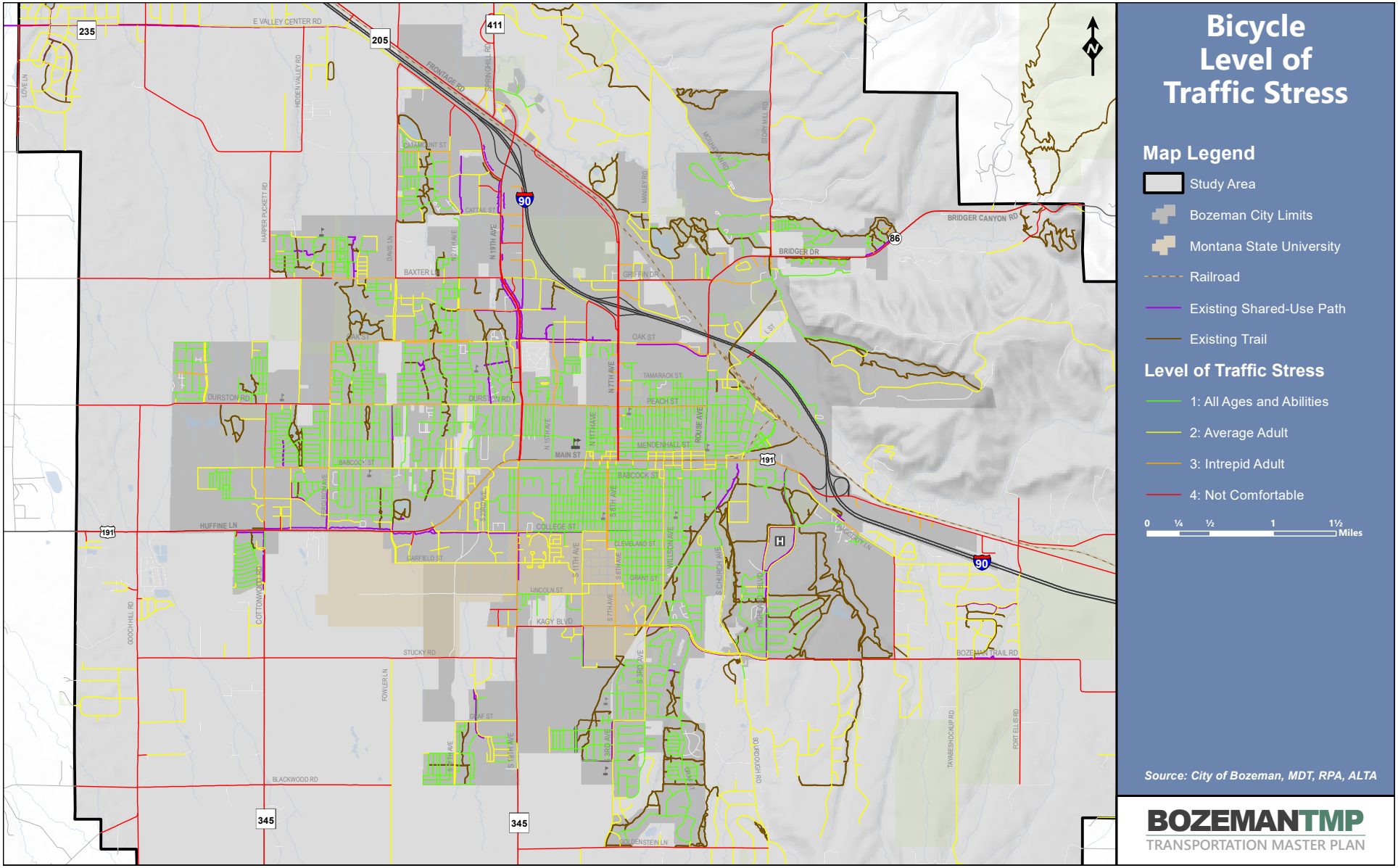



Figure 2.21: Bicycle Level of Traffic Stress

# 3.0. PROJECTED TRANSPORTATION SYSTEM

An analysis of the projected transportation system was performed to estimate how traffic patterns and characteristics may change from the existing conditions. The inputs for this analysis include the existing conditions and potential growth in housing and jobs out to the year 2040. Provided in this section is a description of the traffic modeling effort that was conducted to project the potential future travel conditions. Using the results of the traffic model, it is possible to identify future capacity constraints and other areas of concern.

## 3.1. Travel Demand Model Development

A travel demand model was developed by MDT for Gallatin County. The model was developed using *TransCAD* software. To reflect current conditions, the model used a combination of Census Bureau, GeoResults, Department of Labor and Industry, and Gallatin County structure file data to represent the 2014 socioeconomic baseline model conditions for use in the travel demand model. A comparison of the model and the true existing conditions was performed to validate the model. If any discrepancies were found, the model was "calibrated" to better match existing conditions.

Once validated, the model was used to project conditions for the year 2040 planning horizon. Additional housing and jobs were added to the system to analyze the projected traffic conditions. Census blocks and census tracts were used to distribute the population and employment growth that was projected to occur between 2014 and 2040. In addition, known roadway infrastructure projects expected to be constructed within the next five years were included as part of the projected conditions model. **Appendix B** contains a list and description of the known "committed" projects.

One assumption that was built into the model is that traffic characteristics will remain similar to those that are seen today. Many factors can influence this assumption, such a fuel prices, technological advances, and other unknown circumstances. Another assumption of the model is that the socioeconomic projections will be realized by the year 2040. Ultimately, the projected conditions model was used as a planning tool to help evaluate how traffic patterns might be affected by anticipated future development.

## 3.2. Projected Roadway Volumes and Capacity

Projected traffic volumes were estimated using the travel demand model. A comparison of the existing and projected conditions models was made to determine the percent change in traffic volume. The percent change was then applied to known existing AADT count sites to reflect projected daily traffic volumes. Presented in **Figure 3.1** are the resulting projected daily traffic volumes within the study area. Similarly, **Figure 3.2** presents the projected v/c ratios. It must be noted that the volumes shown in **Figure 3.1** and the v/c ratios shown in **Figure 3.2** are based on the "existing plus committed" roadway network. In other words, these are the projected volumes and projected v/c ratios if no changes to the transportation system, other than those currently committed to, are implemented.

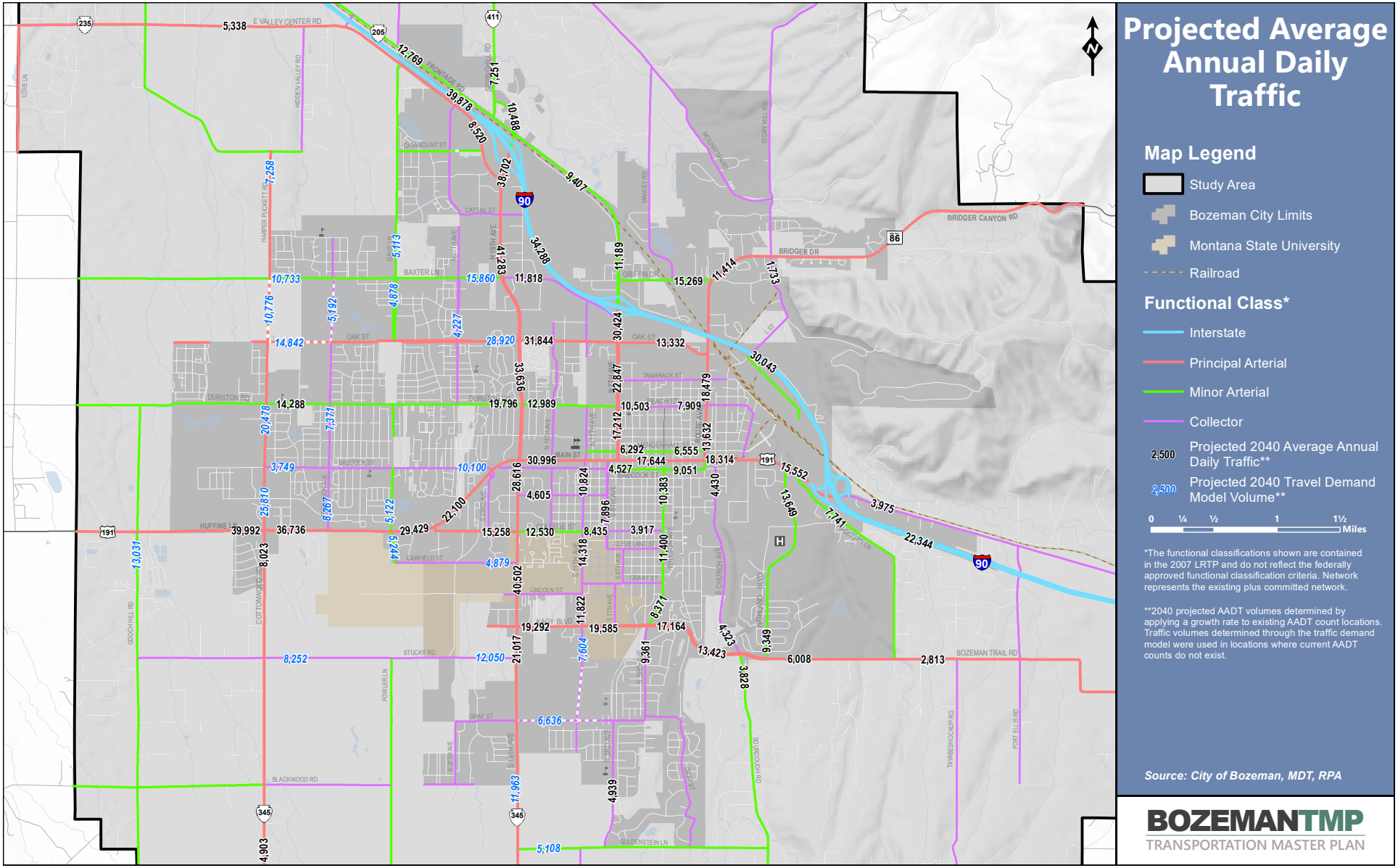



Figure 3.1: Projected Average Annual Daily Traffic

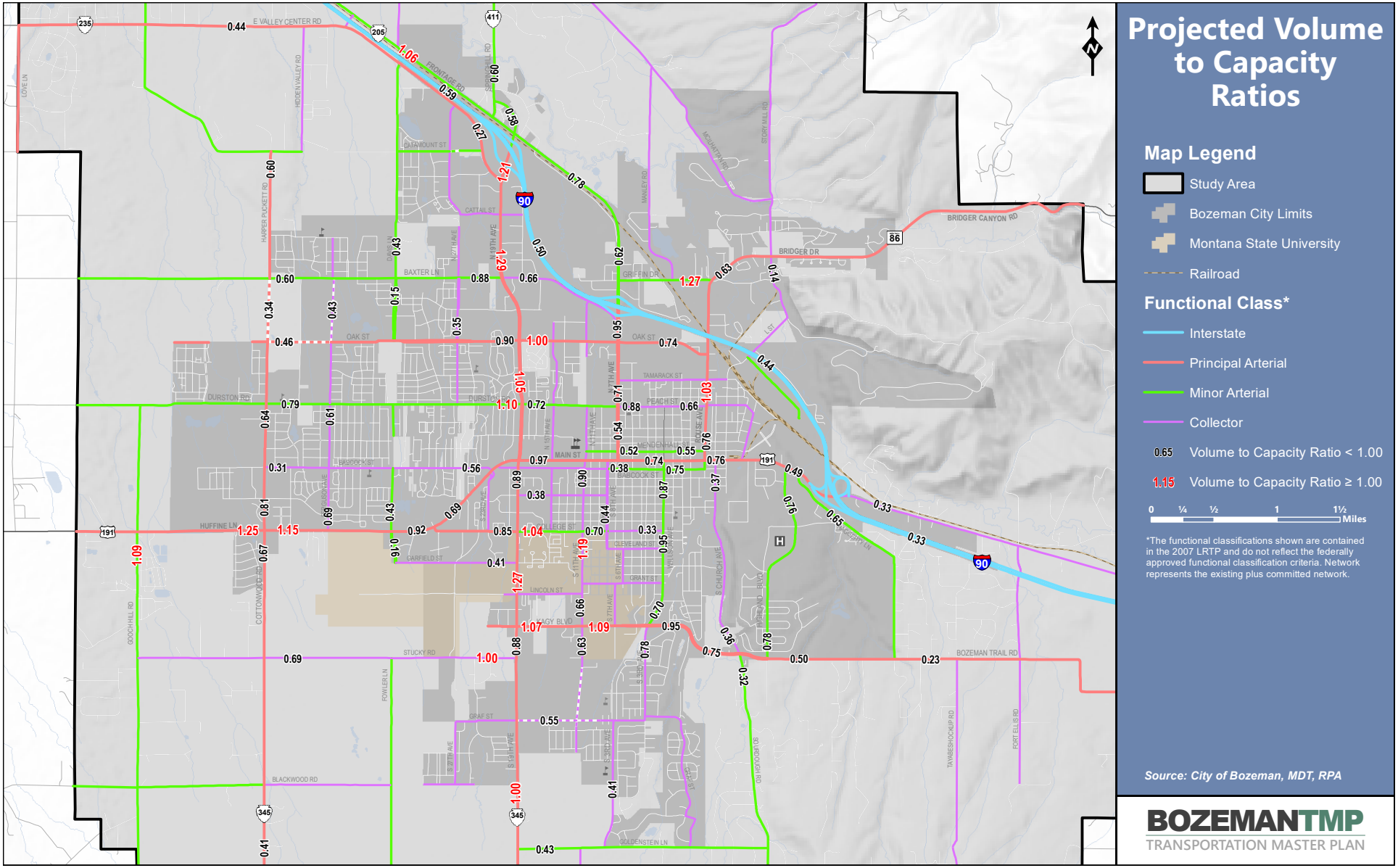



Figure 3.2: Projected Volume to Capacity Ratios

## 3.3. Projected Intersection Levels of Service

Projections for intersection traffic volumes were made for the 63 intersections analyzed previously in **Section 2.2.3**. These projections were based on the percent growth rates calculated from the travel demand model between the years 2014 and 2040. The growth rate was determined for each intersection as a whole. Intersections that are scheduled for reconfiguration or reconstruction, as per the City's Capital Improvement Plan (CIP), were changed to reflect the future configuration of the intersection. Note that changes in travel patterns and volumes resulting from new road connections and revised intersection configurations make traffic volume predictions difficult, and in some cases may not represent the ultimate future volumes that may be realized at a given location.

The results of this analysis are tabulated in **Tables 3.1** and **3.2** for signalized and unsignalized intersections, respectively. Intersections with updated configurations are denoted with bold intersection names in **Tables 3.1** and **3.2**. A graphical representation of the LOS analysis is presented in **Figure 3.3**. Detailed results for individual turning movements are provided in **Appendix C**.

**Table 3.1: Projected Signalized Intersection Level of Service**

| ID | Intersection | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|
| | | Delay (sec) | LOS | Delay (sec) | LOS |
| **03** | Ferguson Avenue and Huffine Lane | 20.6 | C | 27.7 | C |
| **04** | Fowler Avenue and Huffine Lane | 23.3 | C | 43.5 | **D** |
| **05** | 19th Avenue and Garfield Street | 20.7 | C | 118.0 | **F** |
| **06** | 19th Avenue and Stucky Road | 31.4 | C | 27.8 | C |
| **08** | 7th Avenue and Griffin Drive | 17.4 | C | 80.0 | **F** |
| **10** | Rouse Avenue and Griffin Drive | 19.2 | C | 15.1 | B |
| **13** | **Rouse Avenue and Peach Street** | 22.0 | C | 20.6 | C |
| **14** | Willson Avenue and Mendenhall Street | 14.2 | B | 18.3 | B |
| **15** | Willson Avenue and Babcock Street | 12.5 | B | 13.6 | B |
| **16** | Broadway Avenue and Main Street | 10.5 | B | 17.5 | B |
| **17** | Highland Boulevard and Main Street | 19.4 | B | 117.3 | **F** |
| **27** | 11th Avenue and Kagy Boulevard | 34.6 | C | 239.1 | **F** |
| **30** | **7th Avenue and Kagy Boulevard** | 7.9 | A | 10.7 | B |
| **34** | **19th Avenue and I-90 EB Ramp** | 44.4 | **D** | 228.9 | **F** |
| **35** | 19th Avenue and I-90 WB Ramp | 21.2 | C | 69.4 | **F** |
| **36** | 19th Avenue and Tschache Way | 16.9 | B | 31.8 | C |
| **37** | 19th Avenue and Oak Street | 31.9 | C | 82.8 | **F** |
| **38** | 19th Avenue and Durston Road | 27.4 | C | 54.0 | **D** |
| **39** | 7th Avenue and Durston Road/Peach Street | 38.3 | **D** | 52.7 | **D** |
| **40** | 19th Avenue and Main Street | 54.0 | **D** | 62.2 | **E** |
| **41** | 7th Avenue and Main Street | 14.3 | B | 19.7 | B |

| ID | Intersection | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|
| | | Delay (sec) | LOS | Delay (sec) | LOS |
| **42** | 19th Avenue and Babcock Street | Data Unavailable | | 35.5 | **D** |
| **43** | 19th Avenue and Koch Street | 12.7 | B | 16.3 | B |
| **44** | 19th Avenue and College Street | 30.1 | C | 37.8 | **D** |
| **45** | **19th Avenue and Graf Street** | 66.2 | **E** | 22.7 | C |
| **48** | **Davis Lane and Baxter Lane** | 18.2 | B | 14.2 | B |
| **49** | **Laurel Parkway and Durston Road** | 19.0 | B | 13.7 | B |
| **50** | **Cottonwood Road and Durston Road** | 89.5 | **F** | 70.2 | **E** |
| **54** | **Cottonwood Road and Babcock Street** | 32.2 | C | 52.8 | **D** |
| **55** | 19th Avenue and Baxter Lane | 71.7 | **E** | 69.9 | **E** |
| **57** | 7th Avenue and Oak Street | 27.5 | C | 39.7 | **D** |
| **58** | 15th Avenue and Oak Street | 16.6 | B | 22.5 | C |
| **59** | **27th Avenue and Oak Street** | 427.4 | **F** | 321.4 | **F** |
| **61** | Rouse Avenue and Oak Street | 18.9 | B | 16.9 | B |
| **62** | 19th Avenue and Kagy Boulevard | 31.3 | C | 42.5 | **D** |
| **63** | Willson Avenue/3rd Avenue and Kagy Boulevard | 28.8 | C | 30.3 | C |

*Note: **Bold** intersection names denote intersections with future configurations.*

### Table 3.2: Projected Unsignalized Intersection Level of Service

| ID | Intersection | Traffic Control | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|---|
| | | | Delay (sec) | LOS | Delay (sec) | LOS |
| **01** | Ferguson Avenue and Babcock Street | TWS | 144.1 | **F** | ECB | **F** |
| **02** | Fowler Avenue and Babcock Street | TWS | 25.8 | **D** | 83.6 | **F** |
| **07** | **19th Avenue and Goldenstein Lane** | TWS | 33.8 | **D** | 28.6 | **D** |
| **09** | Manely Road and Griffin Drive | TWS | 336.6 | **F** | 67.5 | **F** |
| **11** | **Story Mill Road and Bridger Drive** | TWS | 32.3 | **D** | 34.1 | **D** |
| **12** | Willson Avenue and Peach Street | TWS | 17.8 | C | 41.8 | **E** |
| **18** | Haggerty Lane and Main Street | TWS | 473.6 | **F** | 3,131.6 | **F** |
| **19** | Willson Avenue and College Street | TWS | 56.6 | **F** | 105.4 | **F** |
| **20** | Highland Boulevard and Ellis Street | TWS | 83.8 | **F** | 2,083.4 | **F** |
| **21** | Sourdough Road and Kagy Boulevard | TWS | 1,427.8 | **F** | ECB | **F** |
| **22** | Highland Boulevard and Kagy Boulevard | TWS | ECB | **F** | 1,392.0 | **F** |
| **23** | Wagon Wheel Road and 3rd Avenue | AWS | 10.8 | B | 9.1 | A |
| **24** | 11th Avenue and College Street | Roundabout | 11.1 | B | 85.9 | **F** |
| **25** | 11th Avenue and Grant Street | AWS | 22.3 | C | 234.6 | **F** |
| **26** | 11th Avenue and Lincoln Street | AWS | 30.1 | **D** | 103.2 | **F** |
| **28** | 8th Avenue and College Street | AWS | 20.3 | C | 99.1 | **F** |

| ID | Intersection | Traffic Control | AM Peak Hour | | PM Peak Hour | |
|---|---|---|---|---|---|---|
| | | | Delay (sec) | LOS | Delay (sec) | LOS |
| **29** | 7th Avenue and Grant Street | AWS | 26.2 | **D** | 123.1 | **F** |
| **31** | Valley Center Spur and Frontage Road | TWS | 13.1 | B | 20.4 | C |
| **32** | Valley Center Spur and Valley Center Road | TWS | 185.0 | **F** | 500.3 | **F** |
| **33** | Nelson Road and Frontage Road | TWS | 19.3 | C | 22.2 | C |
| **46** | **Harper Puckett Road and Baxter Lane** | Roundabout | 14.3 | B | 38.9 | **E** |
| **47** | Flanders Mill Road and Baxter Lane | TWS | 18.8 | C | 31.7 | **D** |
| **51** | **Flanders Mill Road and Durston Road** | Roundabout | 14.0 | B | 16.2 | C |
| **52** | **Ferguson Avenue and Durston Road** | Roundabout | 39.9 | **F** | 37.4 | **E** |
| **53** | Fowler Avenue and Durston Road | TWS | 30.0 | **D** | 43.7 | **E** |
| **56** | 7th Avenue and Baxter Lane | TWS | 143.5 | **F** | 206.3 | **F** |
| **60** | **Davis Street and Oak Street** | Roundabout | 300.2 | **F** | 230.0 | **F** |

*Note: **Bold** intersection names denote intersections with future configurations.*

** ECB – Delay exceeds the computational bounds of the software.*

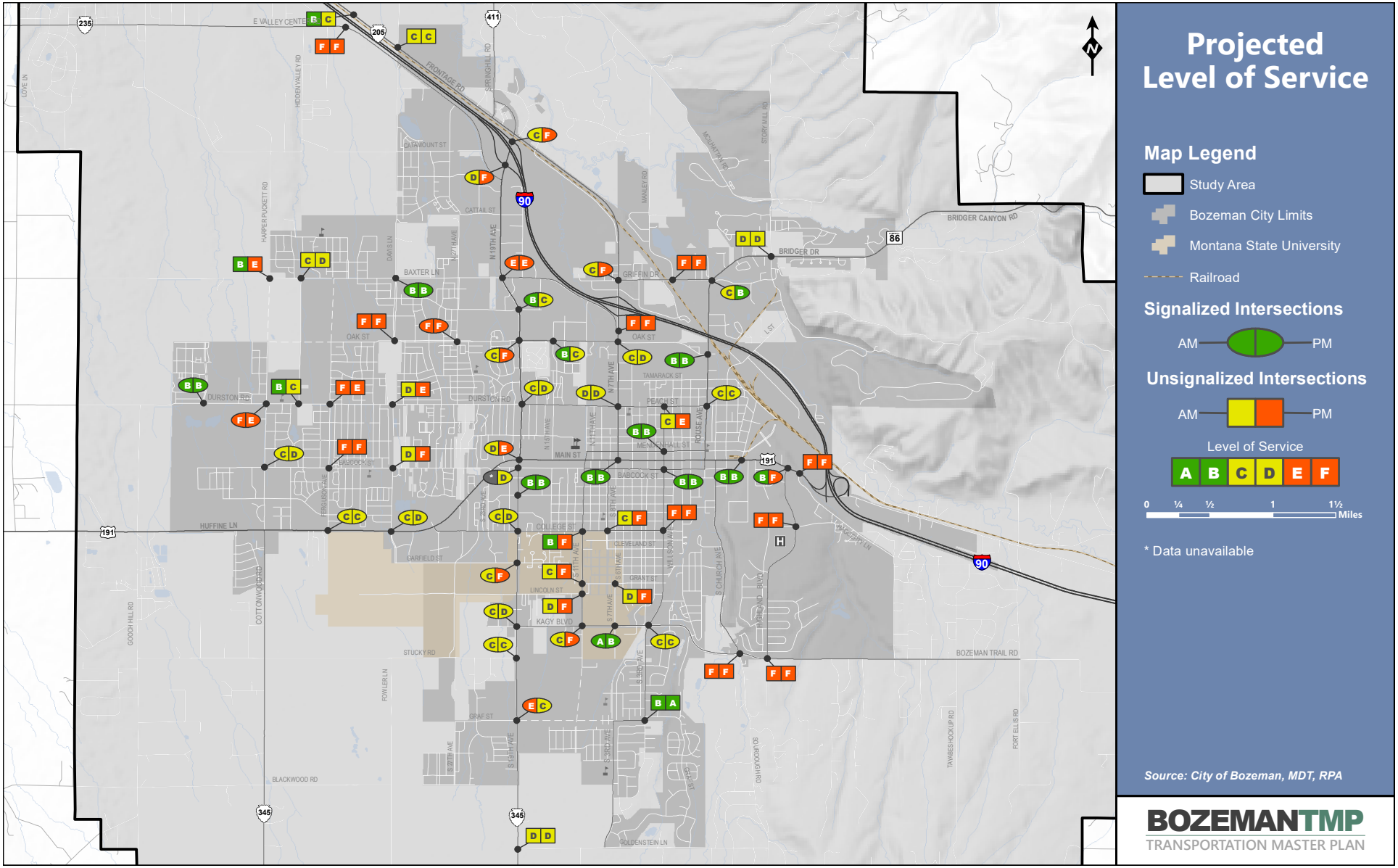



Figure 3.3: Projected Intersection Level of Service

## 3.4. Active Transportation Benefits

With pedestrian and bicycle mode shares higher than most of the other communities in the United States, Bozeman enjoys substantial benefits that are directly attributable to these active modes. This benefits analysis was conducted with a combination of available local data as well as data collected from similar peer communities and national sources of data such as the USDOT TIGER BCA Resource Guide (2014), the National Household Transportation Survey (2009), the National Center for Safe Routes to School travel data (2010), the American Community Survey, and the Automobile Association of America. For Bozeman, the peer communities of Crested Butte, CO; Durango, CO; Ashland, OR; Corvallis, OR; Eugene, OR; and Madison, WI were analyzed. Several types of benefits were evaluated including health, environmental, and transportation. The impact analysis uses a standard methodology for calculating health, environmental, and transportation related benefits. All projections are based on the most recent five-year estimates from the ACS, which are then extrapolated through the use of various multipliers derived from national studies and quantified in terms of monetary value where appropriate. The estimated monetary values are then calibrated to baseline values and compared to bicycle and walk mode commute splits of peer cities. This analysis was bolstered by local enrollment numbers for the Bozeman Unified School District and Montana State University. These figures were significantly different than was recorded in the American Community Survey. Further, this analysis is likely to under represent the existing levels of walking and bicycling as it is heavily influenced by the National Household Transportation Survey. It is likely that the typical Bozeman resident walks and bicycles more than the average American. A local comprehensive travel survey would provide better Bozeman specific data.

Future estimates were derived from an estimate of future mode share in Bozeman based on the peer city analysis. Low, mid, and high mode share growth scenarios were considered for 2040, the planning horizon of this TMP. Bozeman's projected population at 2040 is included in this analysis. The estimates presented in **Table 3.3** are not intended to be mode share targets or policy, but they are useful in quantifying some of the benefit of continuing Bozeman's upward trajectory of active transportation mode share.

**Table 3.3: Projected Mode Share**

| Source | Existing | | Projected Low-Growth | | Projected Mid-Growth | | Projected High-Growth | |
|---|---|---|---|---|---|---|---|---|
| | Bike (%) | Walk (%) | Bike (%) | Walk (%) | Bike (%) | Walk (%) | Bike (%) | Walk (%) |
| **Est. Commute Mode Share (ACS)** | 5.8 | 9.8 | 6.3 | 9.8 | 7.7 | 10.4 | 11.4 | 12.0 |
| **Est. Overall Mode Share for all Trip Purposes (ACS + NHTS)** | 8.2 | 26.4 | 8.8 | 26.4 | 10.8 | 28.2 | 16.1 | 32.5 |

### 3.4.1. Health Benefits

Bozeman's existing levels of walking and bicycling equate to a great deal of physical activity. The Benefit Impact Model quantifies the existing estimated hour of physical activity and projected increases of mode share. Benefits include improved community health and reduced household healthcare spending. The primary inputs into the health components of the Benefit Impact Model were derived from 2009 to 2013 ACS journey to work data, 2009 NHTS, and historic Safe Routes to School data. Existing bicycle and walk commute data were multiplied by national trip purpose ratios to generate mode split data that include all trip purposes. These balanced mode split data were indexed against the mode split data of Bozeman's peer cities and multiplied by various health factors. **Table 3.4** tabulates the estimated health benefits.

**Table 3.4: Health Benefit Estimate**

| Type | Existing | | Low-Growth | | Mid-Growth | | High-Growth | |
|---|---|---|---|---|---|---|---|---|
| | Bike | Walk | Bike | Walk | Bike | Walk | Bike | Walk |
| **Annual Trips** | 4,958,000 | 10,013,000 | 5,341,000 | 10,013,000 | 6,564,000 | 10,677,000 | 9,726,000 | 12,299,000 |
| **Annual Miles** | 11,233,000 | 7,027,000 | 11,732,000 | 7,027,000 | 13,326,000 | 7,235,000 | 17,445,000 | 7,743,000 |
| **Annual Hours of Physical Activity** | 1,123,000 | 2,342,000 | 1,173,000 | 2,342,000 | 1,333,000 | 2,412,000 | 1,745,000 | 2,581,000 |
| **Rec. Physical Activity Minimum Met** | 8,638 | 18,015 | 9,023 | 18,015 | 10,254 | 18,554 | 13,423 | 19,854 |
| **Regional Physical Activity Need Met** | 22.6% | 47.2% | 23.6% | 47.2% | 26.8% | 48.6% | 35.1% | 52.0% |
| **Healthcare Cost Savings** | $291,000 | $401,000 | $313,000 | $401,000 | $385,000 | $428,000 | $571,000 | $493,000 |

### 3.4.2. Environmental Benefits

The existing levels of walking and bicycling provide environmental benefits to the community by not being emissions generating trips. Building off of the health benefits analysis and the mode share growth scenarios, the implications for hydrocarbon, particulate matter, nitrous oxides, carbon monoxide, and carbon dioxide can be estimated. This analysis uses national methodologies to determine trip replacement. Every walking or bicycling trip is not equal to a vehicle trip. Based on a review of air emissions studies, each pound of emissions was assigned an equivalent dollar amount based on how much it would cost to clean up the pollutant or the cost equivalent of how much damage the pollutant causes to the environment. Other potential ecological services associated with the bicycle projects such as water regulation, carbon sequestration, carbon storage, and waste treatment exist but the quantifiable value of these services are negligible on the overall impact. **Table 3.5** presents the estimated environmental benefits of active transportation modes.

**Table 3.5: Environmental Benefit Estimates**

| Type | Existing | | Low-Growth | | Mid-Growth | | High-Growth | |
|---|---|---|---|---|---|---|---|---|
| | Bike | Walk | Bike | Walk | Bike | Walk | Bike | Walk |
| **$CO_2$ Emissions Reduced (lbs)** | 5,960,000 | 5,960,000 | 6,420,000 | 5,960,000 | 7,891,000 | 6,355,000 | 11,691,000 | 7,320,000 |
| **Other Vehicle Emissions Reduced (lbs)** | 136,000 | 102,000 | 146,000 | 102,000 | 180,000 | 109,000 | 266,000 | 125,000 |
| **Total Vehicle Emissions Cost Reduced** | $140,000 | $105,000 | $151,000 | $105,000 | $185,000 | $112,000 | $275,000 | $129,000 |

### 3.4.3. Transportation Benefits

The most readily identifiable benefits of active transportation exist in its ability to increase transportation options and access to activity centers for Bozeman residents and visitors. While money rarely changes hands, real savings can be estimated from the reduced costs associated with congestion, vehicle crashes, road maintenance, and household vehicle operations.

Using the same annual vehicle miles travelled (VMT) reduction estimates highlighted in the health and environmental components, transportation-related costs savings were calculated. By multiplying the amount of VMT reduced by established multipliers for traffic congestion, vehicle collisions, road maintenance, and vehicle operating costs, monetary values were assigned to the transportation-related benefits. This analysis is the most conceptual of the three and actual savings may not result in the estimates given in **Table 3.6**.

**Table 3.6: Transportation Benefit Estimates**

| Type | Existing | | Low-Growth | | Mid-Growth | | High-Growth | |
|---|---|---|---|---|---|---|---|---|
| | Bike | Walk | Bike | Walk | Bike | Walk | Bike | Walk |
| **Annual VMT Reduced** | 4,185,000 | 3,141,000 | 4,508,000 | 3,141,000 | 5,541,000 | 3,349,000 | 8,211,000 | 3,857,000 |
| **Reduced Traffic Congestion Costs** | $293,000 | $220,000 | $316,000 | $220,000 | $388,000 | $234,000 | $575,000 | $270,000 |
| **Reduced Vehicle Crash Cost** | $2,093,000 | $1,570,000 | $2,254,000 | $1,570,000 | $2,771,000 | $1,674,000 | $4,105,000 | $1,929,000 |
| **Reduced Road Maintenance Costs** | $628,000 | $471,000 | $676,000 | $471,000 | $831,000 | $502,000 | $1,232,000 | $579,000 |
| **Household Vehicle Operation Cost Savings** | $2,386,000 | $1,790,000 | $2,570,000 | $1,790,000 | $3,159,000 | $1,909,000 | $4,680,000 | $2,199,000 |

### 3.4.4. Total Benefits

Further improving the walking and bicycling system in Bozeman will result in more trips being taken via these modes. Increases in mode share can yield significant annual benefits to Bozeman and its residents. As summarized in **Table 3.7**, the city currently experiences approximately $10-million in annual benefits from active modes of transportation and could experience a further $500,000 to $6.6 million in additional benefits depending on population growth and varying levels of future mode share increases.

**Table 3.7: Total Benefit Estimates**

| Type | Existing | | Low-Growth | | Mid-Growth | | High-Growth | |
|---|---|---|---|---|---|---|---|---|
| | Bike | Walk | Bike | Walk | Bike | Walk | Bike | Walk |
| **Health Benefits** | $291,000 | $401,000 | $313,000 | $401,000 | $385,000 | $428,000 | $571,000 | $493,000 |
| **Environmental Benefits** | $140,000 | $105,000 | $151,000 | $105,000 | $185,000 | $112,000 | $275,000 | $129,000 |
| **Transportation Benefits** | $5,400,000 | $4,051,000 | $5,816,000 | $4,051,000 | $7,149,000 | $4,319,000 | $10,592,000 | $4,977,000 |
| **Total Benefits** | $10,388,000 | | $10,837,000 | | $12,578,000 | | $17,037,000 | |
| **Total Additional Benefits** | - | | $499,000 | | $2,190,000 | | $6,649,000 | |

The monetary benefits provided in **Table 3.7** combine multiple sources of small amounts of savings. Using the methodology to estimate reductions in vehicle miles traveled, estimates for the overall benefits to the future capacity of Bozeman's streets can also be estimated. For this analysis, Streamline transit ridership data was included and annual growth projections were given for 2%, 3.5% and 5% to represent the low, mid and high growth scenarios. Transit's vehicle trip replacement was also accounted for as only a portion of transit trips may be a direct replacement of a vehicle trip. The purpose of this analysis is to estimate the potential 'load' that active modes of transportation could carry on Bozeman's network. Assuming active modes increase, streets in Bozeman would be carrying more people with fewer vehicles. Such a scenario could negate or substantially delay the need for expensive intersection and roadway capacity projects.

**Table 3.8: Potential Vehicle Trip Reduction from Increased Active Transportation Mode Share in 2040**

| Active Transportation Growth Scenario | Vehicle Miles Traveled Reduced | Total Annual Trips Reduced (estimated) | Daily Trips Reduced |
|---|---|---|---|
| **Low Growth** | 8,740,000 | 2,914,000 | 8,000 |
| **Mid Growth** | 10,483,000 | 3,395,000 | 10,000 |
| **High Growth** | 14,361,000 | 4,787,000 | 14,000 |

Based on the data in **Table 3.8**, it can be estimated that under the high growth scenario, active modes could be carrying 14,000 trips per day in Bozeman. For perspective, this is roughly equivalent to the number of vehicles per day travelling on Kagy Boulevard in 2015. This value is an average and would be higher during the summer months and lower during the winter months. This makes sense as in 2013 on a nice day in September, 2,500 bicyclists alone were manually counted over a 2 hour period at only 15 locations around Bozeman. This benefit would be distributed over the network. Improving active transportation mode share and overall mobility can be accomplished by completing gaps in the network, improving intersections and overcoming some of the barriers which seem to be suppressing mode share in certain areas of Bozeman such as Valley West.

# 4.0. SAFETY

Crash data within the study area were analyzed to determine problem areas, "hot-spot" crash locations, and behavioral characteristics. Trend analysis comparisons were also made for Gallatin County and the State of Montana to help identify unique trends. The following sections provide an analysis of available crash data to help identify crash trends and contributing factors.

Improving transportation safety requires more than just fixing a road or increasing police patrols. In order to be most effective, safety improvements need to consider the "Four E's" of transportation safety: Education, Enforcement, Engineering, and Emergency Services.

## 4.1. Study Area Crash Analysis

Crash data were provided by the MDT Traffic and Safety Bureau for the five-year period between January 1st, 2010 and December 31st, 2014. The crash reports are a summation of information from the scene of the crash provided by the responding officer. As such, some of the information contained in the crash reports may be subjective.

According to the MDT crash database, there were 3,763 crashes reported within the study area during the analysis time period. The number of crashes per year increased from 747 crashes in 2010 to 825 crashes in 2012. After 2012 the number of yearly crashes decreased to 633 crashes in 2014. The number of injury crashes followed a similar trend to that of the total crashes with 191 crashes in 2010, peaking in 2012 with 246 crashes, and decreasing to 194 crashes in 2014. The number of non-injury crashes per year in 2010 was 556 crashes and increased to a peak in 2011 with 605 crashes before decreasing to 436 crashes in 2014. **Figure 4.1** presents the total, injury, and non-injury crashes per year for the five-year analysis period.

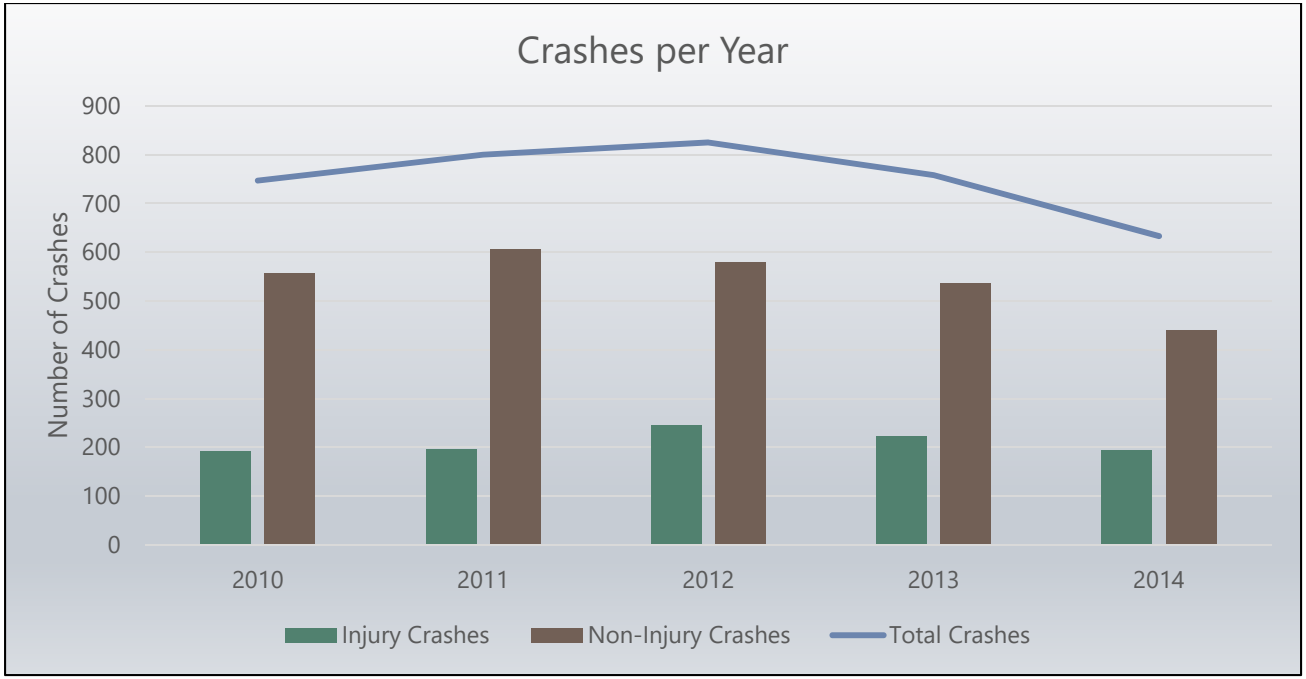



**Figure 4.1: Crashes per Year**

The spatial distribution of all crashes was plotted based on the reported crash locations. The number of crashes per area were then tallied and symbolized in **Figures 4.2** and **4.3**. Locations with higher traffic volumes appear to have a higher number of crashes. Detailed intersection crash analysis is presented in **Section 4.1.5**.

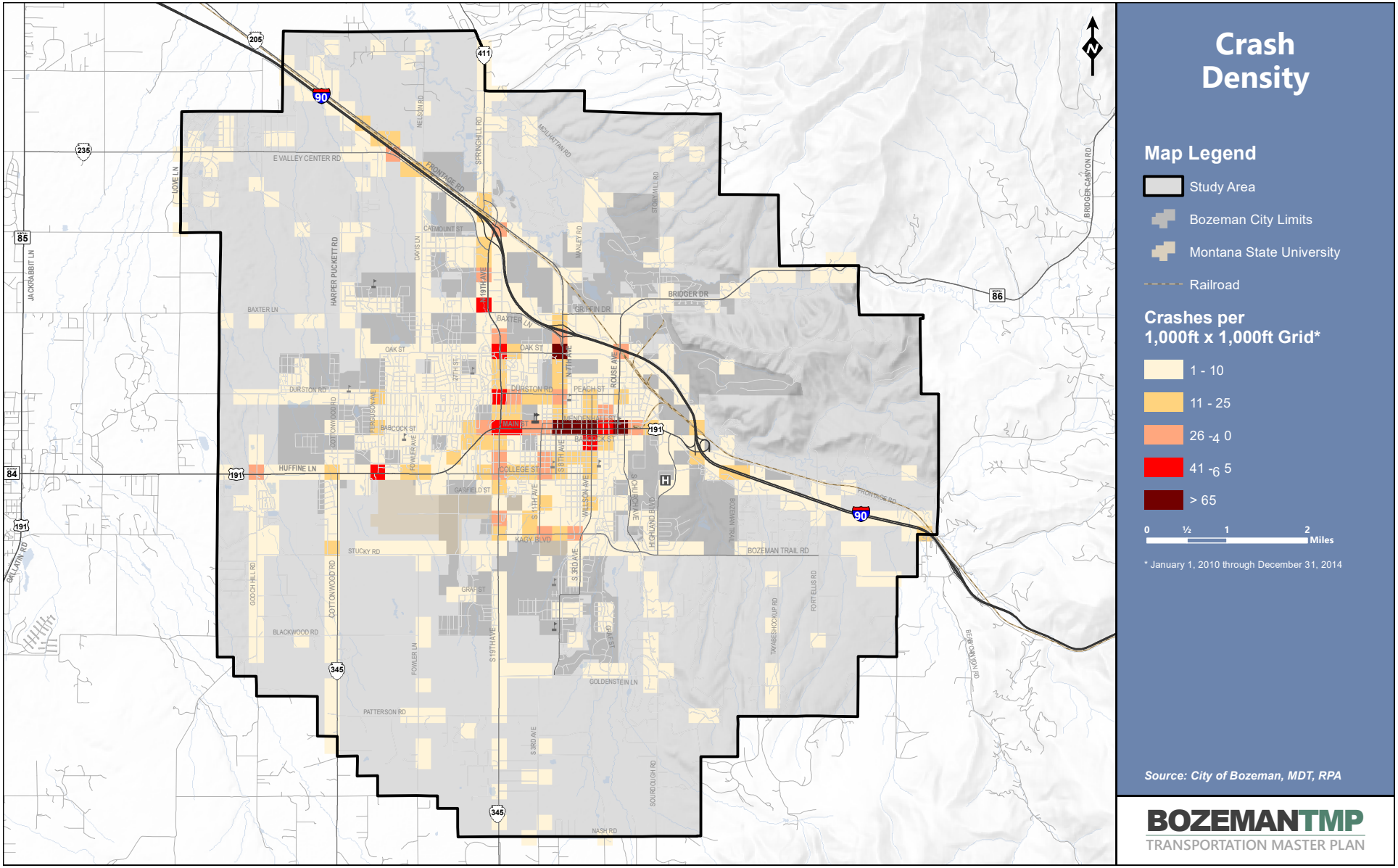



Figure 4.2: Crash Density

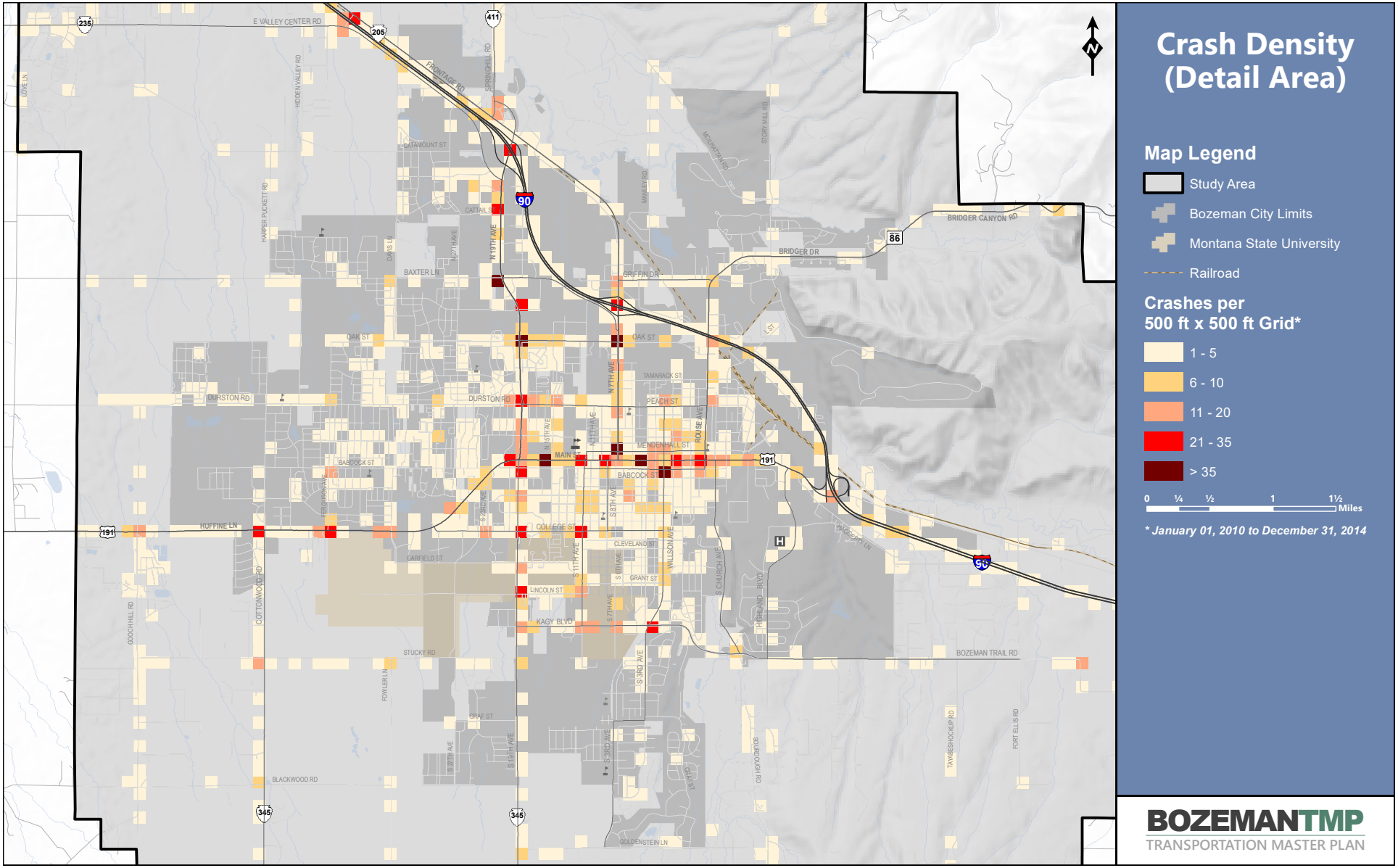



Figure 4.3: Crash Density (Detail Area)

### 4.1.1. Crash Period

Crash data for the study area were evaluated based on the period of time when the crash occurred. With regards to the time of day, two prominent peaks can be seen: one around 8:00 AM and the other around 5:00 PM. Around 50 percent of the reported crashes occurred between the hours of 12:00 PM and 7:00 PM. The PM peak hours (4:00 PM to 7:00 PM) accounted for approximately 22 percent of all reported crashes. The distribution of injury and non-injury crashes generally follows the same pattern as total crashes. The time of day distribution is presented in **Figure 4.4**.

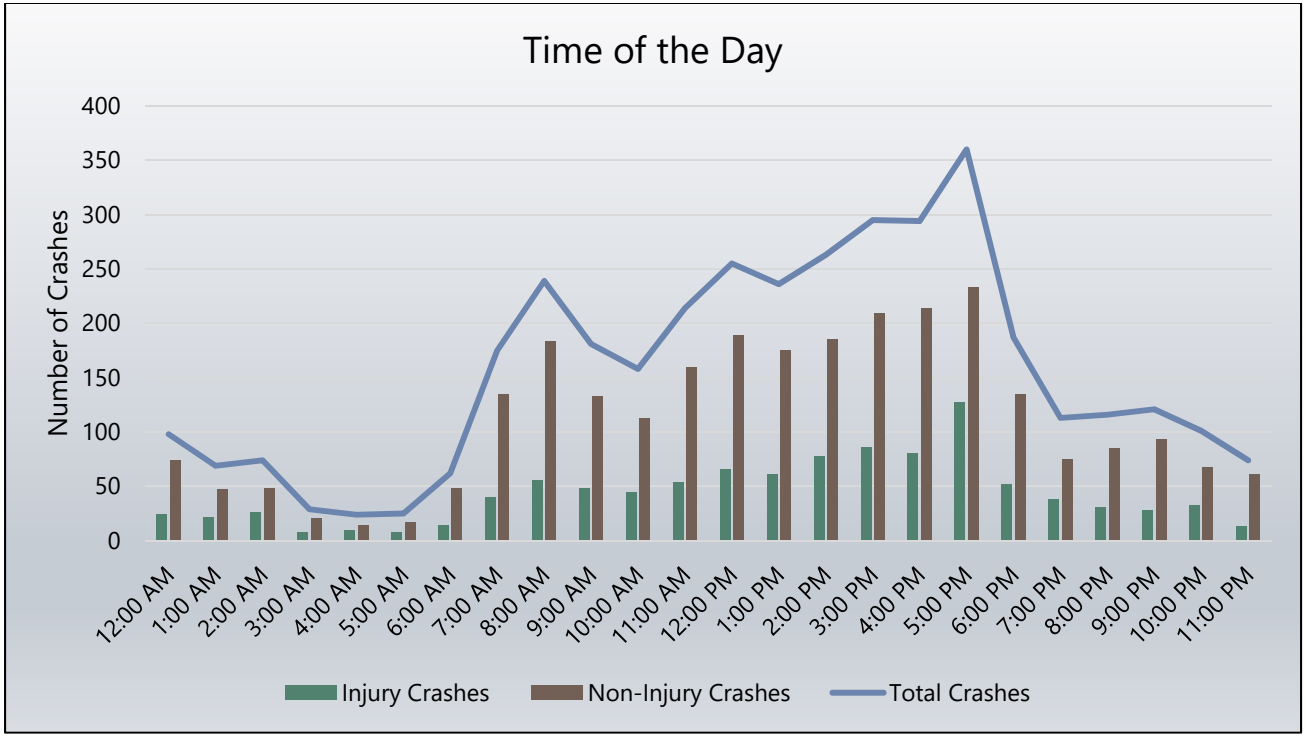



**Figure 4.4: Crash Time of Day Distribution**

The month of December represents the month with the highest reported number of crashes. November and January had the next two highest number of reported crashes. Approximately 35 percent of all crashes occurred during these three months. Inclement weather conditions often exist from November to January which can contribute to an increase in the number of crashes. **Figure 4.5** shows the distribution of reported crashes based on the month of the year in which the crash occurred.

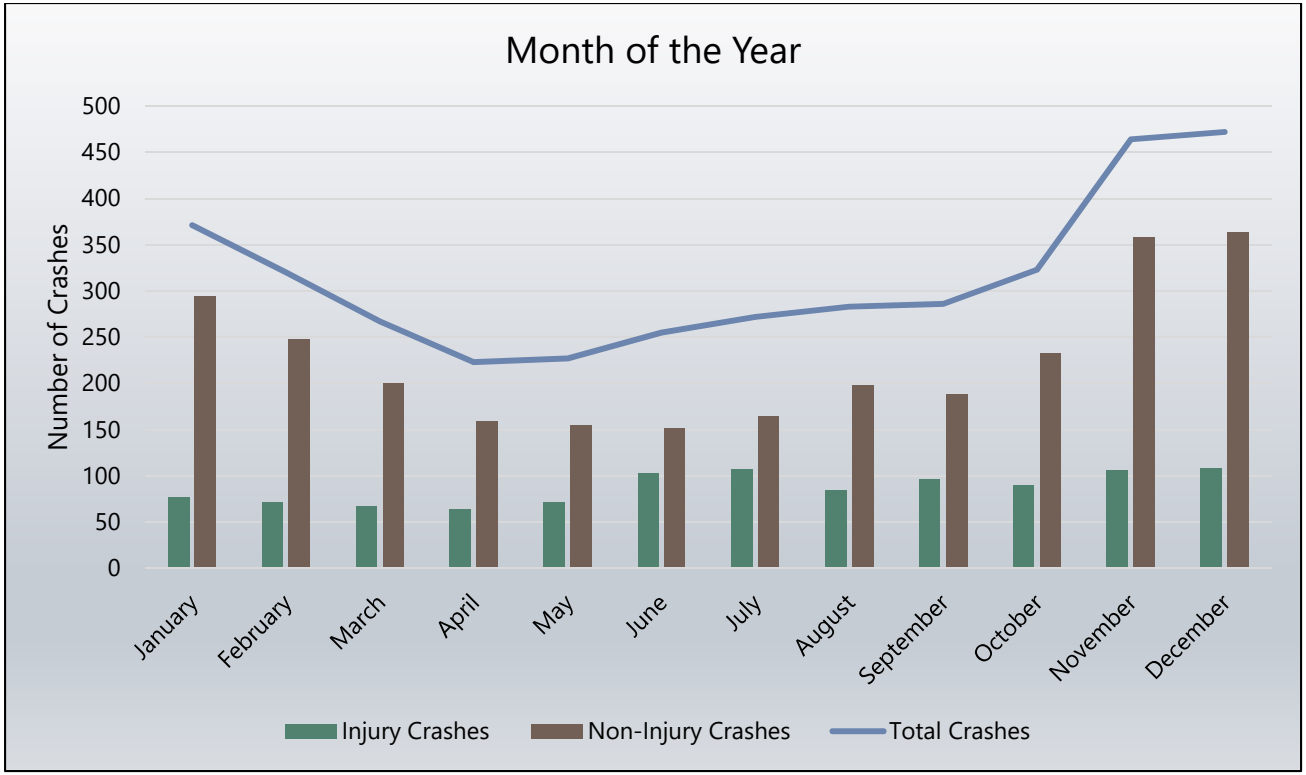



**Figure 4.5: Crash Month of the Year Distribution**

With respect to the day of the week in which crashes occurred, weekdays had a higher number of crashes than weekends. Friday had the highest number of reported crashes, accounting for nearly 18 percent of all crashes. Weekend crashes accounted for approximately 22 percent of all crashes. The distribution of crashes based on day of the week in which the crash occurred is presented in **Figure 4.6**.

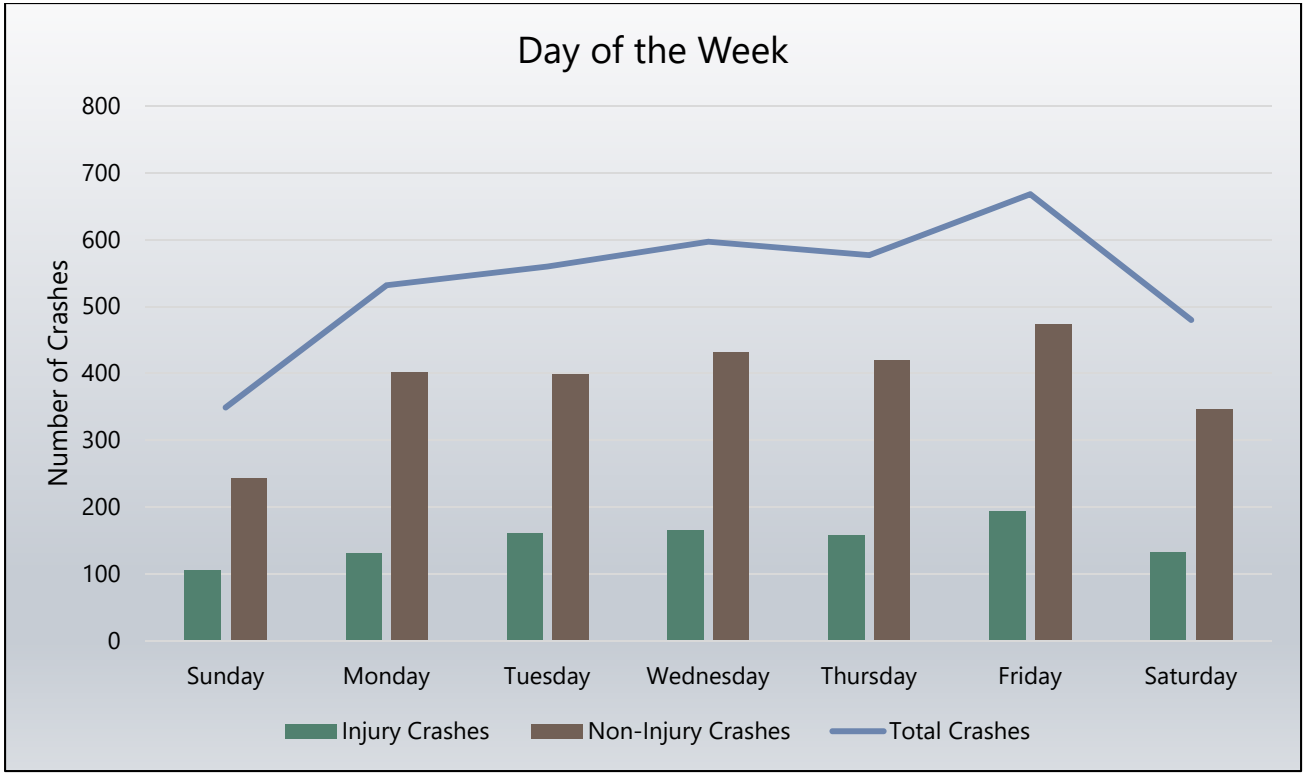



**Figure 4.6: Crash Day of Week Distribution**

### 4.1.2. Environmental Factors

Crash data were reviewed to determine if any trends exist in relation to environmental factors such as weather, roadway surface, and lighting conditions. The weather condition was reported as clear in about 50 percent of all crashes. Cloudy weather accounted for an additional 33 percent of crashes. With respect to the road surface condition, about 59 percent of crashes were reported as having occurred on dry roads, while 7 percent of crashes were reported as having occurred on icy or frost covered roads. Seventy percent of crashes were reported as having occurred under daylight conditions. An additional 15 percent were reported as occurring under dark, not lighted conditions. **Figure 4.7** presents the distribution of crashes based on environmental factors.

In summarizing the environmental factors, several factors were combined for the sake of clarity. For weather conditions, the "other" category includes blowing snow; sleet/hail/freezing; rain/drizzle; fog, smog, or smoke; severe crosswinds, blowing sand, soil, and dirt; and

unknown. For road surface conditions, the "other" category includes mud, dirt, or gravel; other; sand; and unknown. For lighting conditions, the "other" category includes dusk, dawn, dark-unknown lighting, and unknown.

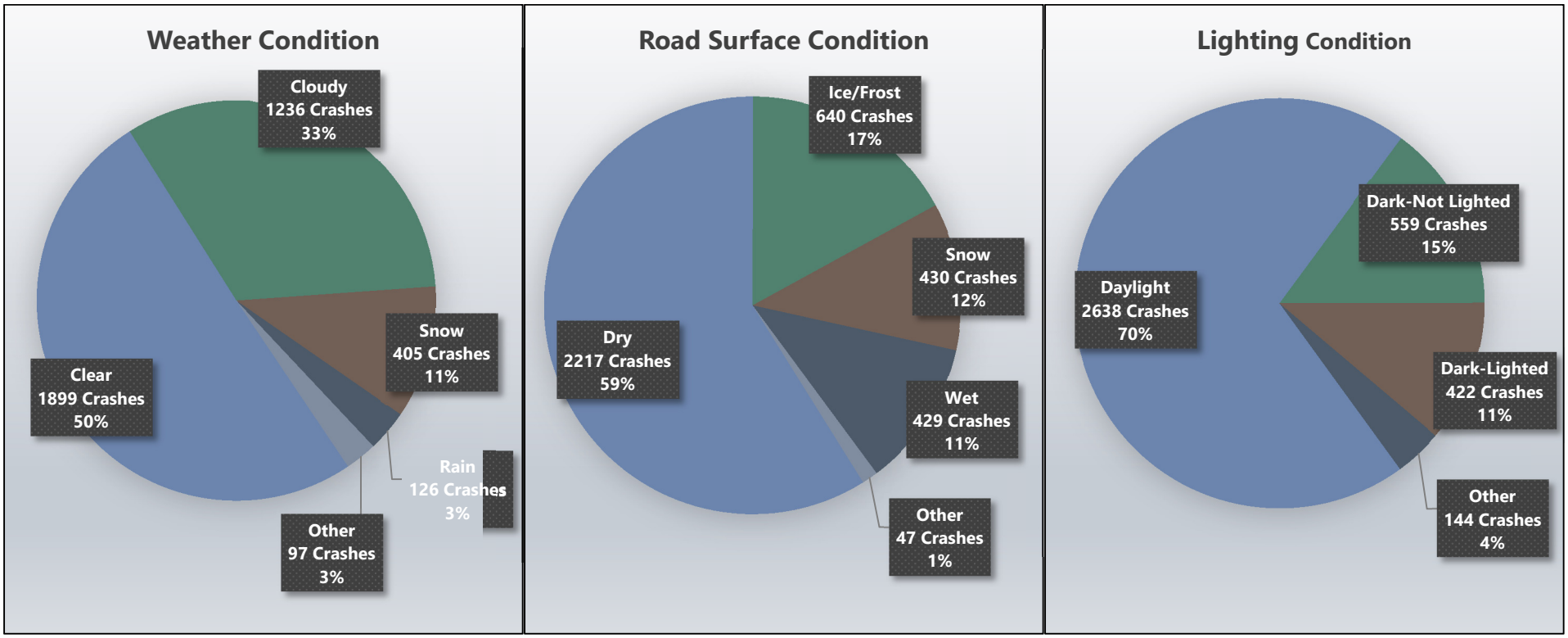



**Figure 4.7: Weather Condition (Left), Road Surface (Center), and Lighting Condition (Right) Summaries**

The charts presented in **Figure 4.7** show the breakdown of crashes based on a single attribute, for example Weather Condition. **Table 4.1** was produced to better understand the relationship between the three environmental factors. The data tabulated in **Table 4.1** represents the number of crashes that occurred under a particular combination of all three of the environmental factors. For example, there were 135 crashes reported to have occurred during clear weather on icy or frost covered roads during daylight conditions. From **Table 4.1**, it can be seen that most of the reported crashes, 1,043 crashes, occurred during clear weather on dry roads during daylight conditions.

**Table 4.1: Relationship between Environmental Conditions**

| Weather Condition | Road Surface Condition | | | | | Total |
|---|---|---|---|---|---|---|
| Lighting Condition | Dry | Ice/Frost | Snow | Wet | Other | |
| **Clear** | **1,457** | **220** | **123** | **83** | **16** | **1,899** |
| Daylight | 1,043 | 135 | 79 | 50 | 9 | 1,316 |
| Dark – Not Lighted | 205 | 34 | 12 | 8 | 5 | 264 |
| Dark – Lighted | 162 | 37 | 24 | 17 | 2 | 242 |
| Other | 47 | 14 | 8 | 8 | | 77 |
| **Cloudy** | **740** | **236** | **94** | **152** | **14** | **1,236** |
| Daylight | 599 | 158 | 67 | 118 | 9 | 951 |
| Dark – Not Lighted | 82 | 46 | 16 | 15 | 4 | 163 |
| Dark – Lighted | 43 | 20 | 8 | 16 | 1 | 88 |
| Other | 16 | 12 | 3 | 3 | | 34 |
| **Snow** | **8** | **150** | **185** | **52** | **10** | **405** |
| Daylight | 5 | 78 | 103 | 42 | 8 | 236 |
| Dark – Not Lighted | | 38 | 49 | 6 | 2 | 95 |
| Dark – Lighted | 3 | 29 | 23 | 1 | | 56 |
| Other | | 5 | 10 | 3 | | 18 |
| **Rain** | **3** | | | **122** | **1** | **126** |
| Daylight | 2 | | | 79 | | 81 |
| Dark – Not Lighted | | | | 24 | | 24 |
| Dark – Lighted | 1 | | | 14 | | 15 |
| Other | | | | 5 | 1 | 6 |
| **Other** | **9** | **34** | **28** | **20** | **6** | **97** |
| Daylight | 5 | 23 | 16 | 10 | | 54 |
| Dark – Not Lighted | 1 | 6 | 6 | | | 13 |
| Dark – Lighted | 3 | 4 | 5 | 8 | 1 | 21 |
| Other | | 1 | 1 | 2 | 5 | 9 |
| **Grand Total** | **2,217** | **640** | **430** | **429** | **47** | **3,763** |

### 4.1.3. Crash Type

Approximately 36 percent, or 1,352 crashes, were reported to have occurred at non-junction locations while about 55 percent, or 2,072 crashes, were reported to have occurred in an intersection or were intersection related. Crashes occurring on the roadway accounted for 81 percent of crashes for a total of 3,037 crashes. About 16 percent of crashes – 585 crashes – occurred on the shoulder of the roadway. **Figure 4.8** shows the distribution of crashes and their respective relationship to junctions and the roadway.

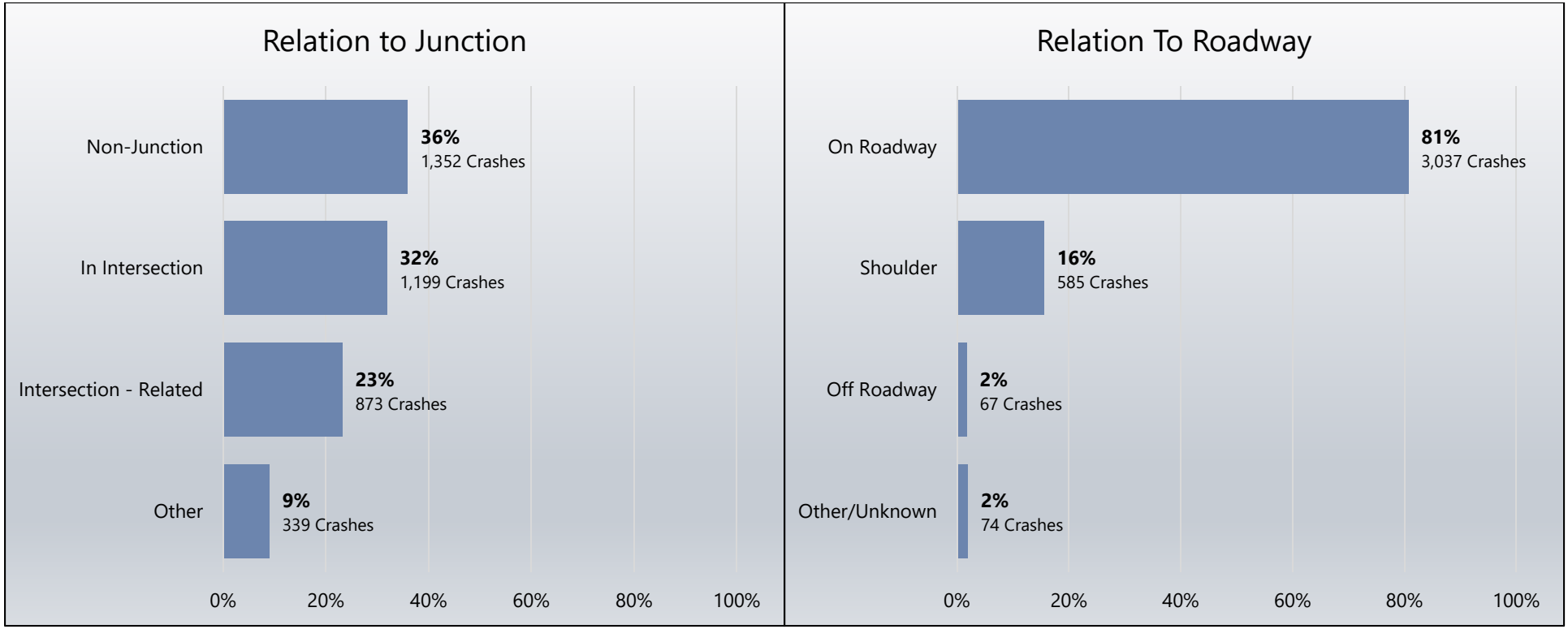



**Figure 4.8: Crash Relation to Junction (Left) and Roadway (Right)**

Crashes can be categorized as either single or multi-vehicle crashes. Multi-vehicle crashes accounted for 74 percent of all reported crashes with a total of 2,789 crashes. Single vehicle crashes represented 26 percent of crashes with 972 total crashes. Two crashes were reported with an unknown crash type.

The most common multi-vehicle crashes were rear-end crashes, accounting for 40 percent of all multi-vehicle crashes. Right angle and sideswipe, same direction crashes were listed as the manner of crash in 856 and 280 crashes, respectively. With respect to single vehicle crashes, fixed object crashes were the most commonly reported crash with 519 crashes, accounting for 53 percent of all single vehicle crashes. Roll over and wild animal crashes were the next two most common crashes with 169 and 140 crashes, respectively. **Figure 4.9** presents the distribution of both multiple and single vehicle crashes within the study area.

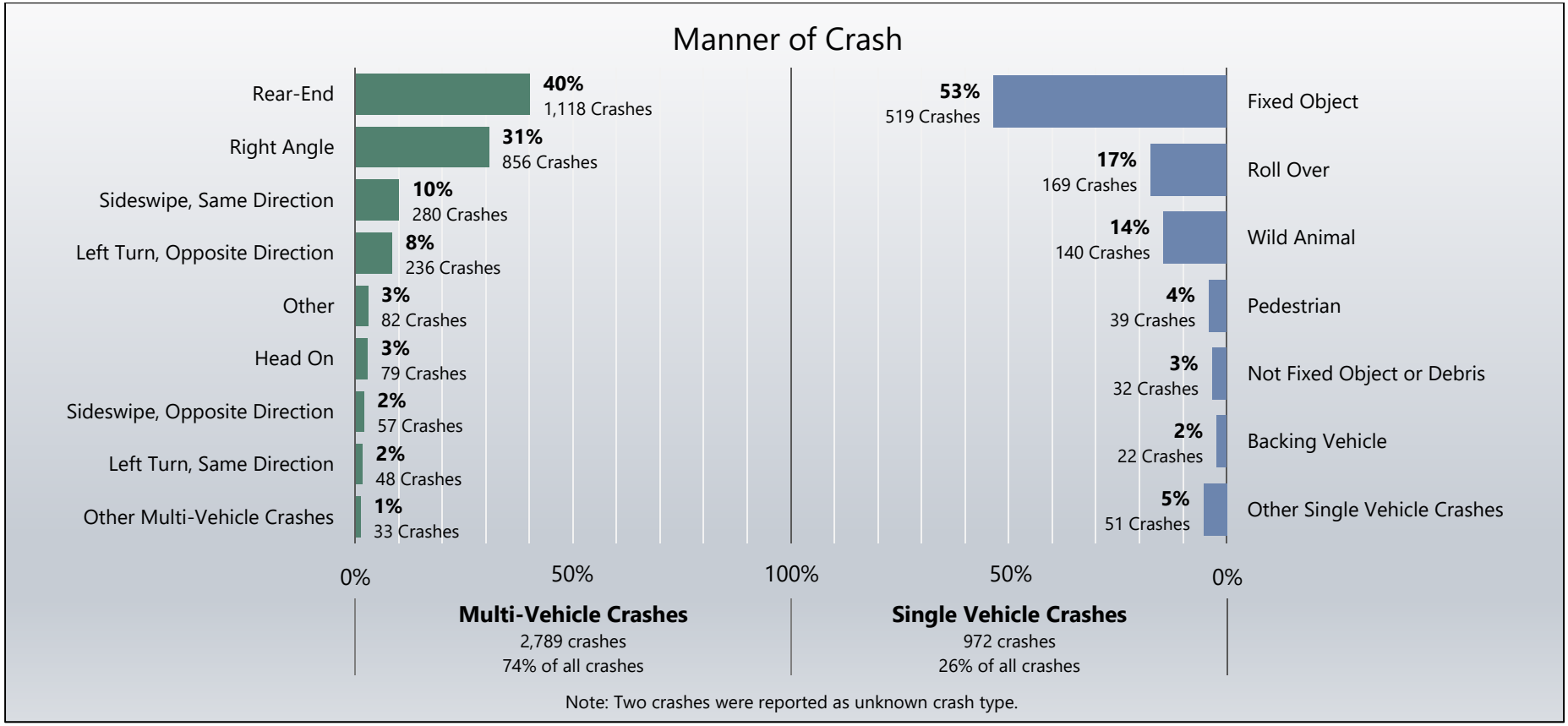



**Figure 4.9: Manner of Crash**

### 4.1.4. Crash Severity

Crash severity is categorized based on the most severe injury of the crash. For example if a crash results in two possible injuries and an incapacitating injury, the crash is reported as an incapacitating injury crash. The distribution of reported crash severity is presented in **Figure 4.10**. The locations of the incapacitating and fatal injury crashes are shown in **Figure 4.11**. An incapacitating injury is defined as an injury, other than a fatality, which prevents the injured individual from walking, driving, or normally continuing the activities they were capable of performing before the injury.

During the five year analysis period, there were a total of 1,032 injury and 16 fatal crashes, accounting for 27 and 0.4 percent of all crashes, respectively. As a result of multiple individuals being injured in a single crash, a total of 1,355 individuals were injured during the crash analysis period. Furthermore, 16 individuals sustained fatal injuries during the same period.

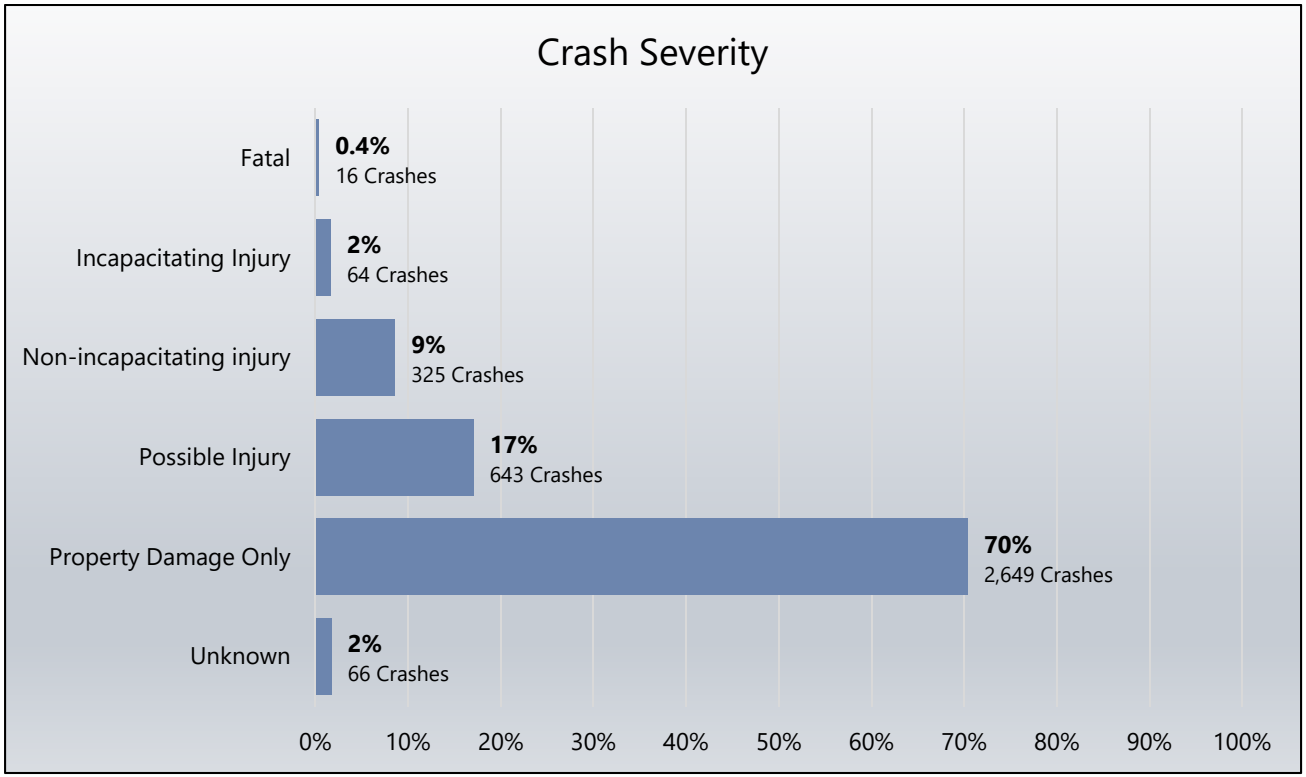



**Figure 4.10: Crash Severity**

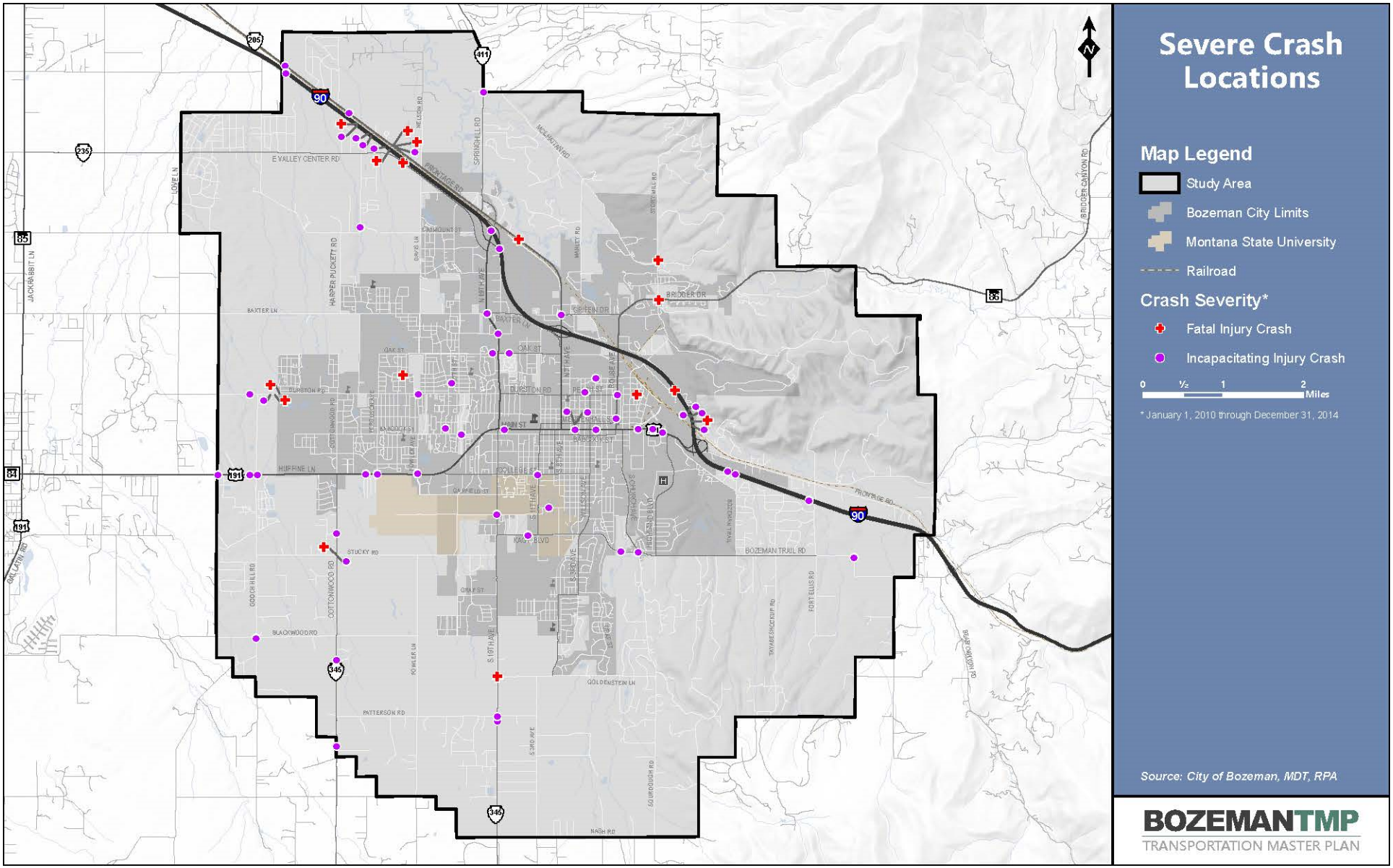



Figure 4.11: Severe Crash Locations

### 4.1.5. Intersection Crashes

The 63 intersection that were studied for LOS were also investigated for crashes. The crash information was analyzed to identify those intersections with crash characteristics that may warrant further study.

The number of crashes at each intersection was determined spatially from the GIS crash database. Any crash located within 150 feet was counted for that intersection. Intersection traffic volumes were determined from PM peak hour turning movement counts. A design hourly vehicle (DHV) factor of 8.61 percent was applied to the peak hour counts to estimate daily traffic volumes based on the average DHV determined from count locations with 24 hours of data.

Crash rates were used to represent the number of crashes against the daily traffic volume. The rate is expressed as the number of crashes per million entering vehicles. **Equation 1** was used to calculated crash rate.

The severity index was calculated by applying multipliers to crashes based on severity. For the severity index, crashes were broken into three categories of severity: property damage only (PDO), non-incapacitating injury, and fatal or incapacitating injury crashes. Each of these three types was given a different multiplier: 1.0 for PDO, 3.0 for injury, and 8.0 for fatal or incapacitating injury crashes. **Equation 2** was used to calculate the severity index. **Table 4.2** presents the crash rates and severity indices for each of the study intersections.

**Equation 1:**

$$\frac{Total\ Number\ of\ Crashes\ \times 1{,}000{,}000\ Vehicles}{Vehicles_{per}\ day\ \times Number\ of\ Years\ \times 365\ days\ per\ year} = Crash\ Rate$$

**Equation 2:**

$$\frac{(\#PDO \times 1.0) + (\#Injury \times 3.0) + (\#Fatal\ of\ Incap \times 8.0)}{Total\ Number\ of\ Crashes} = Severity\ Index$$

## Table 4.2: Intersection Crash Rate, Severity Index, and Severity Rate

| ID | Intersection | Total Crashes | Fatal/Incapacitating Injury Crashes | Injury Crashes | PDO | Crash Rate | Severity Index | Severity Rate |
|---|---|---|---|---|---|---|---|---|
| 01 | Ferguson Avenue and Babcock Street | 18 | 0 | 8 | 10 | 0.70 | 1.89 | 1.32 |
| 02 | Fowler Avenue and Babcock Street | 2 | 0 | 1 | 1 | 0.10 | 2.00 | 0.19 |
| 03 | Ferguson Avenue and Huffine Lane | 22 | 1 | 7 | 14 | 0.35 | 1.95 | 0.68 |
| 04 | Fowler Avenue and Huffine Lane | 10 | 1 | 3 | 6 | 0.15 | 5.60 | 0.35 |
| 05 | 19th Avenue and Garfield Street | 12 | 0 | 4 | 8 | 0.21 | 1.67 | 0.35 |
| 06 | 19th Avenue and Stucky Road | 8 | 0 | 2 | 6 | 0.27 | 1.50 | 0.41 |
| 07 | 19th Avenue and Goldenstein Lane | 9 | 1 | 3 | 5 | 0.58 | 2.44 | 1.41 |
| 08 | 7th Avenue and Griffin Drive | 12 | 1 | 4 | 7 | 0.35 | 2.25 | 0.78 |
| 09 | Manely Road and Griffin Drive | 3 | 0 | 1 | 2 | 0.16 | 1.67 | 0.27 |
| 10 | Rouse Avenue and Griffin Drive | 5 | 0 | 0 | 5 | 0.22 | 1.00 | 0.22 |
| 11 | Story Mill Road and Bridger Drive | 5 | 1 | 2 | 2 | 0.37 | 3.20 | 1.20 |
| 12 | Willson Avenue and Peach Street | 11 | 0 | 5 | 6 | 0.72 | 1.91 | 1.38 |
| 13 | Rouse Avenue and Peach Street | 8 | 1 | 5 | 2 | 0.29 | 3.13 | 0.92 |
| 14 | Willson Avenue and Mendenhall Street | 6 | 0 | 2 | 4 | 0.27 | 1.67 | 0.45 |
| 15 | Willson Avenue and Babcock Street | 21 | 0 | 8 | 13 | 0.74 | 1.76 | 1.30 |
| 16 | Broadway Avenue and Main Street | 11 | 1 | 1 | 9 | 0.30 | 1.82 | 0.54 |
| 17 | Highland Boulevard and Main Street | 1 | 0 | 0 | 1 | 0.02 | 1.00 | 0.02 |
| 18 | Haggerty Lane and Main Street | 7 | 0 | 3 | 4 | 0.19 | 1.86 | 0.36 |
| 19 | Willson Avenue and College Street | 8 | 0 | 5 | 3 | 0.27 | 2.25 | 0.61 |
| 20 | Highland Boulevard and Ellis Street | 3 | 0 | 0 | 3 | 0.12 | 1.00 | 0.12 |
| 21 | Sourdough Road and Kagy Boulevard | 9 | 1 | 2 | 6 | 0.31 | 2.22 | 0.68 |
| 22 | Highland Boulevard and Kagy Boulevard | 2 | 0 | 0 | 2 | 0.09 | 1.00 | 0.09 |
| 23 | Wagon Wheel Road and 3rd Avenue | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 |
| 24 | 11th Avenue and College Street | 17 | 1 | 1 | 15 | 0.42 | 1.53 | 0.65 |
| 25 | 11th Avenue and Grant Street | 7 | 0 | 1 | 6 | 0.32 | 1.29 | 0.41 |
| 26 | 11th Avenue and Lincoln Street | 6 | 0 | 2 | 4 | 0.25 | 1.67 | 0.42 |
| 27 | 11th Avenue and Kagy Boulevard | 14 | 0 | 0 | 14 | 0.34 | 1.00 | 0.34 |
| 28 | 8th Avenue and College Street | 5 | 0 | 0 | 5 | 0.22 | 1.00 | 0.22 |
| 29 | 7th Avenue and Grant Street | 4 | 0 | 1 | 3 | 0.30 | 1.50 | 0.45 |
| 30 | 7th Avenue and Kagy Boulevard | 15 | 0 | 1 | 14 | 0.47 | 1.13 | 0.53 |
| 31 | Valley Center Spur and Frontage Road | 22 | 3 | 8 | 11 | 1.16 | 2.68 | 3.11 |
| 32 | Valley Center Spur and Valley Center Road | 12 | 0 | 1 | 11 | 0.63 | 1.17 | 0.74 |
| 33 | Nelson Road and Frontage Road | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 |
| 34 | 19th Avenue and I-90 EB Ramp | 3 | 0 | 0 | 3 | 0.07 | 1.00 | 0.07 |

| ID | Intersection | Total Crashes | Fatal/Incapacitating Injury Crashes | Injury Crashes | PDO | Crash Rate | Severity Index | Severity Rate |
|---|---|---|---|---|---|---|---|---|
| 35 | 19th Avenue and I-90 WB Ramp | 1 | 0 | 0 | 1 | 0.03 | 1.00 | 0.03 |
| 36 | 19th Avenue and Tschache Way | 27 | 2 | 6 | 19 | 0.51 | 1.96 | 1.00 |
| 37 | 19th Avenue and Oak Street | 38 | 0 | 13 | 25 | 0.52 | 1.68 | 0.88 |
| 38 | 19th Avenue and Durston Road | 29 | 0 | 7 | 22 | 0.42 | 1.48 | 0.63 |
| 39 | 7th Avenue and Durston Road/Peach Street | 18 | 0 | 5 | 13 | 0.36 | 1.56 | 0.56 |
| 40 | 19th Avenue and Main Street | 12 | 0 | 4 | 8 | 0.14 | 1.67 | 0.24 |
| 41 | 7th Avenue and Main Street | 7 | 0 | 2 | 5 | 0.19 | 1.57 | 0.30 |
| 42 | 19th Avenue and Babcock Street | 16 | 0 | 3 | 13 | 0.44 | 1.38 | 0.60 |
| 43 | 19th Avenue and Koch Street | 12 | 0 | 4 | 8 | 0.30 | 1.67 | 0.50 |
| 44 | 19th Avenue and College Street | 30 | 0 | 12 | 18 | 0.54 | 1.80 | 0.96 |
| 45 | 19th Avenue and Graf Street | 1 | 0 | 1 | 0 | 0.06 | 1.00 | 0.06 |
| 46 | Harper Puckett Road and Baxter Lane | 3 | 0 | 0 | 3 | 0.34 | 1.00 | 0.34 |
| 47 | Flanders Mill Road and Baxter Lane | 2 | 0 | 0 | 2 | 0.15 | 1.00 | 0.15 |
| 48 | Davis Lane and Baxter Lane | 10 | 0 | 3 | 7 | 0.39 | 1.60 | 0.62 |
| 49 | Laurel Parkway and Durston Road | 2 | 1 | 1 | 0 | 0.11 | 5.50 | 0.60 |
| 50 | Cottonwood Road and Durston Road | 5 | 0 | 0 | 5 | 0.20 | 1.00 | 0.20 |
| 51 | Flanders Mill Road and Durston Road | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 0.00 |
| 52 | Ferguson Avenue and Durston Road | 10 | 0 | 0 | 10 | 0.35 | 1.00 | 0.35 |
| 53 | Fowler Avenue and Durston Road | 2 | 1 | 1 | 0 | 0.11 | 5.50 | 0.60 |
| 54 | Cottonwood Road and Babcock Street | 2 | 0 | 0 | 2 | 0.11 | 1.00 | 0.11 |
| 55 | 19th Avenue and Baxter Lane | 38 | 2 | 13 | 23 | 0.55 | 2.05 | 1.13 |
| 56 | 7th Avenue and Baxter Lane | 10 | 0 | 3 | 7 | 0.17 | 1.60 | 0.28 |
| 57 | 7th Avenue and Oak Street | 51 | 0 | 17 | 34 | 0.68 | 1.67 | 1.14 |
| 58 | 15th Avenue and Oak Street | 8 | 0 | 5 | 3 | 0.21 | 2.25 | 0.48 |
| 59 | 27th Avenue and Oak Street | 5 | 0 | 0 | 5 | 0.23 | 1.00 | 0.23 |
| 60 | Davis Lane and Oak Street | 5 | 0 | 1 | 4 | 0.23 | 1.40 | 0.33 |
| 61 | Rouse Avenue and Oak Street | 1 | 0 | 0 | 1 | 0.03 | 1.00 | 0.03 |
| 62 | 19th Avenue and Kagy Boulevard | 13 | 0 | 5 | 8 | 0.31 | 1.77 | 0.54 |
| 63 | Willson Avenue/3rd Avenue and Kagy Boulevard | 22 | 0 | 8 | 14 | 0.46 | 1.73 | 0.80 |

## 4.2. Bicyclist and Pedestrian Crash Analysis

Bicycle and pedestrian crash data are part of the same data set as the vehicular crash data. All pedestrian crashes have the reported crash type listed as pedestrian. Bicycle crashes, however, could be listed as right angle, sideswipe, etc. crashes. As such, it was necessary to investigate the vehicles involved in the crash. Any crash listing a bicycle as being involved in a crash has been included in this analysis. Note that each crash used for this analysis was also included in the prior study area crash analysis.

Pedestrian and bicycle crash data are typically underreported as many minor collisions that do not involve injury or significant property damage are unlikely to be reported to the police. Crash data were reviewed for the five year period between January 1st, 2010 to December 31st, 2014 and some interesting trends were noted. **Figure 4.12** provides a summary of this analysis. The vast majority of pedestrian and bicycle involved crashes occur at intersection or driveways; essentially, places where vehicle turning movements conflict. Most of these intersection are on Bozeman's arterial and collector system. Many crashes occurred due to impaired driving (also impaired walking in the case of 19 percent of pedestrian crashes).

**88** CRASHES INVOLVING BICYCLISTS

**47** CRASHES INVOLVING PEDESTRIANS

**16** INCAPACITATING OR FATAL INJURIES
12% OF TOTAL BIKE/PED CRASHES (1 FATAL)

| | |
|---|---|
| **11%** OCCURRED WHEN IT WAS **DARK OUTSIDE** 8 OUT OF 10 (80%) IN UNLIT AREAS | **25%** OCCURRED WHEN IT WAS **DARK OUTSIDE** 7 OUT OF 12 (58%) IN UNLIT AREAS |
| **78%** OCCURRED AT **INTERSECTIONS OR DRIVEWAYS** | **64%** OCCURRED AT **INTERSECTIONS OR DRIVEWAYS** |
| **59%** INVOLVED IMPAIRED DRIVING BY THE **MOTORIST** | **36%** INVOLVED IMPAIRED DRIVING BY THE **MOTORIST** |
| **23%** OCCURRED WITHIN **A BICYCLE LANE** | **19%** INVOLVED IMPAIRED **PEDESTRIANS** |

## WHERE DO CRASHES OCCUR?

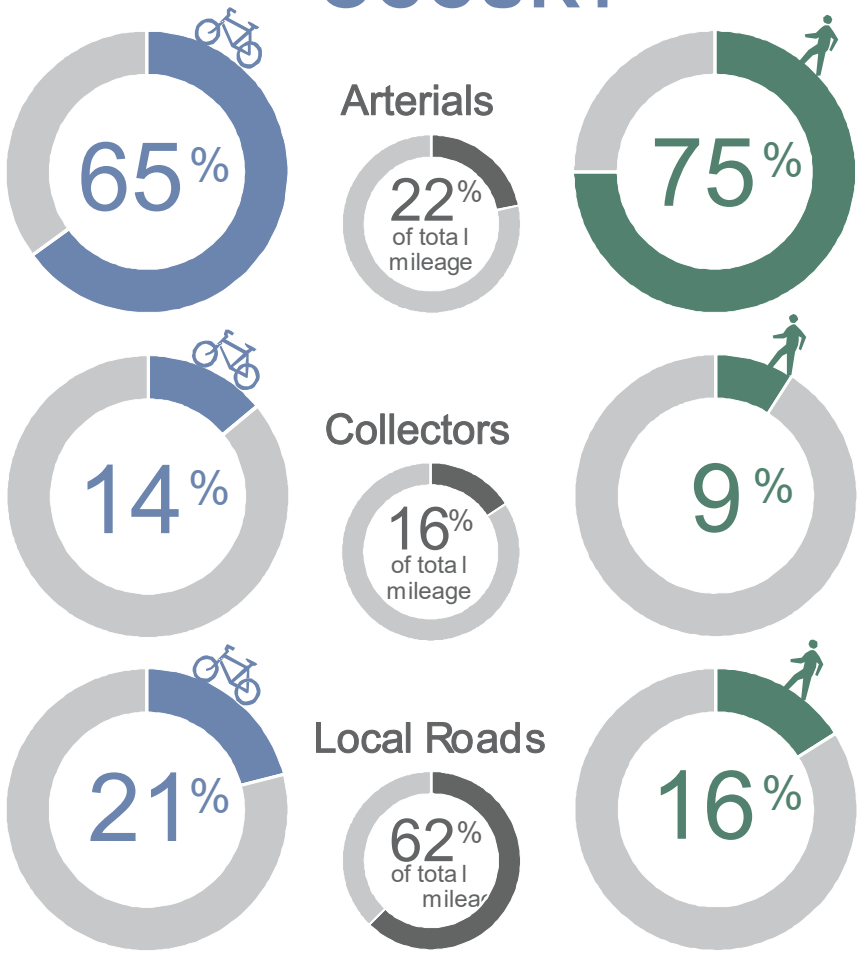



Figure 4.12: Bicyclist and Pedestrian Crash Statistics

## 4.3. Safety Data Trend Analysis

The MDT Highway Traffic Safety Section supplied crash statistics for January 1st, 2010 to December 31st, 2014. A safety data trend analysis was conducted to compare the crash characteristics of the Study Area, Gallatin County, and the State of Montana.

### 4.3.1. Impairment

Of the reported crashes, Gallatin County had a higher rate of alcohol/drug related crashes (10.6 percent) as compared to the State of Montana (9.7 percent). The rate of impaired driving crashes within the study area was lower than both the County and the State with 7.6 percent of reported crashes involving an impaired driver. **Table 4.3** tabulates the total reported crashes and the percentage of crashes involving an impaired driver.

**Table 4.3: Crash Statistics for Alcohol/drug Related Crashes**

| Location | Total Crashes | Impaired Driver Involved | |
|---|---|---|---|
| **Study Area** | 3,763 | 287 | 7.6% |
| **Gallatin County** | 8,167 | 863 | 10.6% |
| **State of Montana** | 102,187 | 9,869 | 9.7% |

### 4.3.2. Safety Belt Use

Safety belt use data were reported on a per individual basis. As such, individuals involved in some crashes did not have the option to use a safety belt, for example motorcycles, pedestrians, or bicyclists. The data were adjusted to account for these users. Safety belt usage data for the State of Montana are unavailable. Safety belt usage was found to be higher in the study area than Gallatin County with 90.8 and 89.8 percent of individuals using safety belts, respectively. **Table 4.4** gives statistics for safety belt use.

**Table 4.4: Crash Statistics for Safety Belt Use**

| Location | Number of Individuals | Using Restraints | | Not Using Restraints | | Unknown | |
|---|---|---|---|---|---|---|---|
| **Study Area** | 8,882 | 8,061 | 90.8% | 383 | 4.3% | 438 | 4.9% |
| **Gallatin County** | 17,452 | 15,669 | 89.8% | 840 | 4.85 | 943 | 5.4% |

### 4.3.3. Driver Age

Analysis of driver's age shows that drivers between 18 and 25 years of age were the most commonly reported ages for the study area, Gallatin County, and the State of Montana. Within the study area, 32 percent of drivers were reported to be within the 18 to 25 years of age range. **Figure 4.13** shows the percent of drivers by age for the study area, Gallatin County, and the State of Montana.

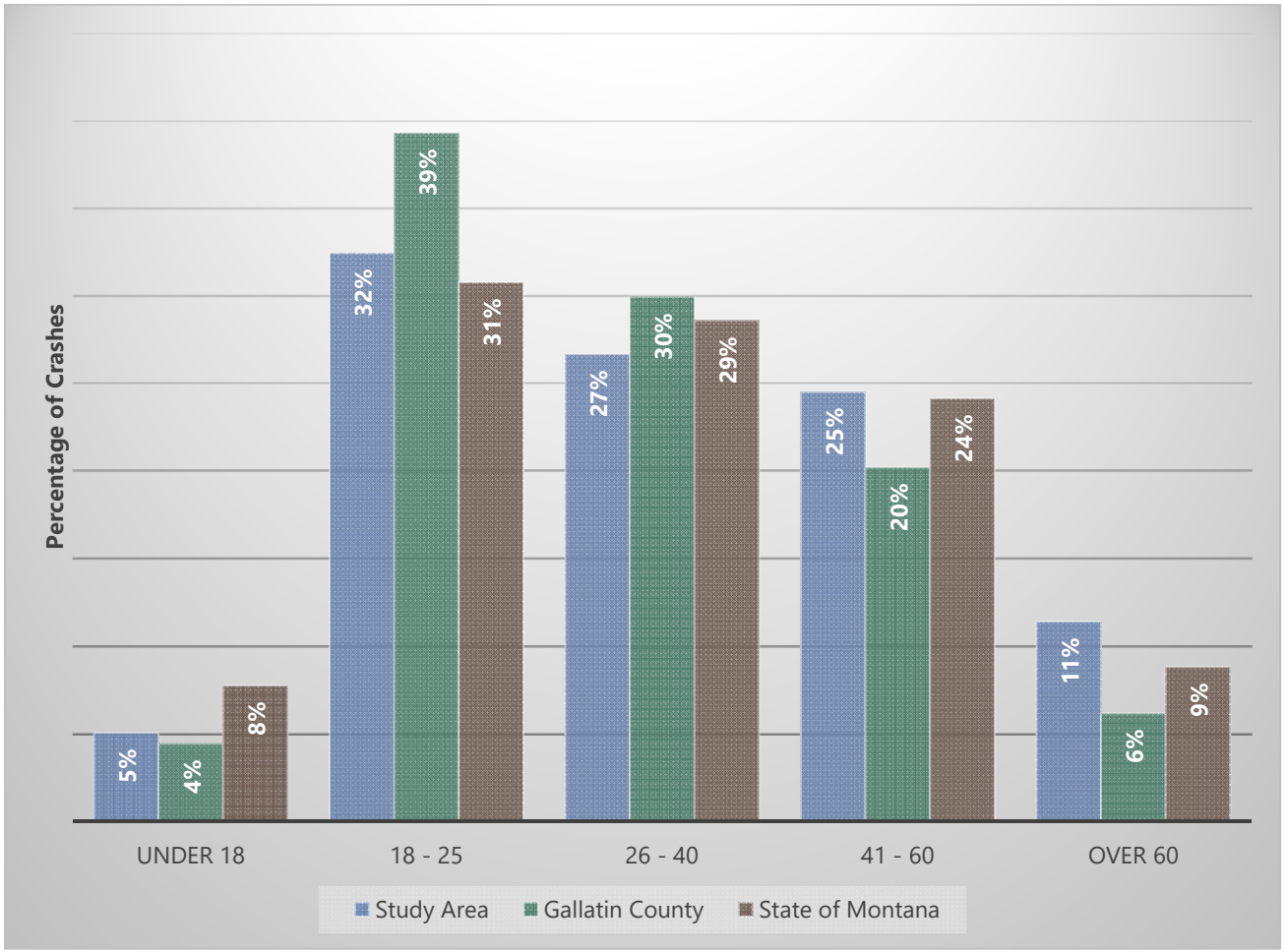



**Figure 4.13: Driver's Age Statistics**

### 4.3.4. Vehicle Type

Motorcycles were involved in 1.5 percent of crashes within the study area, which is lower than both Gallatin County (1.7 percent) and the State of Montana (1.9 percent). Large vehicles, i.e. semi-trucks, were involved in 1.8 percent of crashes within the study area. Large vehicles accounted for 4.9 and 6.3 percent of crashes in Gallatin County and the State of Montana, respectively. **Table 4.5** presents crash statistics based on vehicle type.

**Table 4.5: Crash Statistics for Vehicle Type**

| Location | Total Crashes | Motorcycle Crashes | | Large Vehicle Crashes | |
|---|---|---|---|---|---|
| **Study Area** | 3,763 | 58 | 1.5% | 66 | 1.8% |
| **Gallatin County** | 8,167 | 142 | 1.7% | 401 | 4.9% |
| **State of Montana** | 102,187 | 1,974 | 1.9% | 6,397 | 6.3% |

### 4.3.5. Crash Severity

Comparison of crash severity statistics revealed that fatal and incapacitating injury crashes accounted for a lower percentage of crashes with in the study area as compared to both Gallatin County and the State of Montana. Less than 1.0 percent of crashes resulted in a fatality for the study area, Gallatin County, and the State of Montana. **Table 4.6** tabulates the number and percentage of fatal and incapacitating injury crashes that occurred within the study area, Gallatin County, and the State of Montana.

**Table 4.6: Crash Severity Statistics**

| Location | Total Crashes | Fatal Crashes | | Incapacitating Injury Crashes | |
|---|---|---|---|---|---|
| **Study Area** | 3,763 | 16 | 0.4% | 64 | 1.7% |
| **Gallatin County** | 8,167 | 48 | 0.6% | 193 | 2.4% |
| **State of Montana** | 102,187 | 922 | 0.9% | 4,023 | 3.9% |

# 5.0. AREAS OF CONCERN

This section provides a list and description of areas of concern and consideration within the study area. These areas were identified through review of existing traffic data, travel demand model projections, field review, public databases, and other resources. More discussion has been provided in the previous sections, and it is reiterated here as appropriate.

## 5.1. EXISTING TRANSPORTATION CONDITIONS

The following roadways are currently exceeding capacity (v/c ≥ 1) – refer to **Figure 2.12**:

- Kagy Boulevard – South 19th Avenue to South 7th Avenue
- Rouse Avenue – Peach Street to Bond Street

The following roadways are currently approaching capacity (0.85 ≤ v/c < 1.00) – refer to **Figure 2.12**:

- College Street – South 19th Avenue to South 15th Avenue
- Frontage Road – Valley Center Cut Across to Study Area Boundary
- Kagy Boulevard – South 7th Avenue to Willson / South 3rd Avenue
- Rouse Avenue – Bond Street to Griffin Drive

The following intersections experience a LOS of D or worse under existing conditions:

Signalized (see **Table 2.6** and **Figure 2.20**)

- Highland Boulevard and Main Street (ID 17)
- 19th Avenue and Main Street (ID 40)
- North 7th Avenue and Oak Street (ID 57)

Unsignalized (see **Table 2.7** and **Figure 2.20**)

- Ferguson Avenue and Babcock Street (ID 01)
- Fowler Avenue and Babcock Street (ID 02)
- Manely Road and Griffin Drive (ID 09)
- Rouse Avenue and Peach Street (ID 13)
- Haggerty Lane and Main Street (ID 18)
- Willson Avenue and College Street (ID 19)

- Highland Boulevard and Ellis Street (ID 20)
- Sourdough Road and Kagy Boulevard (ID 21)
- Highland Boulevard and Kagy Boulevard (ID 22)
- South 7th Avenue and Kagy Boulevard (ID 30)
- North 19th Avenue and I-90 EB Ramp (ID 34)
- Davis Lane and Baxter Lane (ID 48)
- Flanders Mill Road and Durston Road (ID 51)
- Ferguson Avenue and Durston Road (ID 52)
- North 7th Avenue and Baxter Lane (ID 56)
- North 27th Avenue and Oak Street (ID 59)
- Davis Street and Oak Street (ID 60)

## 5.2. Projected Transportation Conditions

The following roadways are projected to exceed capacity (v/c ≥ 1) – refer to **Figure 3.2**:

- College Street – South 19th Avenue to South 15th Avenue
- Durston Road – North 25th Avenue North 19th Avenue
- Frontage Road (S-205) – Nelson Road to Springhill Road
- Griffin Drive – North 7th Avenue to Rouse Avenue
- Huffine Lane – Fowler Avenue to Study Area Boundary
- Kagy Boulevard – South 19th Avenue to South 7th Avenue
- Main Street – North 7th Avenue to North 5th Avenue
- North 19th Avenue – Main Street to Interstate 90
- Rouse Avenue – Oak Street to Griffin Drive
- South 19th Avenue – College Street to Kagy Boulevard
- South 11th Avenue – College Street to Grant Street

The following roadways are projected to approach (0.85 ≤ v/c < 1.00) – refer to **Figure 3.2**:

- Baxter Lane – North 27th Avenue to North 19th Avenue
- College Street – South 15th Avenue to South 11th Avenue
- Durston Road – North 27th Avenue to North 25th Avenue

- Durston Road – North 15th Avenue to North 11th Avenue
- Gooch Hill Road – Huffine Lane to Stucky Road
- Huffine Lane – Fowler Avenue to North 19th Avenue
- Kagy Boulevard – North 7th Avenue to Tracy Avenue
- Main Street – North 19th Avenue to North 7th Avenue
- North 7th Avenue – Interstate 90 to Oak Street
- Oak Street – North 27th Avenue to North 19th Avenue
- Oak Street – North 19th Avenue to North 7th Avenue/Walmart Approach
- Peach Street – North 7th Avenue to North 5th Avenue
- South 19th Avenue – College Street to Main Street
- South 19th Avenue – Kagy Boulevard to Graf Street
- South 11th Avenue – College Street to Babcock Street
- Stucky Road – South 19th Avenue to Wagon Wheel Road
- Willson Avenue – Garfield Street to Babcock Street

The following intersections are projected to experience a LOS of D or worse by the year 2040:

Signalized (see **Table 3.1** and **Figure 3.3**)

- Fowler Avenue and Huffine Lane (ID 04)
- South 19th Avenue and Garfield Street (ID 05)
- North 7th Avenue and Griffin Drive (ID 08)
- Highland Boulevard and Main Street (ID 17)
- South 11th Avenue and Kagy Boulevard (ID 27)
- North 19th Avenue and I-90 EB Ramp (ID 34)
- North 19th Avenue and I-90 WB Ramp (ID 35)
- North 19th Avenue and Oak Street (ID 37)
- North 19th Avenue and Durston Road (ID 38)
- North 7th Avenue and Durston / Peach (ID 39)
- 19th Avenue and Main Street (ID 40)
- South 19th Avenue and Babcock Street (ID 42)
- South 19th Avenue and College Street (ID 44)

- South 19th Avenue and Graf Street (ID 45)
- Cottonwood Road and Durston Road (ID 50)
- Cottonwood Road and Babcock Street (ID 54)
- North 19th Avenue and Baxter Lane (ID 55)
- North 7th Avenue and Oak Street (ID 57)
- North 27th Avenue and Oak Street (ID 59)
- South 19th Avenue and Kagy Boulevard (ID 62)

Unsignalized (see **Table 3.2** and **Figure 3.3**)

- Ferguson Avenue and Babcock Street (ID 01)
- Fowler Avenue and Babcock Street (ID 02)
- South 19th Avenue and Goldenstein Lane (ID 07)
- Manely Road and Griffin Drive (ID 09)
- Story Mill Road and Bridger Drive (ID 11)
- Willson Avenue and Peach Street (ID 12)
- Haggerty Lane and Main Street (ID 18)
- Willson Avenue and College Street (ID 19)
- Highland Boulevard and Ellis Street (ID 20)
- Sourdough Road and Kagy Boulevard (ID 21)
- Highland Boulevard and Kagy Boulevard (ID 22)
- South 11th Avenue and College Street (ID 24)
- South 11th Avenue and Grant Street (ID 25)
- South 11th Avenue and Lincoln Street (ID 26)
- South 8th Avenue and College Street (ID 28)
- South 7th Avenue and Grant Street (ID 29)
- Valley Center Spur and Valley Center Road (ID 32)
- Harper Puckett Road and Baxter Lane (ID 46)
- Flanders Mill Road and Baxter Lane (ID 47)
- Ferguson Avenue and Durston Road (ID 52)
- Fowler Avenue and Durston Road (ID 53)
- North 7th Avenue and Baxter Lane (ID 56)

- Davis Street and Oak Street (ID 60)

## 5.3. Safety

Identification of possible safety concerns can be approached in multiple ways. Firstly, overall crash density, as shown in **Figures 4.2** and **4.3**, can be used to identify possible locations with crash concerns. This approach, however, does not take the amount of traffic into account. Accordingly, the second method is to use the intersection crash severity rate as presented in **Table 4.2**. This method does not account for crashes that may be occurring away from intersections. This leads to the third approach, plotting the spatial extent of severe crashes as in **Figure 4.11**. A combination of these three methods can identify locations with possible safety concerns.

### 5.3.1. Crash Density

In reference to **Figures 4.2** and **4.3**, the areas with high crash density (number of crashes occurring in a given area during the crash analysis period) tend to follow the major routes throughout the study area. Specific areas that have high crash densities are:

- North 19th Avenue and Baxter Lane,
- North 19th Avenue and Oak Street,
- North 7th Avenue and Oak Street,
- West of 15th Avenue and Main Street,
- North 7th Avenue and Mendenhall,
- 3rd Avenue and Main Street, and
- Willson Avenue and Babcock Street.

Each of these locations has more than 35 crashes per 500 by 500-foot area during the crash analysis period. Additionally, each of these locations are along roads with high traffic volumes, therefore, more crashes are expected.

### 5.3.2. Intersection Crash Severity Rate

The intersection crash severity rate, as presented in **Section 4.1.5** accounts for the exposure or traffic volume at a given location. For example, an intersection with a high number of PDO crashes and a high traffic volume would have a low severity rate. Alternately, an intersection with a fatal crash and low traffic volume would have a high severity rate. **Table 5.1** presents the intersections with crash severity rates greater than 1.00.

**Table 5.1: High Crash Severity Locations**

| ID | Intersection | Crash Rate | Severity Index | Severity Rate |
|---|---|---|---|---|
| 01 | Ferguson Avenue and Babcock | 0.70 | 1.89 | 1.32 |
| 07 | 19th Avenue and Goldenstein Lane | 0.58 | 2.44 | 1.41 |
| 11 | Story Mill Road and Bridger Drive | 0.37 | 3.20 | 1.20 |
| 12 | Willson Avenue and Peach Street | 0.72 | 1.91 | 1.38 |
| 15 | Wilson Avenue and Babcock Street | 0.74 | 1.76 | 1.30 |
| 31 | Valley Center Spur and Frontage Road | 1.16 | 2.68 | 3.11 |
| 36 | 19th Avenue and Tschache Way | 0.51 | 1.96 | 1.00 |
| 55 | 19th Avenue and Baxter Lane | 0.55 | 2.05 | 1.13 |
| 57 | 7th Avenue and Oak Street | 0.68 | 1.67 | 1.14 |

### 5.3.3. Severe Crash Locations

Plotting the location of severe crashes, those resulting in a fatal or incapacitating injury, may reveal locations with safety concerns. These locations may not be apparent though the previous two analysis techniques due to the location not being at an intersection or at a location with a high number of non-injury crashes. The following locations were identified based on the number of severe crashes occurring at the location:

- Interstate 90 west of the East Main interchange,
- Interstate 90 west of the Valley Center Spur overpass,
- Intersection of Valley Center Spur and Frontage Road,
- The chicane on Durston Road west of Laurel Parkway, and
- Intersection of Cottonwood Road and Stucky Road.

### 5.3.4. Summary

Each of the three previous methods identified locations and intersection with possible crash concerns. Some of the intersections were listed in two of the three lists, these include:

- North 19th Avenue and Baxter Lane,
- North 7th Avenue and Oak Street,
- Willson Avenue and Babcock Street, and
- Valley Center Spur and Frontage Road.

Additionally, the severe crash clusters on Interstate 90 and at the chicane on Durston Road represent possible safety concerns. Both of the severe crash clusters on Interstate 90 are located at or near a bridge structure. The chicane on Durston Road is a sudden transition from a rural to an urban area with poor sightlines and complicated road geometry.

### 5.3.5. Pedestrians and Bicyclists

Bicycle and pedestrian crash data are part of the same data set as the vehicular crash data. All pedestrian crashes have the reported crash type listed as pedestrian. Bicycle crashes, however, could be listed as right angle, sideswipe, etc. crashes. Pedestrian and bicycle crash data are typically underreported as many minor collisions that do not involve injury or significant property damage are unlikely to be reported to the police. Crash data were reviewed for the five year period between January 1st, 2010 to December 31st, 2014 and some interesting trends noted as follows (refer to **Figure 4.12** for a complete summary):

- There were 88 crashes involving bicyclists, and 47 crashes involving pedestrians, in the analysis period.
- Of the 135 toatal bicycle and pedestrian crashes in the analysis period, 16 crashes (12%) resulted in incapacitating or fatal injuries.
- 78% of bicycle crashes, and 64% of pedestrian crashes, occurred at intersections or driveways.
- 23% of bicycle crashes occurred within a bicycle lane.
- 19% of pedestrian crashes involved impaired pedestrians.

The vast majority of pedestrian and bicycle involved crashes occur at intersection or driveways; essentially, places where vehicle turning movements conflict. Most of these intersection are on Bozeman's arterial and collector system. Many crashes are occurring due to impaired driving / impaired walking. The crash data indicate a focus on intersection safety may yield reductions in the number of future crashes. Additionally, as so few pedestrian and bicycle crashes occur on local streets, they may be another place to invest future improvements such as bicycle boulevards and arterial crossing improvements for pedestrians and bicyclists.

## 5.4. Alternative Transportation Modes

### 5.4.1. Pedestrian

Bozeman City residents have a developed pedestrian system (see **Figure 2.5** for Existing Pedestrian Conditions), but there are still opportunities present for advancement. Through the existing conditions analysis and public involvement the main themes of pedestrian problems are summarized below:

- Lack of ADA compatible curb ramps throughout much of the city.
- Old, deteriorating sections of sidewalk.
- Lack of vegetation maintenance.

- Snow removal in winter.
- Longstanding gaps in the pedestrian network.
- Short-term gaps in the pedestrian network in new development areas by piecemeal building.
- Difficult crossing locations of major streets.
- Large distances between legal crossings of major streets
- Lack of full integration with transit – sidewalk connections, shelters.

### 5.4.2. Bicycle

People that bicycle make up a diverse group with widely varying needs and preferences. A solution for some will still leave others unserved. For example, the construction of bike lanes will be a boon to confident cyclists and those that prefer direct routes with few interruptions, however less confident bicyclists will not feel comfortable next to vehicle traffic and will prefer a separated pathway or a parallel lower traffic route. Conversely, a shared-use path will encourage less confident cyclists and other recreational users, but if it is the sole bicycle facility confident cyclists will prefer to ride in the unimproved roadway, away from slow moving pedestrians and complicated crossings of roads and driveways. To meet the needs of all cyclists, a balanced approach to solving bicycle facility concerns is required.

The City of Bozeman has seen a rapid increase in bicycle facilities in recent years (see **Figure 2.4** for Existing Bicycle Conditions). Many of the east-west arterials to the north side of Main Street have had bicycle lanes installed including Durston Road, Oak Street, Babcock Street, Baxter Lane, Ferguson Ave and others. Shared use path corridors have also been developed and expanded including the North 19th Avenue corridor, the Highland Boulevard corridor, and along West College Street. Through the existing conditions analysis and public involvement the main themes of bicycle problems are summarized below:

- Bike lanes not available on all arterial routes including:
  - *North Rouse Avenue*
  - *Kagy Boulevard*
  - *Huffine / Main Street*
  - *North 7th Avenue*
  - *North and South 19th Avenue*
  - *Cottonwood Road*
  - *Davis Lane*
  - *Willson Avenue*
  - *College Street*
  - *South 8th Avenue*

  - *Valley Center Drive*
- Existing bike lane network has numerous gaps.
- Many unimproved roadways have no shoulder.
- Bike lanes and shoulders covered in debris.
- Pavement quality including potholes and cracking on many bike routes.
- Difficult crossings of major roadways at unsignalized intersections along high desire corridors including:
  - *West Koch Street and South 19th Avenue*
  - *West Koch Street and South 11th Avenue*
  - *West Lamme Street and North 7th Avenue*
  - *West Lamme Street and North Rouse Avenue*
  - *West College Street and South Willson Avenue*
- Some bike lanes are not routinely plowed in winter.
- Shortage or lack of bicycle parking at bicyclists' destination.
- Shortage or lack of bicycle parking at major transit stops.
- Shortage or lack of wayfinding signage on bicycle routes to major destinations.
- Shortage or lack of bicycle lanes to Downtown Bozeman (Main Street, Mendenhall Street and Babcock Street).
- Shortage or lack of bicycle lanes to Montana State University.
- Shortage or lack of dedicated bicycle facilities along high profile routes such as Bozeman-Belgrade, and Bozeman-Four Corners.
- General perception of lack of safety for adults and children.
- General perception of lack of adequate bicycle connections from new residential areas to commercial areas.
- Need for better education for bicyclists and motorists.

### 5.4.3. Transit

Streamline plans for increased ridership as more people use the service and as funding allows for the increase of services through increased daily hours and expanded weekend service. Streamline works very closely with a variety of partners to determine needs and changes. The following areas of concern have been identified through prior transit planning and public feedback associated with this citywide planning process.

#### *5.4.3.1 Service Gaps*

- Higher service frequency
- Unserved portions of Bozeman

  - Northeast trailer parks
  - South of campus
  - Business park southwest of campus hosting RightNow Technologies, one of the largest employers
  - New growth areas in northwest
- Underserved areas

#### 5.4.3.2 Information Gaps

- Lack of knowledge in the community regarding Streamline.
- Difficulty among some potential users in understanding time tables and planning trips.

#### 5.4.3.3 Resource Gaps

- Lack of benches and bus shelters
- Bus stop interaction with development
- Bus stop placement
- Bus stop elements

# Appendix A

## EXISTING INTERSECTION LEVEL OF SERVICE (LOS)

Bozeman TMP

Vistro File: F:\...\BozemanTMP_LOS_+Future.vistro
Report File: F:\...\Existing AM.pdf

Scenario 1: Existing - AM
3/16/2016

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | 01 - Ferguson Avenue / Babcock Street | Two-way stop | HCM 2010 | WB Left | 0.297 | 50.6 | F |
| 2 | 02 - Fowler Avenue / Babcock Street | Two-way stop | HCM 2010 | NB Left | 0.186 | 20.5 | C |
| 3 | 03 - Ferguson Avenue / Huffine Lane | Signalized | HCM 2010 | SB Left | 0.443 | 15.4 | B |
| 4 | 04 - Fowler Avenue / Huffine Lane | Signalized | HCM 2010 | WB Left | 0.367 | 25.8 | C |
| 5 | 05 - 19th Avenue / Garfield Street | Signalized | HCM 2010 | EB Left | 0.348 | 13.0 | B |
| 6 | 06 - 19th Avenue / Stucky Road | Signalized | HCM 2010 | EB Left | 0.435 | 12.2 | B |
| 7 | 07 - 19th Avenue / Goldenstein Lane | Two-way stop | HCM 2010 | WB Left | 0.086 | 21.4 | C |
| 8 | 08 - 7th Avenue / Griffin Drive | Signalized | HCM 2010 | WB Left | 0.507 | 13.4 | B |
| 9 | 09 - Manley Road / Griffin Drive | Two-way stop | HCM 2010 | SB Left | 0.386 | 28.3 | D |
| 10 | 10 - Rouse Avenue / Griffin Drive | Signalized | HCM 2010 | EB Left | 0.255 | 12.9 | B |
| 11 | 11 - Story Mill Road / Bridger Drive | Two-way stop | HCM 2010 | NB Left | 0.027 | 17.6 | C |
| 12 | 12 - Wilson Avenue / Peach Street | Two-way stop | HCM 2010 | NB Thru | 0.027 | 14.5 | B |
| 13 | 13 - Rouse Avenue / Peach Street | Two-way stop | HCM 2010 | EB Left | 0.318 | 81.0 | F |
| 14 | 14 - Willson Avenue / Mendenhall Street | Signalized | HCM 2010 | WB Right | 0.226 | 13.5 | B |
| 15 | 15 - Willson Avenue / Babcock Street | Signalized | HCM 2010 | EB Right | 0.299 | 11.9 | B |
| 16 | 16 - Broadway Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.308 | 7.8 | A |
| 17 | 17 - Highland Boulevard / Main Street | Signalized | HCM 2010 | NEB Left | 0.496 | 14.1 | B |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18 | 18 - Haggerty Lane / Main Street | Two-way stop | HCM 2010 | NEB Thru | 0.000 | 78.9 | F |
| 19 | 19 - Willson Avenue / College Street | Two-way stop | HCM 2010 | WB Left | 0.011 | 45.4 | E |
| 20 | 20 - Highland Boulevard / Ellis Street | Two-way stop | HCM 2010 | WB Thru | 0.082 | 35.1 | E |
| 21 | 21 - Sourdough Road / Kagy Boulevard | Two-way stop | HCM 2010 | NB Left | 0.491 | 78.2 | F |
| 22 | 22 - Highland Boulevard / Kagy Boulevard | Two-way stop | HCM 2010 | NB Left | 0.036 | 72.7 | F |
| 23 | 23 - Wagon Wheel Road / 3rd Avenue | All-way stop | HCM 2010 | EB Left | | 15.3 | C |
| 27 | 25 - 11th Avenue / Grant Street | All-way stop | HCM 2010 | SB Thru | | 10.6 | B |
| 28 | 26 - 11th Avenue / Lincoln Street | All-way stop | HCM 2010 | EB Right | | 11.2 | B |
| 29 | 27 - 11th Avenue / Kagy Boulevard | Signalized | HCM 2010 | WB Thru | 0.519 | 22.6 | C |
| 30 | 28 - 8th Avenue / College Street | All-way stop | HCM 2010 | WB Thru | | 12.9 | B |
| 31 | 29 - 7th Avenue / Grant Street | All-way stop | HCM 2010 | WB Left | | 9.2 | A |
| 32 | 30 - 7th Avenue / Kagy Boulevard | Two-way stop | HCM 2010 | NB Left | 0.038 | 87.2 | F |
| 33 | 31 - Valley Center Spur / Frontage Road | Two-way stop | HCM 2010 | NEB Left | 0.172 | 15.9 | C |
| 34 | 32 - Valley Center Spur / Valley Center Road | Two-way stop | HCM 2010 | SB Left | 0.326 | 18.8 | C |
| 35 | 33 - Nelson Road / Frontage Road | Two-way stop | HCM 2010 | SWB Left | 0.222 | 19.4 | C |
| 36 | 34 - 19th Avenue / I-90 EB Ramp | Two-way stop | HCM 2010 | SEB Left | 0.183 | 41.5 | E |
| 37 | 35 - 19th Avenue / I-90 WB Ramp | Signalized | HCM 2010 | NWB Left | 0.481 | 12.7 | B |
| 38 | 36 - 19th Avenue / Tschache Way | Signalized | HCM 2010 | WB Left | 0.361 | 27.5 | C |
| 39 | 37 - 19th Avenue / Oak Street | Signalized | HCM 2010 | EB Thru | 0.512 | 27.6 | C |
| 40 | 38 - 19th Avenue / Durston Road | Signalized | HCM 2010 | EB Thru | 0.452 | 20.8 | C |
| 41 | 39 - 7th Avenue / Durston Road / Peach Street | Signalized | HCM 2010 | EB Thru | 0.474 | 28.1 | C |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 42 | 40 - 19th Avenue / Main Street | Signalized | HCM 2010 | NB Left | 0.523 | 44.6 | D |
| 43 | 41 - 7th Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.319 | 14.4 | B |
| 44 | 42 - 19th Avenue / Babcock Street | Signalized | HCM 2010 | | 0.000 | 0.0 | A |
| 45 | 43 - 19th Avenue / Koch Street | Signalized | HCM 2010 | EB Right | 0.305 | 9.6 | A |
| 46 | 44 - 19th Avenue / College Street | Signalized | HCM 2010 | EB Thru | 0.431 | 20.5 | C |
| 47 | 45 - 19th Avenue / Graf Street | Two-way stop | HCM 2010 | EB Left | 0.152 | 17.4 | C |
| 48 | 46 - Harper Puckett Road / Baxter Lane | Two-way stop | HCM 2010 | SB Left | 0.101 | 11.0 | B |
| 49 | 47 - Flanders Mill Road / Baxter Lane | Two-way stop | HCM 2010 | NB Left | 0.070 | 13.7 | B |
| 50 | 48 - Davis Lane / Baxter Lane | All-way stop | HCM 2010 | EB Thru | | 54.6 | F |
| 51 | 49 - Laurel Parkway / Durston Road | All-way stop | HCM 2010 | SB Left | | 10.6 | B |
| 52 | 50 - Cottonwood Road / Durston Road | Signalized | HCM 2010 | EB Thru | 0.526 | 19.4 | B |
| 53 | 51 - Flanders Mill Road / Durston Road | Two-way stop | HCM 2010 | SB Left | 0.278 | 26.3 | D |
| 54 | 52 - Ferguson Avenue / Durston Road | All-way stop | HCM 2010 | EB Thru | | 17.9 | C |
| 55 | 53 - Fowler Avenue / Durston Road | Two-way stop | HCM 2010 | NB Left | 0.023 | 14.6 | B |
| 56 | 54 - Cottonwood Road / Babcock Street | Two-way stop | HCM 2010 | WB Left | 0.160 | 17.0 | C |
| 58 | 55 - 19th Avenue / Baxter Lane | Signalized | HCM 2010 | WB Left | 0.558 | 24.0 | C |
| 59 | 56 - 7th Avenue / Baxter Lane | Two-way stop | HCM 2010 | EB Right | 0.636 | 25.4 | D |
| 60 | 57 - 7th Avenue / Oak Street | Signalized | HCM 2010 | WB Thru | 0.522 | 21.9 | C |
| 61 | 58 - 15th Avenue / Oak Street | Signalized | HCM 2010 | WB Left | 0.258 | 18.1 | B |
| 62 | 59 - 27th Avenue / Oak Street | Two-way stop | HCM 2010 | SB Left | 0.112 | 25.9 | D |
| 63 | 60 - Davis Lane / Oak Street | Two-way stop | HCM 2010 | SB Left | 0.701 | 46.6 | E |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 64 | 61 - Rouse Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 0.360 | 14.5 | B |
| 65 | 62 - 19th Avenue / Kagy Boulevard | Signalized | HCM 2010 | WB Left | 0.471 | 14.8 | B |
| 66 | 63 - Willson Avenue / Kagy Boulevard | Signalized | HCM 2010 | SWB Thru | 0.650 | 27.0 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 1: 01 - Ferguson Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 50.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.297 |

**Intersection Setup**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | Yes | | |

**volumes**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 14 | 182 | 41 | 63 | 428 | 10 | 16 | 73 | 77 | 26 | 34 | 43 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 14 | 182 | 41 | 63 | 428 | 10 | 16 | 73 | 77 | 26 | 34 | 43 |
| Peak Hour Factor | 0.7970 | 0.7970 | 0.7970 | 0.7970 | 0.7970 | 0.7970 | 0.7970 | 0.7970 | 0.7970 | 0.7970 | 0.7970 | 0.7970 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 4 | 55 | 12 | 19 | 129 | 3 | 5 | 22 | 23 | 8 | 11 | 13 |
| Total Analysis Volume [veh/h] | 17 | 219 | 49 | 76 | 516 | 12 | 19 | 88 | 93 | 33 | 43 | 54 |
| Pedestrian Volume [ped/h] | 0 | | | 5 | | | 0 | | | 5 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.02 | 0.00 | 0.00 | 0.06 | 0.01 | 0.00 | 0.12 | 0.39 | 0.17 | 0.30 | 0.19 | 0.07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.49 | 0.00 | 0.00 | 7.95 | 0.00 | 0.00 | 49.13 | 43.01 | 33.42 | 50.56 | 23.92 | 12.98 |
| Movement LOS | A | A | A | A | A | A | E | E | D | F | C | B |
| 95th-Percentile Queue Length [veh] | 1.11 | 1.11 | 1.11 | 2.54 | 2.54 | 2.54 | 4.53 | 4.53 | 4.53 | 1.14 | 1.01 | 1.01 |
| 95th-Percentile Queue Length [ft] | 27.65 | 27.65 | 27.65 | 63.62 | 63.62 | 63.62 | 113.29 | 113.29 | 113.29 | 28.40 | 25.26 | 25.26 |
| d_A, Approach Delay [s/veh] | 0.51 | | | 1.00 | | | 39.13 | | | 26.14 | | |
| Approach LOS | A | | | A | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 9.82 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 2: 02 - Fowler Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 20.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.186 |

**Intersection Setup**

| Name | Fowler Avenue | | Babcock Street | | Babcock Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Fowler Avenue | | Babcock Street | | Babcock Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 50 | 75 | 256 | 179 | 126 | 158 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.40 | 0.00 | 0.80 | 0.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 50 | 75 | 256 | 179 | 126 | 158 |
| Peak Hour Factor | 0.8940 | 0.8940 | 0.8940 | 0.8940 | 0.8940 | 0.8940 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 14 | 21 | 69 | 48 | 34 | 42 |
| Total Analysis Volume [veh/h] | 56 | 84 | 275 | 192 | 135 | 170 |
| Pedestrian Volume [ped/h] | 9 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.19 | 0.13 | 0.00 | 0.00 | 0.12 | 0.00 |
| d_M, Delay for Movement [s/veh] | 20.54 | 14.00 | 0.00 | 0.00 | 8.80 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.32 | 1.32 | 0.00 | 0.00 | 0.43 | 0.00 |
| 95th-Percentile Queue Length [ft] | 32.88 | 32.88 | 0.00 | 0.00 | 10.64 | 0.00 |
| d_A, Approach Delay [s/veh] | 16.62 | | 0.00 | | 3.89 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 3.85 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 3: 03 - Ferguson Avenue / Huffine Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 15.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.443 |

**Intersection Setup**

| Name | Ferguson Avenue | | Huffine Lane | | Huffine Lane | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 0 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 110.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**volumes**

| Name | Ferguson Avenue | | Huffine Lane | | Huffine Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 311 | 202 | 201 | 862 | 522 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.30 | 4.50 | 1.50 | 1.90 | 2.50 | 0.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 311 | 202 | 201 | 862 | 522 | 122 |
| Peak Hour Factor | 0.9050 | 0.9050 | 0.9050 | 0.9050 | 0.9050 | 0.9050 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 82 | 54 | 54 | 231 | 140 | 33 |
| Total Analysis Volume [veh/h] | 330 | 214 | 215 | 924 | 559 | 131 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 0 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - |
| Minimum Green [s] | 15 | 0 | 0 | 60 | 60 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 90 | 90 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 30 | 0 | 0 | 65 | 65 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | R |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 20 | 20 | 65 | 65 | 65 | 65 |
| g / C, Green / Cycle | 0.21 | 0.21 | 0.69 | 0.69 | 0.69 | 0.69 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.14 | 0.25 | 0.26 | 0.16 | 0.08 |
| s, saturation flow rate [veh/h] | 1804 | 1545 | 851 | 3550 | 3529 | 1602 |
| c, Capacity [veh/h] | 377 | 323 | 584 | 2435 | 2421 | 1099 |
| d1, Uniform Delay [s] | 36.38 | 34.51 | 10.30 | 6.34 | 5.57 | 5.10 |
| k, delay calibration | 0.20 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 11.34 | 2.33 | 1.78 | 0.45 | 0.22 | 0.22 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

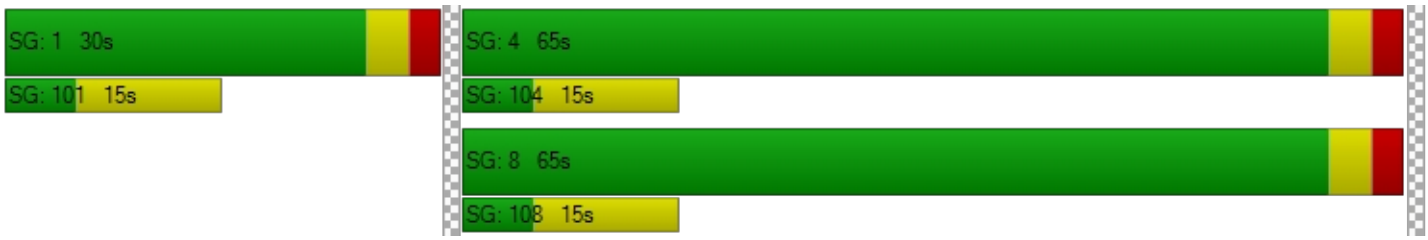
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.88 | 0.66 | 0.37 | 0.38 | 0.23 | 0.12 |
| d, Delay for Lane Group [s/veh] | 47.72 | 36.84 | 12.08 | 6.79 | 5.79 | 5.33 |
| Lane Group LOS | D | D | B | A | A | A |
| Critical Lane Group | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 8.46 | 4.68 | 2.51 | 3.52 | 1.86 | 0.84 |
| 50th-Percentile Queue Length [ft] | 211.56 | 117.10 | 62.74 | 87.88 | 46.57 | 20.89 |
| 95th-Percentile Queue Length [veh] | 13.23 | 8.23 | 4.52 | 6.33 | 3.35 | 1.50 |
| 95th-Percentile Queue Length [ft] | 330.83 | 205.83 | 112.93 | 158.18 | 83.83 | 37.61 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 47.72 | 36.84 | 12.08 | 6.79 | 5.79 | 5.33 |
| Movement LOS | D | D | B | A | A | A |
| d_A, Approach Delay [s/veh] | 43.44 | | 7.79 | | 5.70 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 15.36 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.443 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: 04 - Fowler Avenue / Huffine Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 25.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.367 |

**Intersection Setup**

| Name | Fowler Avenue | | | Fowler Avenue | | | Huffine Lane | | | Huffine Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Pocket Length [ft] | 253.00 | 100.00 | 100.00 | 76.00 | 100.00 | 100.00 | 100.00 | 100.00 | 280.00 | 365.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Fowler Avenue | | | Fowler Avenue | | | Huffine Lane | | | Huffine Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 145 | 42 | 7 | 84 | 198 | 34 | 19 | 654 | 307 | 6 | 420 | 24 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.40 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 2.70 | 1.30 | 0.00 | 3.10 | 4.20 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 145 | 42 | 7 | 84 | 198 | 34 | 19 | 654 | 307 | 6 | 420 | 24 |
| Peak Hour Factor | 0.8650 | 0.8650 | 0.8650 | 0.8650 | 0.8650 | 0.8650 | 0.8650 | 0.8650 | 0.8650 | 0.8650 | 0.8650 | 0.8650 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 42 | 12 | 2 | 24 | 57 | 10 | 5 | 183 | 86 | 2 | 118 | 7 |
| Total Analysis Volume [veh/h] | 168 | 49 | 8 | 97 | 229 | 39 | 21 | 733 | 344 | 7 | 471 | 27 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 90 | 0 | 0 | 90 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 37 | 0 | 0 | 37 | 0 | 0 | 53 | 0 | 0 | 53 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 57 | 57 | 57 | 57 | 57 | 57 | 23 | 23 | 23 | 23 | 23 | 23 |
| g / C, Green / Cycle | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.03 | 0.00 | 0.07 | 0.07 | 0.07 | 0.02 | 0.21 | 0.22 | 0.01 | 0.14 | 0.14 |
| s, saturation flow rate [veh/h] | 1113 | 1900 | 1615 | 1378 | 1891 | 1797 | 914 | 3522 | 1594 | 735 | 1843 | 1808 |
| c, Capacity [veh/h] | 700 | 1191 | 1012 | 876 | 1185 | 1126 | 212 | 923 | 418 | 132 | 483 | 474 |
| d1, Uniform Delay [s] | 10.41 | 6.43 | 6.30 | 8.62 | 6.75 | 6.76 | 33.75 | 30.94 | 31.25 | 39.27 | 28.37 | 28.39 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.81 | 0.06 | 0.01 | 0.26 | 0.20 | 0.21 | 0.20 | 1.60 | 4.13 | 0.17 | 0.87 | 0.89 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

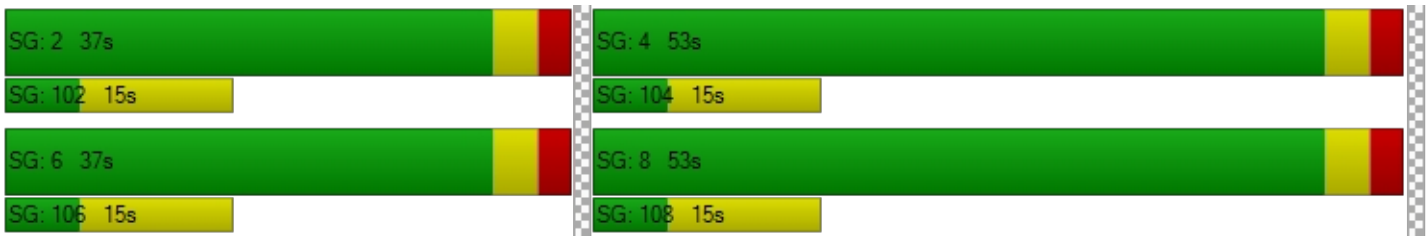
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.24 | 0.04 | 0.01 | 0.11 | 0.11 | 0.12 | 0.10 | 0.79 | 0.82 | 0.05 | 0.52 | 0.52 |
| d, Delay for Lane Group [s/veh] | 11.22 | 6.50 | 6.31 | 8.87 | 6.95 | 6.97 | 33.95 | 32.54 | 35.37 | 39.44 | 29.23 | 29.28 |
| Lane Group LOS | B | A | A | A | A | A | C | C | D | D | C | C |
| Critical Lane Group | Yes | No | No | No | No | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 1.77 | 0.34 | 0.06 | 0.86 | 1.01 | 0.98 | 0.41 | 7.42 | 7.32 | 0.15 | 4.64 | 4.58 |
| 50th-Percentile Queue Length [ft] | 44.34 | 8.61 | 1.39 | 21.48 | 25.15 | 24.50 | 10.26 | 185.52 | 182.95 | 3.75 | 116.08 | 114.54 |
| 95th-Percentile Queue Length [veh] | 3.19 | 0.62 | 0.10 | 1.55 | 1.81 | 1.76 | 0.74 | 11.89 | 11.75 | 0.27 | 8.18 | 8.09 |
| 95th-Percentile Queue Length [ft] | 79.81 | 15.49 | 2.50 | 38.66 | 45.27 | 44.09 | 18.47 | 297.21 | 293.86 | 6.76 | 204.43 | 202.29 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 11.22 | 6.50 | 6.31 | 8.87 | 6.96 | 6.97 | 33.95 | 32.54 | 35.37 | 39.44 | 29.25 | 29.28 |
| Movement LOS | B | A | A | A | A | A | C | C | D | D | C | C |
| d_A, Approach Delay [s/veh] | 10.02 | | | 7.47 | | | 33.46 | | | 29.40 | | |
| Approach LOS | B | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 25.79 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.367 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 5: 05 - 19th Avenue / Garfield Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.348 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Garfield Street | | | Garfield Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 280.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Garfield Street | | | Garfield Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 245 | 607 | 9 | 45 | 720 | 53 | 32 | 25 | 542 | 8 | 12 | 31 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.10 | 0.00 | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 245 | 607 | 9 | 45 | 720 | 53 | 32 | 25 | 542 | 8 | 12 | 31 |
| Peak Hour Factor | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 | 0.8800 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 67 | 166 | 2 | 12 | 196 | 14 | 9 | 7 | 154 | 2 | 3 | 9 |
| Total Analysis Volume [veh/h] | 267 | 662 | 10 | 49 | 785 | 58 | 36 | 28 | 616 | 9 | 14 | 35 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 1 | | | 4 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 1 | | | 1 | | | 5 | | | 1 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Overlap | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 6 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | 6,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 45 | 0 | 10 | 45 | 0 | 0 | 30 | 45 | 0 | 30 | 0 |
| Maximum Green [s] | 30 | 90 | 0 | 30 | 90 | 0 | 0 | 45 | 90 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 13 | 61 | 0 | 24 | 72 | 0 | 0 | 35 | 72 | 0 | 35 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | No | | No | |
| Maximum Recall | No | No | | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 80 | 69 | 69 | 80 | 67 | 67 | 30 | 30 | 102 | 30 | 30 |
| g / C, Green / Cycle | 0.67 | 0.57 | 0.57 | 0.67 | 0.56 | 0.56 | 0.25 | 0.25 | 0.85 | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.33 | 0.18 | 0.18 | 0.05 | 0.23 | 0.23 | 0.03 | 0.01 | 0.39 | 0.01 | 0.03 |
| s, saturation flow rate [veh/h] | 821 | 1879 | 1868 | 896 | 1885 | 1834 | 1373 | 1900 | 1583 | 1403 | 1665 |
| c, Capacity [veh/h] | 551 | 1078 | 1072 | 612 | 1052 | 1024 | 349 | 475 | 1346 | 372 | 416 |
| d1, Uniform Delay [s] | 9.51 | 13.28 | 13.28 | 7.46 | 15.13 | 15.14 | 38.39 | 34.25 | 2.21 | 36.54 | 34.77 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.03 | 0.76 | 0.76 | 0.06 | 1.16 | 1.20 | 0.13 | 0.05 | 1.12 | 0.03 | 0.12 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.48 | 0.31 | 0.31 | 0.08 | 0.41 | 0.41 | 0.10 | 0.06 | 0.46 | 0.02 | 0.12 |
| d, Delay for Lane Group [s/veh] | 12.54 | 14.04 | 14.05 | 7.52 | 16.29 | 16.34 | 38.52 | 34.31 | 3.33 | 36.57 | 34.90 |
| Lane Group LOS | B | B | B | A | B | B | D | C | A | D | C |
| Critical Lane Group | Yes | No | No | No | No | No | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 3.04 | 4.87 | 4.85 | 0.42 | 6.87 | 6.72 | 0.88 | 0.64 | 2.55 | 0.21 | 1.13 |
| 50th-Percentile Queue Length [ft] | 76.01 | 121.72 | 121.14 | 10.59 | 171.65 | 167.98 | 21.96 | 15.88 | 63.82 | 5.29 | 28.27 |
| 95th-Percentile Queue Length [veh] | 5.47 | 8.49 | 8.46 | 0.76 | 11.16 | 10.97 | 1.58 | 1.14 | 4.60 | 0.38 | 2.04 |
| 95th-Percentile Queue Length [ft] | 136.81 | 212.19 | 211.39 | 19.07 | 279.09 | 274.26 | 39.53 | 28.59 | 114.88 | 9.51 | 50.89 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 12.54 | 14.04 | 14.05 | 7.52 | 16.31 | 16.34 | 38.52 | 34.31 | 3.33 | 36.57 | 34.90 | 34.90 |
| Movement LOS | B | B | B | A | B | B | D | C | A | D | C | C |
| d_A, Approach Delay [s/veh] | 13.61 | | | 15.83 | | | 6.47 | | | 35.16 | | |
| Approach LOS | B | | | B | | | A | | | D | | |
| d_I, Intersection Delay [s/veh] | 12.98 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.348 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: 06 - 19th Avenue / Stucky Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.435 |

**Intersection Setup**

| Name | 19th Avenue | | 19th Avenue | | Stucky Road | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 1 |
| Pocket Length [ft] | 400.00 | 100.00 | 100.00 | 100.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | 19th Avenue | | 19th Avenue | | Stucky Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 62 | 479 | 182 | 232 | 361 | 41 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.60 | 0.40 | 3.80 | 0.00 | 0.00 | 2.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 62 | 479 | 182 | 232 | 361 | 41 |
| Peak Hour Factor | 0.8570 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.8570 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 17 | 115 | 44 | 56 | 87 | 11 |
| Total Analysis Volume [veh/h] | 69 | 460 | 175 | 223 | 347 | 46 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Protected | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 6 | 0 | 3 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 22 | 22 | 0 | 38 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | No | | No | |
| Maximum Recall | | No | No | | No | |
| Pedestrian Recall | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | R | L | R |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 36 | 36 | 36 | 36 | 14 | 14 |
| g / C, Green / Cycle | 0.60 | 0.60 | 0.60 | 0.60 | 0.23 | 0.23 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.24 | 0.10 | 0.14 | 0.19 | 0.03 |
| s, saturation flow rate [veh/h] | 1209 | 1892 | 1830 | 1615 | 1810 | 1577 |
| c, Capacity [veh/h] | 726 | 1135 | 1098 | 969 | 422 | 368 |
| d1, Uniform Delay [s] | 7.92 | 6.34 | 5.31 | 5.57 | 21.82 | 18.16 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.26 | 1.08 | 0.31 | 0.55 | 4.04 | 0.15 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

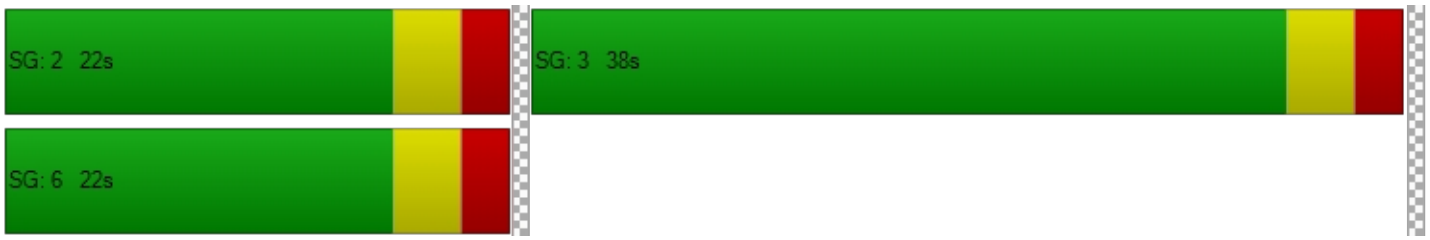
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.10 | 0.41 | 0.16 | 0.23 | 0.82 | 0.12 |
| d, Delay for Lane Group [s/veh] | 8.18 | 7.42 | 5.62 | 6.12 | 25.86 | 18.31 |
| Lane Group LOS | A | A | A | A | C | B |
| Critical Lane Group | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 0.45 | 2.62 | 0.82 | 1.12 | 4.73 | 0.49 |
| 50th-Percentile Queue Length [ft] | 11.20 | 65.55 | 20.54 | 28.03 | 118.33 | 12.14 |
| 95th-Percentile Queue Length [veh] | 0.81 | 4.72 | 1.48 | 2.02 | 8.30 | 0.87 |
| 95th-Percentile Queue Length [ft] | 20.16 | 117.98 | 36.97 | 50.45 | 207.52 | 21.85 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.18 | 7.42 | 5.62 | 6.12 | 25.86 | 18.31 |
| Movement LOS | A | A | A | A | C | B |
| d_A, Approach Delay [s/veh] | 7.52 | | 5.90 | | 24.97 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 12.23 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.435 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: 07 - 19th Avenue / Goldenstein Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 21.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.086 |

**Intersection Setup**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 335 | 73 | 105 | 91 | 22 | 179 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.30 | 0.00 | 2.90 | 0.00 | 0.00 | 0.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 335 | 73 | 105 | 91 | 22 | 179 |
| Peak Hour Factor | 0.8110 | 0.8110 | 0.8110 | 0.8110 | 0.8110 | 0.8110 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 99 | 22 | 31 | 27 | 7 | 55 |
| Total Analysis Volume [veh/h] | 397 | 86 | 124 | 108 | 27 | 221 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.12 | 0.00 | 0.09 | 0.36 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 8.78 | 0.00 | 21.43 | 15.80 |
| Movement LOS | A | A | A | A | C | C |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.82 | 0.82 | 2.25 | 2.25 |
| 95th-Percentile Queue Length [ft] | 0.00 | 0.00 | 20.48 | 20.48 | 56.23 | 56.23 |
| d_A, Approach Delay [s/veh] | 0.00 | | 4.70 | | 16.41 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 5.36 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: 08 - 7th Avenue / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.507 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Mandeville Lane | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Mandeville Lane | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 9 | 210 | 351 | 122 | 266 | 6 | 7 | 12 | 24 | 228 | 4 | 60 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 6.20 | 2.80 | 9.00 | 4.90 | 16.70 | 14.30 | 8.30 | 12.00 | 16.70 | 0.00 | 6.70 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 9 | 210 | 351 | 122 | 266 | 6 | 7 | 12 | 24 | 228 | 4 | 60 |
| Peak Hour Factor | 0.8120 | 0.8120 | 0.8120 | 0.8120 | 0.8120 | 0.8120 | 0.8120 | 0.8120 | 0.8120 | 0.8120 | 0.8120 | 0.8120 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 3 | 62 | 104 | 36 | 79 | 2 | 2 | 4 | 7 | 67 | 1 | 18 |
| Total Analysis Volume [veh/h] | 11 | 248 | 415 | 144 | 314 | 7 | 9 | 15 | 30 | 270 | 5 | 71 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 20 | 0 | 0 | 20 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 0 | 60 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 35 | 0 | 0 | 35 | 0 | 0 | 25 | 0 | 0 | 25 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | C | C |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 30 | 30 | 30 | 30 | 20 | 20 |
| g / C, Green / Cycle | 0.50 | 0.50 | 0.50 | 0.50 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.26 | 0.14 | 0.18 | 0.03 | 0.24 |
| s, saturation flow rate [veh/h] | 1771 | 1571 | 1055 | 1804 | 1593 | 1425 |
| c, Capacity [veh/h] | 949 | 787 | 523 | 904 | 600 | 581 |
| d1, Uniform Delay [s] | 8.74 | 10.16 | 13.25 | 9.09 | 13.83 | 17.67 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.21 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.71 | 2.52 | 1.30 | 1.09 | 0.06 | 1.92 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.27 | 0.53 | 0.28 | 0.36 | 0.09 | 0.60 |
| d, Delay for Lane Group [s/veh] | 9.45 | 12.69 | 14.55 | 10.19 | 13.90 | 19.59 |
| Lane Group LOS | A | B | B | B | B | B |
| Critical Lane Group | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.83 | 3.62 | 1.42 | 2.40 | 0.47 | 4.08 |
| 50th-Percentile Queue Length [ft] | 45.82 | 90.41 | 35.61 | 59.91 | 11.78 | 102.00 |
| 95th-Percentile Queue Length [veh] | 3.30 | 6.51 | 2.56 | 4.31 | 0.85 | 7.34 |
| 95th-Percentile Queue Length [ft] | 82.48 | 162.74 | 64.09 | 107.83 | 21.21 | 183.60 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.45 | 9.45 | 12.69 | 14.55 | 10.19 | 10.19 | 13.90 | 13.90 | 13.90 | 19.59 | 19.59 | 19.59 |
| Movement LOS | A | A | B | B | B | B | B | B | B | B | B | B |
| d_A, Approach Delay [s/veh] | 11.44 | | | 11.54 | | | 13.90 | | | 19.59 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 13.39 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.507 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 9: 09 - Manley Road / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 28.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.386 |

**Intersection Setup**

| Name | Manley Road | | Griffin Drive | | Griffin Drive | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Manley Road | | Griffin Drive | | Griffin Drive | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 83 | 45 | 123 | 316 | 222 | 46 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 6.00 | 11.10 | 1.60 | 4.10 | 8.60 | 2.20 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 83 | 45 | 123 | 316 | 222 | 46 |
| Peak Hour Factor | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 24 | 13 | 36 | 91 | 64 | 13 |
| Total Analysis Volume [veh/h] | 96 | 52 | 142 | 366 | 257 | 53 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.39 | 0.07 | 0.11 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 28.34 | 10.28 | 8.24 | 0.00 | 0.00 | 0.00 |
| Movement LOS | D | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.73 | 0.23 | 2.00 | 2.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 43.30 | 5.70 | 50.08 | 50.08 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 21.99 | | 2.30 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.58 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: 10 - Rouse Avenue / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.255 |

**Intersection Setup**

| Name | Griffin Drive | | | Rouse Avenue | | | Bridger Drive | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Eastbound | | | Northeastbound | | | Southwestbound | | | Northwestbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 275.00 | 130.00 | 100.00 | 100.00 | 70.00 | 100.00 | 70.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Griffin Drive | | | Rouse Avenue | | | Bridger Drive | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 122 | 5 | 175 | 139 | 159 | 5 | 1 | 206 | 111 | 5 | 7 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 9.80 | 0.00 | 9.70 | 7.90 | 4.40 | 0.00 | 100.00 | 2.90 | 5.40 | 0.00 | 28.60 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 122 | 5 | 175 | 139 | 159 | 5 | 1 | 206 | 111 | 5 | 7 | 1 |
| Peak Hour Factor | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 | 0.9590 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 1 | 44 | 35 | 40 | 1 | 0 | 52 | 28 | 1 | 2 | 0 |
| Total Analysis Volume [veh/h] | 122 | 5 | 175 | 139 | 159 | 5 | 1 | 206 | 111 | 5 | 7 | 1 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Overlap | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 6 | 8 | 3 | 8 | 0 | 0 | 4 | 0 | 0 | 2 | 0 |
| Auxiliary Signal Groups | | | 6,8 | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 30 | 10 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 60 | 60 | 25 | 60 | 0 | 0 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 35 | 55 | 13 | 55 | 0 | 0 | 42 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | No | No | No | | | No | | | No | |
| Maximum Recall | | No | No | No | No | | | No | | | No | |
| Pedestrian Recall | | No | No | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | L | C | R | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 30 | 85 | 50 | 50 | 37 | 37 | 37 | 30 |
| g / C, Green / Cycle | 0.33 | 0.94 | 0.56 | 0.56 | 0.41 | 0.41 | 0.41 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.12 | 0.11 | 0.09 | 0.00 | 0.11 | 0.07 | 0.01 |
| s, saturation flow rate [veh/h] | 1311 | 1472 | 1230 | 1810 | 621 | 1846 | 1532 | 1090 |
| c, Capacity [veh/h] | 515 | 1390 | 717 | 1006 | 291 | 764 | 634 | 419 |
| d1, Uniform Delay [s] | 23.16 | 0.16 | 9.98 | 9.77 | 19.59 | 17.40 | 16.67 | 20.34 |
| k, delay calibration | 0.11 | 0.11 | 0.44 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.25 | 0.04 | 0.53 | 0.35 | 0.02 | 0.87 | 0.60 | 0.03 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

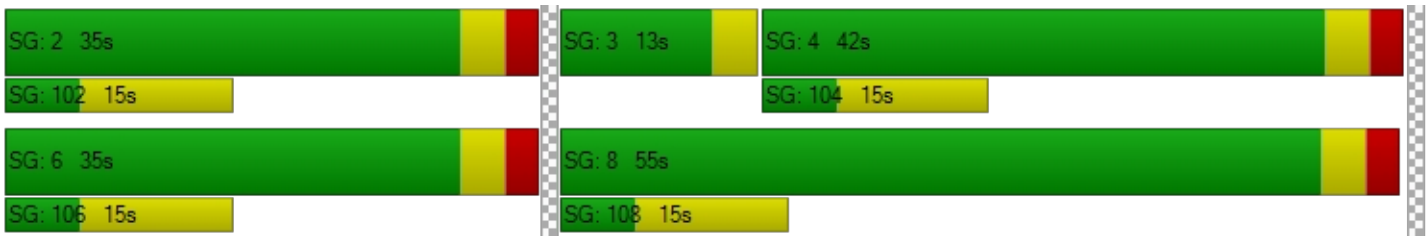
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.25 | 0.13 | 0.19 | 0.16 | 0.00 | 0.27 | 0.18 | 0.03 |
| d, Delay for Lane Group [s/veh] | 23.41 | 0.20 | 10.51 | 10.12 | 19.61 | 18.27 | 17.27 | 20.37 |
| Lane Group LOS | C | A | B | B | B | B | B | C |
| Critical Lane Group | Yes | No | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 2.06 | 0.02 | 1.35 | 1.58 | 0.02 | 2.91 | 1.51 | 0.18 |
| 50th-Percentile Queue Length [ft] | 51.54 | 0.39 | 33.80 | 39.51 | 0.38 | 72.76 | 37.83 | 4.61 |
| 95th-Percentile Queue Length [veh] | 3.71 | 0.03 | 2.43 | 2.84 | 0.03 | 5.24 | 2.72 | 0.33 |
| 95th-Percentile Queue Length [ft] | 92.77 | 0.70 | 60.84 | 71.11 | 0.69 | 130.98 | 68.09 | 8.29 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 23.41 | 23.41 | 0.20 | 10.51 | 10.12 | 10.12 | 19.61 | 18.27 | 17.27 | 20.37 | 20.37 | 20.37 |
| Movement LOS | C | C | A | B | B | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 9.96 | | | 10.30 | | | 17.93 | | | 20.37 | | |
| Approach LOS | A | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 12.92 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.255 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 11: 11 - Story Mill Road / Bridger Drive**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.027 |

**Intersection Setup**

| Name | Story Mill Road | | | Story Mill Road | | | Bridger Drive | | | Bridger Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**volumes**

| Name | Story Mill Road | | | Story Mill Road | | | Bridger Drive | | | Bridger Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 7 | 15 | 14 | 4 | 41 | 93 | 61 | 121 | 4 | 41 | 172 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 6.70 | 0.00 | 25.00 | 0.00 | 4.30 | 8.20 | 7.40 | 25.00 | 0.00 | 0.60 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 7 | 15 | 14 | 4 | 41 | 93 | 61 | 121 | 4 | 41 | 172 | 3 |
| Peak Hour Factor | 0.8780 | 0.8780 | 0.8780 | 0.8780 | 0.8780 | 0.8780 | 0.8780 | 0.8780 | 0.8780 | 0.8780 | 0.8780 | 0.8780 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 2 | 4 | 4 | 1 | 11 | 25 | 17 | 33 | 1 | 11 | 47 | 1 |
| Total Analysis Volume [veh/h] | 8 | 16 | 15 | 4 | 45 | 102 | 67 | 132 | 4 | 45 | 188 | 3 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.03 | 0.04 | 0.02 | 0.01 | 0.11 | 0.12 | 0.05 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 17.64 | 14.72 | 9.60 | 16.85 | 15.69 | 11.12 | 7.81 | 0.00 | 0.00 | 7.54 | 0.00 | 0.00 |
| Movement LOS | C | B | A | C | C | B | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.27 | 0.27 | 0.27 | 0.95 | 0.95 | 0.95 | 0.53 | 0.53 | 0.53 | 0.58 | 0.58 | 0.58 |
| 95th-Percentile Queue Length [ft] | 6.75 | 6.75 | 6.75 | 23.66 | 23.66 | 23.66 | 13.27 | 13.27 | 13.27 | 14.40 | 14.40 | 14.40 |
| d_A, Approach Delay [s/veh] | 13.35 | | | 12.63 | | | 2.58 | | | 1.44 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 5.23 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 12: 12 - Wilson Avenue / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 14.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.027 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 44 | 10 | 14 | 2 | 3 | 2 | 0 | 232 | 71 | 19 | 139 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.30 | 2.80 | 0.00 | 4.30 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 44 | 10 | 14 | 2 | 3 | 2 | 0 | 232 | 71 | 19 | 139 | 0 |
| Peak Hour Factor | 0.8170 | 0.8170 | 0.8170 | 0.8170 | 0.8170 | 0.8170 | 0.8170 | 0.8170 | 0.8170 | 0.8170 | 0.8170 | 0.8170 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 13 | 3 | 4 | 1 | 1 | 1 | 0 | 68 | 21 | 6 | 41 | 0 |
| Total Analysis Volume [veh/h] | 52 | 12 | 16 | 2 | 4 | 2 | 0 | 273 | 83 | 22 | 163 | 0 |
| Pedestrian Volume [ped/h] | 3 | | | 4 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.12 | 0.03 | 0.02 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 14.46 | 14.53 | 11.42 | 13.52 | 13.64 | 9.24 | 7.54 | 0.00 | 0.00 | 8.04 | 0.00 | 0.00 |
| Movement LOS | B | B | B | B | B | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.58 | 0.58 | 0.58 | 0.05 | 0.05 | 0.05 | 0.00 | 0.00 | 0.00 | 0.54 | 0.54 | 0.54 |
| 95th-Percentile Queue Length [ft] | 14.61 | 14.61 | 14.61 | 1.25 | 1.25 | 1.25 | 0.00 | 0.00 | 0.00 | 13.51 | 13.51 | 13.51 |
| d_A, Approach Delay [s/veh] | 13.86 | | | 12.51 | | | 0.00 | | | 0.96 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 2.20 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 13: 13 - Rouse Avenue / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 81.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.318 |

**Intersection Setup**

| Name | Rouse Avenue | | | Rouse Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Rouse Avenue | | | Rouse Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 56 | 334 | 9 | 70 | 421 | 69 | 29 | 52 | 75 | 5 | 51 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 0.00 | 1.40 | 0.70 | 1.40 | 0.00 | 5.80 | 1.30 | 0.00 | 0.00 | 0.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 56 | 334 | 9 | 70 | 421 | 69 | 29 | 52 | 75 | 5 | 51 | 122 |
| Peak Hour Factor | 0.9210 | 0.9210 | 0.9210 | 0.9210 | 0.9210 | 0.9210 | 0.9210 | 0.9210 | 0.9210 | 0.9210 | 0.9210 | 0.9210 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 15 | 87 | 2 | 18 | 110 | 18 | 8 | 14 | 20 | 1 | 13 | 32 |
| Total Analysis Volume [veh/h] | 58 | 348 | 9 | 73 | 439 | 72 | 30 | 54 | 78 | 5 | 53 | 127 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.05 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.32 | 0.30 | 0.13 | 0.05 | 0.30 | 0.18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.58 | 0.00 | 0.00 | 8.18 | 0.00 | 0.00 | 81.02 | 62.92 | 48.91 | 50.84 | 36.70 | 21.40 |
| Movement LOS | A | A | A | A | A | A | F | F | E | F | E | C |
| 95th-Percentile Queue Length [veh] | 1.87 | 1.87 | 1.87 | 2.73 | 2.73 | 2.73 | 5.14 | 5.14 | 5.14 | 2.98 | 2.98 | 2.98 |
| 95th-Percentile Queue Length [ft] | 46.83 | 46.83 | 46.83 | 68.14 | 68.14 | 68.14 | 128.47 | 128.47 | 128.47 | 74.53 | 74.53 | 74.53 |
| d_A, Approach Delay [s/veh] | 1.20 | | | 1.02 | | | 59.53 | | | 26.58 | | |
| Approach LOS | A | | | A | | | F | | | D | | |
| d_I, Intersection Delay [s/veh] | 11.63 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 14: 14 - Willson Avenue / Mendenhall Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.226 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Mendenhall Street | | | Mendenhall Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Mendenhall Street | | | Mendenhall Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 53 | 107 | 0 | 0 | 97 | 10 | 0 | 0 | 0 | 72 | 238 | 17 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.90 | 0.00 | 2.00 | 2.00 | 4.10 | 0.00 | 2.00 | 2.00 | 2.00 | 0.00 | 0.50 | 5.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 53 | 107 | 0 | 0 | 97 | 10 | 0 | 0 | 0 | 72 | 238 | 17 |
| Peak Hour Factor | 0.8950 | 0.8950 | 1.0000 | 1.0000 | 0.8950 | 0.8950 | 1.0000 | 1.0000 | 1.0000 | 0.8950 | 0.8950 | 0.8950 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 14 | 29 | 0 | 0 | 26 | 3 | 0 | 0 | 0 | 19 | 64 | 5 |
| Total Analysis Volume [veh/h] | 57 | 115 | 0 | 0 | 104 | 11 | 0 | 0 | 0 | 77 | 255 | 18 |
| Presence of On-Street Parking | No | | No | No | | No | | | | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 7 | | | 7 | | | 9 | | | 9 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | | | | No | |
| Maximum Recall | | No | | | No | | | | | | No | |
| Pedestrian Recall | | No | | | No | | | | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | | C | C |
|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 35 | 35 | | 15 | 15 |
| g / C, Green / Cycle | 0.58 | 0.58 | | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.07 | | 0.11 | 0.11 |
| s, saturation flow rate [veh/h] | 1481 | 1615 | | 1666 | 1517 |
| c, Capacity [veh/h] | 940 | 938 | | 421 | 383 |
| d1, Uniform Delay [s] | 5.86 | 5.67 | | 18.84 | 18.84 |
| k, delay calibration | 0.50 | 0.50 | | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.43 | 0.27 | | 0.71 | 0.78 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.18 | 0.12 | | 0.44 | 0.44 |
| d, Delay for Lane Group [s/veh] | 6.29 | 5.94 | | 19.55 | 19.62 |
| Lane Group LOS | A | A | | B | B |
| Critical Lane Group | Yes | No | | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.89 | 0.57 | | 2.06 | 1.88 |
| 50th-Percentile Queue Length [ft] | 22.27 | 14.36 | | 51.47 | 47.08 |
| 95th-Percentile Queue Length [veh] | 1.60 | 1.03 | | 3.71 | 3.39 |
| 95th-Percentile Queue Length [ft] | 40.09 | 25.84 | | 92.64 | 84.75 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.29 | 6.29 | 0.00 | 0.00 | 5.94 | 5.94 | 0.00 | 0.00 | 0.00 | 19.55 | 19.59 | 19.62 |
| Movement LOS | A | A | | | A | A | | | | B | B | B |
| d_A, Approach Delay [s/veh] | 6.29 | | | 5.94 | | | 0.00 | | | 19.58 | | |
| Approach LOS | A | | | A | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 13.53 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.226 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: 15 - Willson Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 11.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.299 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Babcock Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 125.00 | 110.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Babcock Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 229 | 217 | 22 | 234 | 0 | 17 | 337 | 51 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 1.30 | 0.50 | 9.10 | 2.10 | 2.00 | 0.00 | 0.60 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 229 | 217 | 22 | 234 | 0 | 17 | 337 | 51 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 0.8990 | 0.8990 | 0.8990 | 0.8990 | 1.0000 | 0.8990 | 0.8990 | 0.8990 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 61 | 58 | 6 | 62 | 0 | 5 | 90 | 14 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 245 | 232 | 23 | 250 | 0 | 18 | 360 | 54 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 4 | | | 8 | | | 1 | | | 7 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 60 | 0 | 0 | 0 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | | |
| Maximum Recall | | No | | | No | | | No | | | | |
| Pedestrian Recall | | No | | | No | | | No | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | C | C | |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| g_i, Effective Green Time [s] | 35 | 35 | 35 | 35 | 15 | 15 | |
| g / C, Green / Cycle | 0.58 | 0.58 | 0.58 | 0.58 | 0.25 | 0.25 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.16 | 0.02 | 0.15 | 0.14 | 0.14 | |
| s, saturation flow rate [veh/h] | 1688 | 1441 | 950 | 1675 | 1693 | 1474 | |
| c, Capacity [veh/h] | 980 | 836 | 560 | 972 | 428 | 373 | |
| d1, Uniform Delay [s] | 6.18 | 6.30 | 8.86 | 6.21 | 19.37 | 19.41 | |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 0.61 | 0.82 | 0.14 | 0.64 | 1.04 | 1.24 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

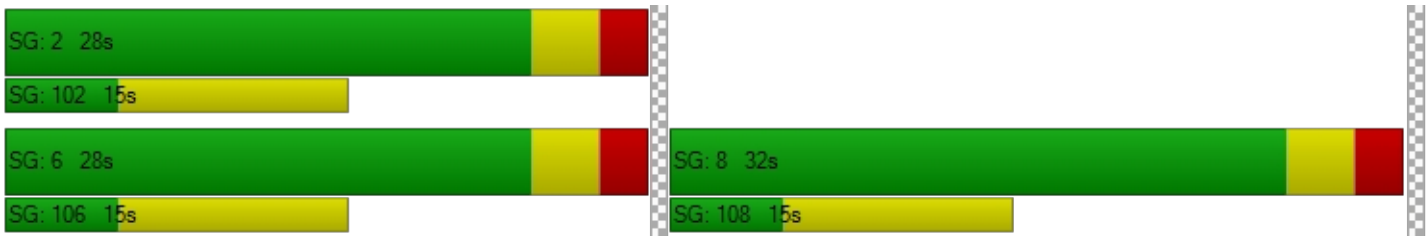
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.25 | 0.28 | 0.04 | 0.26 | 0.54 | 0.54 | |
| d, Delay for Lane Group [s/veh] | 6.79 | 7.12 | 9.00 | 6.85 | 20.41 | 20.65 | |
| Lane Group LOS | A | A | A | A | C | C | |
| Critical Lane Group | No | Yes | No | No | No | Yes | |
| 50th-Percentile Queue Length [veh] | 1.34 | 1.32 | 0.16 | 1.37 | 2.67 | 2.38 | |
| 50th-Percentile Queue Length [ft] | 33.42 | 33.01 | 4.09 | 34.32 | 66.71 | 59.55 | |
| 95th-Percentile Queue Length [veh] | 2.41 | 2.38 | 0.29 | 2.47 | 4.80 | 4.29 | |
| 95th-Percentile Queue Length [ft] | 60.15 | 59.42 | 7.37 | 61.77 | 120.08 | 107.19 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 6.79 | 7.12 | 9.00 | 6.85 | 0.00 | 20.41 | 20.51 | 20.65 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | A | A | A | A | | C | C | C | | | |
| d_A, Approach Delay [s/veh] | 6.95 | | | 7.03 | | | 20.52 | | | 0.00 | | |
| Approach LOS | A | | | A | | | C | | | A | | |
| d_I, Intersection Delay [s/veh] | 11.93 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.299 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: 16 - Broadway Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 7.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.308 |

**Intersection Setup**

| Name | Broadway Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | No | |

**volumes**

| Name | Broadway Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 93 | 23 | 41 | 508 | 524 | 114 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 4.40 | 8.60 | 3.60 | 0.00 | 2.10 | 4.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 93 | 23 | 41 | 508 | 524 | 114 |
| Peak Hour Factor | 0.8880 | 0.8880 | 0.8880 | 0.8880 | 0.8880 | 0.8880 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 25 | 6 | 11 | 139 | 143 | 31 |
| Total Analysis Volume [veh/h] | 101 | 25 | 45 | 555 | 572 | 125 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 4 | | 5 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protected | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 0 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - |
| Minimum Green [s] | 15 | 0 | 0 | 30 | 30 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 90 | 90 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 39 | 39 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | C | C |
|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 13 | 37 | 37 | 37 | 37 |
| g / C, Green / Cycle | 0.22 | 0.61 | 0.61 | 0.61 | 0.61 |
| (v / s)_i Volume / Saturation Flow Rate | 0.09 | 0.20 | 0.20 | 0.21 | 0.22 |
| s, saturation flow rate [veh/h] | 1465 | 1472 | 1556 | 1675 | 1573 |
| c, Capacity [veh/h] | 326 | 969 | 951 | 1023 | 961 |
| d1, Uniform Delay [s] | 19.85 | 5.49 | 5.65 | 5.73 | 5.83 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.75 | 0.81 | 0.89 | 0.91 | 1.06 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

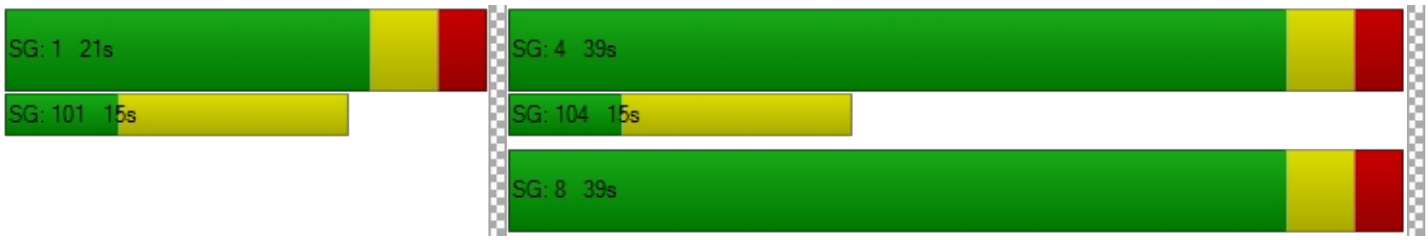
| X, volume / capacity | 0.39 | 0.30 | 0.32 | 0.34 | 0.36 |
|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 20.60 | 6.29 | 6.54 | 6.64 | 6.89 |
| Lane Group LOS | C | A | A | A | A |
| Critical Lane Group | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.46 | 1.49 | 1.59 | 1.83 | 1.88 |
| 50th-Percentile Queue Length [ft] | 36.51 | 37.24 | 39.87 | 45.76 | 47.09 |
| 95th-Percentile Queue Length [veh] | 2.63 | 2.68 | 2.87 | 3.29 | 3.39 |
| 95th-Percentile Queue Length [ft] | 65.73 | 67.03 | 71.77 | 82.37 | 84.77 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 20.60 | 20.60 | 6.29 | 6.43 | 6.74 | 6.89 |
| Movement LOS | C | C | A | A | A | A |
| d_A, Approach Delay [s/veh] | 20.60 | | 6.42 | | 6.77 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 7.85 | | | | | |
| Intersection LOS | A | | | | | |
| Intersection V/C | 0.308 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 17: 17 - Highland Boulevard / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 14.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.496 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northeastbound | | | Southwestbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 173 | 1 | 129 | 0 | 0 | 0 | 379 | 463 | 0 | 0 | 287 | 264 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.80 | 2.00 | 3.90 | 2.00 | 2.00 | 2.00 | 1.90 | 2.80 | 2.00 | 2.00 | 3.10 | 1.10 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 173 | 1 | 129 | 0 | 0 | 0 | 379 | 463 | 0 | 0 | 287 | 264 |
| Peak Hour Factor | 0.7940 | 0.7940 | 0.7940 | 0.7940 | 0.7940 | 0.7940 | 0.7940 | 0.7940 | 0.7940 | 0.7940 | 0.7940 | 0.7940 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 52 | 0 | 39 | 0 | 0 | 0 | 116 | 141 | 0 | 0 | 88 | 81 |
| Total Analysis Volume [veh/h] | 209 | 1 | 156 | 0 | 0 | 0 | 463 | 566 | 0 | 0 | 351 | 323 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 1 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 70 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 8 | 0 | 0 | 4 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 10 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 25 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 15 | 50 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | | No | |
| Maximum Recall | | No | | | No | | No | No | | | No | |
| Pedestrian Recall | | No | | | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 16 | 16 | 16 | 44 | 44 | 44 | 30 | 30 | 30 |
| g / C, Green / Cycle | 0.22 | 0.22 | 0.22 | 0.63 | 0.63 | 0.63 | 0.43 | 0.43 | 0.43 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.10 | 0.00 | 0.44 | 0.15 | 0.15 | 0.00 | 0.19 | 0.21 |
| s, saturation flow rate [veh/h] | 1414 | 1564 | 1863 | 1044 | 1848 | 1848 | 842 | 1843 | 1566 |
| c, Capacity [veh/h] | 375 | 350 | 468 | 704 | 1170 | 1170 | 385 | 790 | 671 |
| d1, Uniform Delay [s] | 26.79 | 23.43 | 0.00 | 8.25 | 5.56 | 5.56 | 0.00 | 14.12 | 14.40 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.22 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 5.88 | 4.11 | 0.00 | 2.16 | 0.11 | 0.11 | 0.00 | 0.39 | 0.54 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.56 | 0.45 | 0.00 | 0.66 | 0.24 | 0.24 | 0.00 | 0.44 | 0.48 |
| d, Delay for Lane Group [s/veh] | 32.67 | 27.54 | 0.00 | 10.42 | 5.66 | 5.66 | 0.00 | 14.51 | 14.93 |
| Lane Group LOS | C | C | A | B | A | A | A | B | B |
| Critical Lane Group | Yes | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 3.75 | 2.53 | 0.00 | 3.09 | 1.46 | 1.46 | 0.00 | 3.65 | 3.45 |
| 50th-Percentile Queue Length [ft] | 93.80 | 63.17 | 0.00 | 77.33 | 36.48 | 36.48 | 0.00 | 91.33 | 86.19 |
| 95th-Percentile Queue Length [veh] | 6.75 | 4.55 | 0.00 | 5.57 | 2.63 | 2.63 | 0.00 | 6.58 | 6.21 |
| 95th-Percentile Queue Length [ft] | 168.85 | 113.71 | 0.00 | 139.20 | 65.67 | 65.67 | 0.00 | 164.40 | 155.14 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 32.67 | 27.54 | 27.54 | 0.00 | 0.00 | 0.00 | 10.42 | 5.66 | 5.66 | 0.00 | 14.51 | 14.93 |
| Movement LOS | C | C | C | A | A | A | B | A | A | A | B | B |
| d_A, Approach Delay [s/veh] | 30.47 | | | 0.00 | | | 7.80 | | | 14.71 | | |
| Approach LOS | C | | | A | | | A | | | B | | |
| d_I, Intersection Delay [s/veh] | 14.06 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.496 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 18: 18 - Haggerty Lane / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 78.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | Haggerty Lane | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northeastbound | | | Southwestbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**volumes**

| Name | Haggerty Lane | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 62 | 0 | 49 | 1 | 0 | 0 | 92 | 773 | 2 | 2 | 332 | 83 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.60 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 3.30 | 2.50 | 0.00 | 0.00 | 3.30 | 3.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 62 | 0 | 49 | 1 | 0 | 0 | 92 | 773 | 2 | 2 | 332 | 83 |
| Peak Hour Factor | 0.7700 | 0.7700 | 0.7700 | 0.7700 | 0.7700 | 0.7700 | 0.7700 | 0.7700 | 0.7700 | 0.7700 | 0.7700 | 0.7700 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 19 | 0 | 15 | 0 | 0 | 0 | 29 | 243 | 1 | 1 | 105 | 26 |
| Total Analysis Volume [veh/h] | 77 | 0 | 61 | 1 | 0 | 0 | 116 | 974 | 3 | 3 | 418 | 105 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.60 | 0.00 | 0.08 | 0.01 | 0.00 | 0.00 | 0.11 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 63.67 | 78.87 | 40.69 | 49.62 | 51.83 | 12.33 | 8.94 | 0.00 | 0.00 | 10.06 | 0.00 | 0.00 |
| Movement LOS | F | F | E | E | F | B | A | A | A | B | A | A |
| 95th-Percentile Queue Length [veh] | 4.19 | 4.19 | 4.19 | 0.04 | 0.04 | 0.04 | 0.38 | 0.00 | 0.00 | 1.70 | 0.85 | 0.00 |
| 95th-Percentile Queue Length [ft] | 104.69 | 104.69 | 104.69 | 0.93 | 0.93 | 0.93 | 9.48 | 0.00 | 0.00 | 42.43 | 21.22 | 0.00 |
| d_A, Approach Delay [s/veh] | 53.51 | | | 49.62 | | | 0.95 | | | 0.06 | | |
| Approach LOS | F | | | E | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4.84 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 19: 19 - Willson Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 45.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.011 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 158 | 471 | 50 | 19 | 302 | 53 | 1 | 1 | 66 | 1 | 4 | 18 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.30 | 1.30 | 2.00 | 5.30 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 158 | 471 | 50 | 19 | 302 | 53 | 1 | 1 | 66 | 1 | 4 | 18 |
| Peak Hour Factor | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 44 | 130 | 14 | 5 | 83 | 15 | 0 | 0 | 18 | 0 | 1 | 5 |
| Total Analysis Volume [veh/h] | 175 | 520 | 55 | 21 | 334 | 59 | 1 | 1 | 73 | 1 | 5 | 21 |
| Pedestrian Volume [ped/h] | 5 | | | 4 | | | 0 | | | 3 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.15 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.01 | 0.11 | 0.01 | 0.04 | 0.04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.62 | 0.00 | 0.00 | 8.77 | 0.00 | 0.00 | 41.40 | 36.77 | 11.18 | 45.39 | 37.26 | 13.05 |
| Movement LOS | A | A | A | A | A | A | E | E | B | E | E | B |
| 95th-Percentile Queue Length [veh] | 4.91 | 4.91 | 4.91 | 2.14 | 2.14 | 2.14 | 0.43 | 0.43 | 0.43 | 0.31 | 0.31 | 0.31 |
| 95th-Percentile Queue Length [ft] | 122.65 | 122.65 | 122.65 | 53.55 | 53.55 | 53.55 | 10.75 | 10.75 | 10.75 | 7.65 | 7.65 | 7.65 |
| d_A, Approach Delay [s/veh] | 2.01 | | | 0.44 | | | 11.92 | | | 18.73 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 2.44 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 20: 20 - Highland Boulevard / Ellis Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 35.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.082 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Ellis Street | | | Ellis Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 75.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Ellis Street | | | Ellis Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 253 | 49 | 74 | 300 | 257 | 18 | 2 | 4 | 28 | 10 | 34 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.80 | 0.00 | 1.40 | 2.60 | 1.20 | 0.00 | 0.00 | 25.00 | 0.00 | 0.00 | 2.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 253 | 49 | 74 | 300 | 257 | 18 | 2 | 4 | 28 | 10 | 34 |
| Peak Hour Factor | 0.7600 | 0.7600 | 0.7600 | 0.7600 | 0.7600 | 0.7600 | 0.7600 | 0.7600 | 0.7600 | 0.7600 | 0.7600 | 0.7600 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 80 | 15 | 23 | 95 | 81 | 6 | 1 | 1 | 9 | 3 | 11 |
| Total Analysis Volume [veh/h] | 6 | 320 | 62 | 93 | 379 | 325 | 24 | 3 | 5 | 37 | 13 | 45 |
| Pedestrian Volume [ped/h] | 3 | | | 0 | | | 1 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 | 0.16 | 0.02 | 0.01 | 0.21 | 0.08 | 0.07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.02 | 0.00 | 0.00 | 8.31 | 0.00 | 0.00 | 33.36 | 28.61 | 16.91 | 32.98 | 35.15 | 17.62 |
| Movement LOS | A | A | A | A | A | A | D | D | C | D | E | C |
| 95th-Percentile Queue Length [veh] | 0.02 | 0.00 | 0.00 | 0.26 | 0.00 | 0.00 | 0.65 | 0.65 | 0.65 | 1.56 | 1.56 | 1.56 |
| 95th-Percentile Queue Length [ft] | 0.50 | 0.00 | 0.00 | 6.41 | 0.00 | 0.00 | 16.33 | 16.33 | 16.33 | 39.07 | 39.07 | 39.07 |
| d_A, Approach Delay [s/veh] | 0.14 | | | 0.97 | | | 30.34 | | | 26.00 | | |
| Approach LOS | A | | | A | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 3.25 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 21: 21 - Sourdough Road / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 78.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.491 |

**Intersection Setup**

| Name | Sourdough Road | | | Kagy Boulevard | | | Kagy Boulevard | | | Sourdough Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Eastbound | | | Westbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | Yes | | |

**volumes**

| Name | Sourdough Road | | | Kagy Boulevard | | | Kagy Boulevard | | | Sourdough Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 67 | 42 | 79 | 36 | 315 | 31 | 26 | 560 | 20 | 5 | 21 | 30 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 1.30 | 0.00 | 0.60 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 3.30 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 67 | 42 | 79 | 36 | 315 | 31 | 26 | 560 | 20 | 5 | 21 | 30 |
| Peak Hour Factor | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 18 | 11 | 21 | 10 | 85 | 8 | 7 | 151 | 5 | 1 | 6 | 8 |
| Total Analysis Volume [veh/h] | 72 | 45 | 85 | 39 | 340 | 33 | 28 | 604 | 22 | 5 | 23 | 32 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 5 | | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free | Stop |
|---|---|---|---|---|
| Flared Lane | No | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.49 | 0.23 | 0.12 | 0.04 | 0.00 | 0.00 | 0.02 | 0.01 | 0.00 | 0.04 | 0.12 | 0.07 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 78.23 | 72.28 | 58.92 | 8.92 | 0.00 | 0.00 | 8.08 | 0.00 | 0.00 | 40.05 | 27.75 | 16.48 |
| Movement LOS | F | F | F | A | A | A | A | A | A | E | D | C |
| 95th-Percentile Queue Length [veh] | 6.71 | 6.71 | 6.71 | 0.13 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.86 | 0.86 | 0.86 |
| 95th-Percentile Queue Length [ft] | 167.65 | 167.65 | 167.65 | 3.18 | 0.00 | 0.00 | 1.80 | 0.00 | 0.00 | 21.53 | 21.53 | 21.53 |
| d_A, Approach Delay [s/veh] | 68.78 | | | 0.84 | | | 0.35 | | | 22.77 | | |
| Approach LOS | F | | | A | | | A | | | C | | |
| d_I, Intersection Delay [s/veh] | 11.92 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 22: 22 - Highland Boulevard / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 72.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.036 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 2 | 0 | 7 | 0 | 331 | 319 | 71 | 1 | 1 | 270 | 21 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.30 | 0.00 | 0.00 | 0.00 | 0.40 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 2 | 0 | 7 | 0 | 331 | 319 | 71 | 1 | 1 | 270 | 21 |
| Peak Hour Factor | 0.8630 | 0.8630 | 0.8630 | 0.8630 | 0.8630 | 0.8630 | 0.8630 | 0.8630 | 0.8630 | 0.8630 | 0.8630 | 0.8630 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 0 | 2 | 0 | 92 | 89 | 20 | 0 | 0 | 75 | 6 |
| Total Analysis Volume [veh/h] | 2 | 2 | 0 | 8 | 0 | 368 | 355 | 79 | 1 | 1 | 300 | 23 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.04 | 0.01 | 0.00 | 0.05 | 0.00 | 0.50 | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 72.73 | 31.41 | 10.98 | 36.16 | 35.28 | 16.48 | 9.04 | 0.00 | 0.00 | 7.35 | 0.00 | 0.00 |
| Movement LOS | F | D | B | E | E | C | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.15 | 0.15 | 0.15 | 3.47 | 3.47 | 3.47 | 1.19 | 0.00 | 0.00 | 0.80 | 0.80 | 0.80 |
| 95th-Percentile Queue Length [ft] | 3.86 | 3.86 | 3.86 | 86.79 | 86.79 | 86.79 | 29.63 | 0.00 | 0.00 | 20.03 | 20.03 | 20.03 |
| d_A, Approach Delay [s/veh] | 52.07 | | | 16.90 | | | 7.38 | | | 0.02 | | |
| Approach LOS | F | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 8.59 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 23: 23 - Wagon Wheel Road / 3rd Avenue**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 15.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Wagon Wheel Road | | 3rd Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 115.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | Yes | |

**volumes**

| Name | Wagon Wheel Road | | 3rd Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 7 | 163 | 33 | 171 | 275 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 2.40 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 7 | 163 | 33 | 171 | 275 | 3 |
| Peak Hour Factor | 0.6270 | 0.6270 | 0.6270 | 0.6270 | 0.6270 | 0.6270 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 3 | 65 | 13 | 65 | 105 | 1 |
| Total Analysis Volume [veh/h] | 11 | 260 | 51 | 262 | 421 | 5 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 3 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.24 | 0.29 | 1.98 | 5.07 |
| 95th-Percentile Queue Length [ft] | 55.98 | 7.27 | 49.38 | 126.85 |
| Approach Delay [s/veh] | 13.35 | 11.66 | | 19.28 |
| Approach LOS | B | B | | C |
| Intersection Delay [s/veh] | 15.33 | | | |
| Intersection LOS | C | | | |

**Intersection Level Of Service Report**
**Intersection 27: 25 - 11th Avenue / Grant Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Grant Street | | | Grant Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Grant Street | | | Grant Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 101 | 96 | 79 | 109 | 39 | 10 | 47 | 18 | 50 | 36 | 40 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 3.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 2.00 | 2.80 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 5 | 101 | 96 | 79 | 109 | 39 | 10 | 47 | 18 | 50 | 36 | 40 |
| Peak Hour Factor | 0.7330 | 0.7330 | 0.7330 | 0.7330 | 0.7330 | 0.7330 | 0.7330 | 0.7330 | 0.7330 | 0.7330 | 0.7330 | 0.7330 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 2 | 33 | 31 | 26 | 36 | 13 | 3 | 16 | 6 | 16 | 12 | 13 |
| Total Analysis Volume [veh/h] | 7 | 132 | 126 | 103 | 143 | 51 | 14 | 64 | 25 | 65 | 47 | 52 |
| Pedestrian Volume [ped/h] | 154 | | | 130 | | | 106 | | | 65 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.61 | 2.02 | 0.56 | 0.96 |
| 95th-Percentile Queue Length [ft] | 40.30 | 50.51 | 13.91 | 24.12 |
| Approach Delay [s/veh] | 10.47 | 11.43 | 9.53 | 10.16 |
| Approach LOS | B | B | A | B |
| Intersection Delay [s/veh] | 10.64 | | | |
| Intersection LOS | B | | | |

**Intersection Level Of Service Report**
**Intersection 28: 26 - 11th Avenue / Lincoln Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 11.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Lincoln Street | | | Bobcat Circle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Lincoln Street | | | Bobcat Circle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 31 | 126 | 24 | 3 | 129 | 27 | 73 | 38 | 208 | 13 | 8 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.20 | 0.80 | 0.00 | 0.00 | 0.80 | 11.10 | 1.40 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 31 | 126 | 24 | 3 | 129 | 27 | 73 | 38 | 208 | 13 | 8 | 7 |
| Peak Hour Factor | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 | 0.8100 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 37 | 7 | 1 | 38 | 8 | 22 | 11 | 62 | 4 | 2 | 2 |
| Total Analysis Volume [veh/h] | 37 | 149 | 28 | 4 | 153 | 32 | 87 | 45 | 247 | 16 | 10 | 9 |
| Pedestrian Volume [ped/h] | 35 | | | 36 | | | 48 | | | 110 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.21 | 1.16 | 1.02 | 0.15 | 2.78 | 0.17 |
| 95th-Percentile Queue Length [ft] | 5.26 | 28.88 | 25.54 | 3.74 | 69.55 | 4.23 |
| Approach Delay [s/veh] | 10.48 | | 10.25 | | 12.23 | 8.81 |
| Approach LOS | B | | B | | B | A |
| Intersection Delay [s/veh] | 11.16 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 29: 27 - 11th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.519 |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 200.00 | 100.00 | 100.00 | 115.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 10 | 41 | 7 | 52 | 55 | 42 | 141 | 520 | 74 | 17 | 513 | 103 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.40 | 0.00 | 7.70 | 1.80 | 4.80 | 2.10 | 1.00 | 0.00 | 0.00 | 0.60 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 10 | 41 | 7 | 52 | 55 | 42 | 141 | 520 | 74 | 17 | 513 | 103 |
| Peak Hour Factor | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 0.8070 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 3 | 13 | 2 | 15 | 16 | 12 | 42 | 155 | 22 | 5 | 153 | 31 |
| Total Analysis Volume [veh/h] | 12 | 51 | 9 | 62 | 65 | 50 | 168 | 619 | 88 | 20 | 610 | 123 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 23 | | | 49 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 10 | 15 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 25 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 13 | 60 | 0 | 0 | 47 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | | No | |
| Maximum Recall | | No | | | No | | No | No | | | No | |
| Pedestrian Recall | | No | | | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 23 | 23 | 23 | 23 | 47 | 47 | 34 | 34 |
| g / C, Green / Cycle | 0.29 | 0.29 | 0.29 | 0.29 | 0.59 | 0.59 | 0.43 | 0.43 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.03 | 0.05 | 0.07 | 0.17 | 0.38 | 0.03 | 0.40 |
| s, saturation flow rate [veh/h] | 1275 | 1779 | 1203 | 1700 | 961 | 1841 | 753 | 1834 |
| c, Capacity [veh/h] | 338 | 510 | 355 | 488 | 454 | 1082 | 228 | 785 |
| d1, Uniform Delay [s] | 26.21 | 21.05 | 25.61 | 21.81 | 13.55 | 11.02 | 27.40 | 21.79 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.13 | 0.11 | 0.27 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.20 | 0.47 | 1.07 | 1.14 | 2.30 | 0.82 | 0.16 | 12.34 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

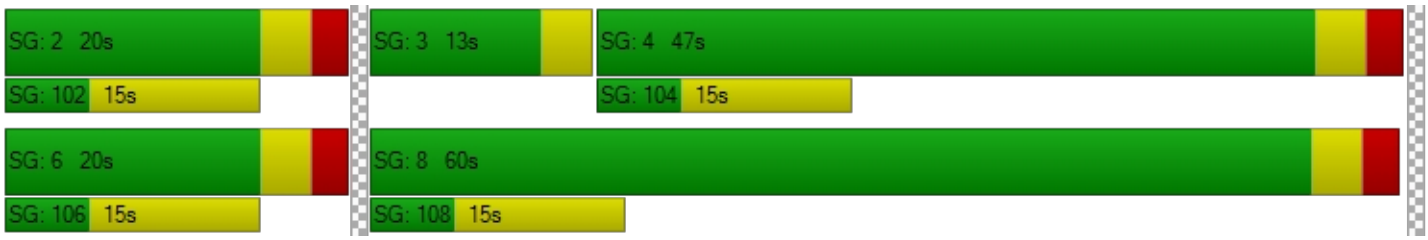
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.04 | 0.12 | 0.17 | 0.24 | 0.37 | 0.65 | 0.09 | 0.93 |
| d, Delay for Lane Group [s/veh] | 26.41 | 21.52 | 26.68 | 22.95 | 15.85 | 11.84 | 27.57 | 34.12 |
| Lane Group LOS | C | C | C | C | B | B | C | C |
| Critical Lane Group | No | No | No | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.20 | 0.87 | 1.05 | 1.75 | 1.46 | 7.46 | 0.32 | 14.70 |
| 50th-Percentile Queue Length [ft] | 5.00 | 21.76 | 26.20 | 43.77 | 36.44 | 186.53 | 8.11 | 367.47 |
| 95th-Percentile Queue Length [veh] | 0.36 | 1.57 | 1.89 | 3.15 | 2.62 | 11.94 | 0.58 | 20.99 |
| 95th-Percentile Queue Length [ft] | 9.01 | 39.17 | 47.15 | 78.78 | 65.58 | 298.52 | 14.59 | 524.66 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 26.41 | 21.52 | 21.52 | 26.68 | 22.95 | 22.95 | 15.85 | 11.84 | 11.84 | 27.57 | 34.12 | 34.12 |
| Movement LOS | C | C | C | C | C | C | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 22.33 | | | 24.26 | | | 12.61 | | | 33.95 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 22.64 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.519 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 30: 28 - 8th Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 12.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 8th Avenue | | | 8th Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 8th Avenue | | | 8th Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 68 | 35 | 2 | 23 | 106 | 45 | 59 | 123 | 77 | 4 | 253 | 52 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.70 | 0.00 | 1.30 | 0.00 | 0.40 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 68 | 35 | 2 | 23 | 106 | 45 | 59 | 123 | 77 | 4 | 253 | 52 |
| Peak Hour Factor | 0.8180 | 0.8180 | 0.8180 | 0.8180 | 0.8180 | 0.8180 | 0.8180 | 0.8180 | 0.8180 | 0.8180 | 0.8180 | 0.8180 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 20 | 10 | 1 | 7 | 31 | 13 | 17 | 36 | 23 | 1 | 74 | 15 |
| Total Analysis Volume [veh/h] | 80 | 41 | 2 | 27 | 124 | 53 | 69 | 144 | 90 | 5 | 297 | 61 |
| Pedestrian Volume [ped/h] | 5 | | | 11 | | | 21 | | | 20 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.80 | 1.44 | 2.36 | 3.20 |
| 95th-Percentile Queue Length [ft] | 20.08 | 35.93 | 58.95 | 79.95 |
| Approach Delay [s/veh] | 10.94 | 11.66 | 12.74 | 14.26 |
| Approach LOS | B | B | B | B |
| Intersection Delay [s/veh] | 12.85 | | | |
| Intersection LOS | B | | | |

**Intersection Level Of Service Report**
**Intersection 31: 29 - 7th Avenue / Grant Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 9.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 7th Avenue | | Grant Street | | Grant Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**volumes**

| Name | 7th Avenue | | Grant Street | | Grant Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 59 | 37 | 84 | 87 | 112 | 78 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.40 | 2.70 | 1.20 | 1.10 | 0.00 | 1.30 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 59 | 37 | 84 | 87 | 112 | 78 |
| Peak Hour Factor | 0.7230 | 0.7230 | 0.7230 | 0.7230 | 0.7230 | 0.7230 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 20 | 12 | 28 | 29 | 37 | 26 |
| Total Analysis Volume [veh/h] | 78 | 49 | 112 | 116 | 149 | 104 |
| Pedestrian Volume [ped/h] | 12 | | 100 | | 160 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | |
|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.63 | 1.09 | 1.41 |
| 95th-Percentile Queue Length [ft] | 15.63 | 27.16 | 35.16 |
| Approach Delay [s/veh] | 8.95 | 8.79 | 9.80 |
| Approach LOS | A | A | A |
| Intersection Delay [s/veh] | 9.24 | | |
| Intersection LOS | A | | |

**Intersection Level Of Service Report**
**Intersection 32: 30 - 7th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 87.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.038 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 12 | 2 | 1 | 7 | 38 | 127 | 401 | 19 | 29 | 637 | 111 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.30 | 1.60 | 1.70 | 5.30 | 0.00 | 0.40 | 1.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 12 | 2 | 1 | 7 | 38 | 127 | 401 | 19 | 29 | 637 | 111 |
| Peak Hour Factor | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 3 | 1 | 0 | 2 | 10 | 35 | 110 | 5 | 8 | 175 | 31 |
| Total Analysis Volume [veh/h] | 2 | 14 | 2 | 1 | 8 | 42 | 140 | 441 | 21 | 32 | 700 | 122 |
| Pedestrian Volume [ped/h] | 4 | | | 6 | | | 29 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.04 | 0.19 | 0.00 | 0.02 | 0.10 | 0.11 | 0.17 | 0.00 | 0.00 | 0.03 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 87.24 | 67.76 | 24.51 | 70.92 | 57.07 | 16.00 | 10.45 | 0.00 | 0.00 | 8.37 | 0.00 | 0.00 |
| Movement LOS | F | F | C | F | F | C | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.82 | 0.82 | 0.82 | 0.39 | 0.39 | 0.38 | 7.08 | 7.08 | 7.08 | 8.18 | 8.18 | 8.18 |
| 95th-Percentile Queue Length [ft] | 20.48 | 20.48 | 20.48 | 9.63 | 9.63 | 9.54 | 177.00 | 177.00 | 177.00 | 204.48 | 204.48 | 204.48 |
| d_A, Approach Delay [s/veh] | 65.12 | | | 23.52 | | | 2.43 | | | 0.31 | | |
| Approach LOS | F | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 2.69 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 33: 31 - Valley Center Spur / Frontage Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 15.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.172 |

**Intersection Setup**

| Name | Valley Center Spur | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Approach | Northeastbound | | Northwestbound | | Southeastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 825.00 | 100.00 | 100.00 | 615.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Valley Center Spur | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 64 | 101 | 61 | 66 | 236 | 103 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.10 | 2.00 | 4.90 | 6.10 | 5.90 | 4.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 64 | 101 | 61 | 66 | 236 | 103 |
| Peak Hour Factor | 0.8130 | 0.8130 | 0.8130 | 0.8130 | 0.8130 | 0.8130 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0500 | 1.0500 | 1.0500 | 1.0500 |
| Total 15-Minute Volume [veh/h] | 20 | 31 | 20 | 21 | 76 | 33 |
| Total Analysis Volume [veh/h] | 79 | 124 | 79 | 85 | 305 | 133 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.17 | 0.17 | 0.07 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 15.91 | 12.98 | 8.50 | 0.00 | 0.00 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.50 | 1.50 | 0.23 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 37.56 | 37.56 | 5.76 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 14.12 | | 4.10 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.40 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 34: 32 - Valley Center Spur / Valley Center Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 18.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.326 |

**Intersection Setup**

| Name | Valley Center Spur | | Valley Center Road | | Valley Center Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 120.00 | 430.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Valley Center Spur | | Valley Center Road | | Valley Center Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 105 | 62 | 104 | 217 | 70 | 60 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.90 | 4.80 | 1.00 | 4.10 | 15.80 | 1.70 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 105 | 62 | 104 | 217 | 70 | 60 |
| Peak Hour Factor | 0.8310 | 0.8310 | 0.8310 | 0.8310 | 0.8310 | 0.8310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0500 | 1.0500 | 1.0500 | 1.0500 |
| Total 15-Minute Volume [veh/h] | 32 | 19 | 33 | 69 | 22 | 19 |
| Total Analysis Volume [veh/h] | 126 | 75 | 131 | 274 | 88 | 76 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.33 | 0.08 | 0.09 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 18.77 | 9.28 | 7.79 | 0.00 | 0.00 | 0.00 |
| Movement LOS | C | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.39 | 0.27 | 0.30 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 34.83 | 6.66 | 7.60 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 15.23 | | 2.52 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 5.30 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 35: 33 - Nelson Road / Frontage Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 19.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.222 |

**Intersection Setup**

| Name | Nelson Road | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Approach | Southwestbound | | Northwestbound | | Southeastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 575.00 | 600.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Nelson Road | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 53 | 25 | 139 | 11 | 6 | 448 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 4.00 | 1.40 | 0.00 | 0.00 | 0.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 53 | 25 | 139 | 11 | 6 | 448 |
| Peak Hour Factor | 0.7450 | 0.7450 | 0.7450 | 0.7450 | 0.7450 | 0.7450 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0900 | 1.0900 | 1.0900 | 1.0900 |
| Total 15-Minute Volume [veh/h] | 18 | 8 | 51 | 4 | 2 | 164 |
| Total Analysis Volume [veh/h] | 71 | 34 | 203 | 16 | 9 | 655 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.22 | 0.04 | 0.00 | 0.00 | 0.01 | 0.01 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 19.44 | 12.51 | 0.00 | 0.00 | 7.66 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.04 | 1.04 | 0.00 | 0.00 | 0.02 | 0.00 |
| 95th-Percentile Queue Length [ft] | 26.01 | 26.01 | 0.00 | 0.00 | 0.50 | 0.00 |
| d_A, Approach Delay [s/veh] | 17.19 | | 0.00 | | 0.10 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 1.90 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 36: 34 - 19th Avenue / I-90 EB Ramp**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 41.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.183 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 WB On | | | I-90 WB Off | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 350.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | | No | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 WB On | | | I-90 WB Off | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 308 | 200 | 103 | 440 | 0 | 0 | 0 | 0 | 18 | 0 | 302 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 6.20 | 12.00 | 2.90 | 2.20 | 2.00 | 2.00 | 2.00 | 2.00 | 5.60 | 2.00 | 4.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 308 | 200 | 103 | 440 | 0 | 0 | 0 | 0 | 18 | 0 | 302 |
| Peak Hour Factor | 1.0000 | 0.8070 | 0.8070 | 0.8070 | 0.8070 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.8070 | 1.0000 | 0.8070 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 95 | 62 | 32 | 136 | 0 | 0 | 0 | 0 | 6 | 0 | 94 |
| Total Analysis Volume [veh/h] | 0 | 382 | 248 | 128 | 545 | 0 | 0 | 0 | 0 | 22 | 0 | 374 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.14 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.70 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 9.39 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 41.48 | 0.00 | 26.14 |
| Movement LOS | | A | A | A | A | | | | | E | | D |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.00 | 0.47 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.64 | 0.00 | 5.53 |
| 95th-Percentile Queue Length [ft] | 0.00 | 0.00 | 0.00 | 11.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.95 | 0.00 | 138.23 |
| d_A, Approach Delay [s/veh] | 0.00 | | | 1.79 | | | 0.00 | | | 26.99 | | |
| Approach LOS | A | | | A | | | A | | | D | | |
| d_I, Intersection Delay [s/veh] | 7.00 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 37: 35 - 19th Avenue / I-90 WB Ramp**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.481 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 EB Off | | | I-90 EB On | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 275.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 260.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 EB Off | | | I-90 EB On | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 160 | 170 | 0 | 0 | 467 | 12 | 81 | 0 | 19 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 10.60 | 2.40 | 2.00 | 2.00 | 1.30 | 0.00 | 13.50 | 2.00 | 5.30 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 160 | 170 | 0 | 0 | 467 | 12 | 81 | 0 | 19 | 0 | 0 | 0 |
| Peak Hour Factor | 0.7950 | 0.7950 | 1.0000 | 1.0000 | 0.7950 | 0.7950 | 0.7950 | 1.0000 | 0.7950 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 50 | 53 | 0 | 0 | 147 | 4 | 25 | 0 | 6 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 201 | 214 | 0 | 0 | 587 | 15 | 102 | 0 | 24 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 70 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 0 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 0 | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 25 | 60 | 0 | 0 | 60 | 0 | 45 | 0 | 0 | 0 | 0 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 13 | 48 | 0 | 0 | 35 | 0 | 22 | 0 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | No | No | | | No | | No | | | | | |
| Maximum Recall | No | No | | | No | | No | | | | | |
| Pedestrian Recall | No | No | | | No | | No | | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | R | |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| g_i, Effective Green Time [s] | 54 | 54 | 42 | 6 | 6 | |
| g / C, Green / Cycle | 0.78 | 0.78 | 0.59 | 0.08 | 0.08 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.24 | 0.13 | 0.36 | 0.07 | 0.02 | |
| s, saturation flow rate [veh/h] | 834 | 1670 | 1681 | 1435 | 1380 | |
| c, Capacity [veh/h] | 626 | 1294 | 995 | 118 | 114 | |
| d1, Uniform Delay [s] | 5.04 | 2.04 | 9.09 | 31.72 | 29.99 | |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 1.35 | 0.28 | 2.73 | 16.28 | 0.91 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.32 | 0.17 | 0.61 | 0.86 | 0.21 | |
| d, Delay for Lane Group [s/veh] | 6.39 | 2.31 | 11.82 | 48.00 | 30.90 | |
| Lane Group LOS | A | A | B | D | C | |
| Critical Lane Group | Yes | No | Yes | Yes | No | |
| 50th-Percentile Queue Length [veh] | 0.58 | 0.46 | 5.47 | 2.18 | 0.39 | |
| 50th-Percentile Queue Length [ft] | 14.45 | 11.51 | 136.78 | 54.50 | 9.87 | |
| 95th-Percentile Queue Length [veh] | 1.04 | 0.83 | 9.31 | 3.92 | 0.71 | |
| 95th-Percentile Queue Length [ft] | 26.01 | 20.72 | 232.68 | 98.11 | 17.76 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.39 | 2.31 | 0.00 | 0.00 | 11.82 | 11.82 | 48.00 | 0.00 | 30.90 | 0.00 | 0.00 | 0.00 |
| Movement LOS | A | A | | | B | B | D | | C | | | |
| d_A, Approach Delay [s/veh] | 4.29 | | | 11.82 | | | 44.74 | | | 0.00 | | |
| Approach LOS | A | | | B | | | D | | | A | | |
| d_I, Intersection Delay [s/veh] | 12.71 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.481 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 38: 36 - 19th Avenue / Tschache Way**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.361 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Tschache Way | | | Tschache Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 200.00 | 100.00 | 200.00 | 275.00 | 100.00 | 175.00 | 80.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Tschache Way | | | Tschache Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 29 | 405 | 11 | 17 | 899 | 18 | 25 | 12 | 55 | 5 | 4 | 6 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 5.40 | 9.10 | 11.80 | 2.10 | 16.70 | 12.00 | 8.30 | 1.80 | 0.00 | 50.00 | 33.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 29 | 405 | 11 | 17 | 899 | 18 | 25 | 12 | 55 | 5 | 4 | 6 |
| Peak Hour Factor | 0.8820 | 0.8820 | 0.8820 | 0.8820 | 0.8820 | 0.8820 | 0.8820 | 0.8820 | 0.8820 | 0.8820 | 0.8820 | 0.8820 |
| Other Adjustment Factor | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 119 | 3 | 5 | 265 | 5 | 7 | 3 | 16 | 1 | 1 | 2 |
| Total Analysis Volume [veh/h] | 34 | 478 | 13 | 20 | 1060 | 21 | 28 | 14 | 62 | 6 | 5 | 7 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 68.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 10 | 30 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 13 | 51 | 0 | 19 | 57 | 0 | 0 | 20 | 0 | 0 | 20 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 40 | 33 | 33 | 40 | 31 | 31 | 9 | 9 | 9 | 9 |
| g / C, Green / Cycle | 0.44 | 0.36 | 0.36 | 0.44 | 0.34 | 0.34 | 0.10 | 0.10 | 0.10 | 0.10 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.14 | 0.01 | 0.02 | 0.30 | 0.02 | 0.02 | 0.05 | 0.00 | 0.01 |
| s, saturation flow rate [veh/h] | 757 | 3432 | 1480 | 934 | 3543 | 1384 | 1272 | 1534 | 1344 | 1148 |
| c, Capacity [veh/h] | 313 | 1247 | 538 | 449 | 1221 | 477 | 166 | 147 | 120 | 110 |
| d1, Uniform Delay [s] | 17.58 | 21.20 | 18.41 | 14.60 | 27.58 | 19.62 | 40.02 | 38.72 | 42.52 | 37.19 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.15 | 0.19 | 0.02 | 0.04 | 2.03 | 0.04 | 0.48 | 2.82 | 0.17 | 0.43 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.11 | 0.38 | 0.02 | 0.04 | 0.87 | 0.04 | 0.17 | 0.52 | 0.05 | 0.11 |
| d, Delay for Lane Group [s/veh] | 17.73 | 21.39 | 18.43 | 14.64 | 29.60 | 19.66 | 40.50 | 41.54 | 42.69 | 37.63 |
| Lane Group LOS | B | C | B | B | C | B | D | D | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 0.40 | 3.65 | 0.17 | 0.23 | 10.56 | 0.29 | 0.61 | 1.69 | 0.13 | 0.25 |
| 50th-Percentile Queue Length [ft] | 9.92 | 91.27 | 4.34 | 5.73 | 263.96 | 7.33 | 15.18 | 42.33 | 3.36 | 6.32 |
| 95th-Percentile Queue Length [veh] | 0.71 | 6.57 | 0.31 | 0.41 | 15.89 | 0.53 | 1.09 | 3.05 | 0.24 | 0.45 |
| 95th-Percentile Queue Length [ft] | 17.86 | 164.28 | 7.81 | 10.32 | 397.19 | 13.19 | 27.33 | 76.19 | 6.05 | 11.37 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 17.73 | 21.39 | 18.43 | 14.64 | 29.60 | 19.66 | 40.50 | 41.54 | 41.54 | 42.69 | 37.63 | 37.63 |
| Movement LOS | B | C | B | B | C | B | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 21.08 | | | 29.14 | | | 41.26 | | | 39.32 | | |
| Approach LOS | C | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 27.55 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.361 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 39: 37 - 19th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.512 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 400.00 | 100.00 | 400.00 | 275.00 | 100.00 | 250.00 | 200.00 | 100.00 | 100.00 | 225.00 | 100.00 | 225.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 39 | 312 | 169 | 240 | 705 | 80 | 61 | 313 | 44 | 113 | 167 | 88 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 5.10 | 7.70 | 1.80 | 2.50 | 2.90 | 2.50 | 0.00 | 1.30 | 2.30 | 4.40 | 7.80 | 6.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 39 | 312 | 169 | 240 | 705 | 80 | 61 | 313 | 44 | 113 | 167 | 88 |
| Peak Hour Factor | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 11 | 89 | 48 | 68 | 201 | 23 | 17 | 89 | 13 | 31 | 46 | 24 |
| Total Analysis Volume [veh/h] | 45 | 356 | 193 | 274 | 805 | 91 | 70 | 357 | 50 | 125 | 185 | 97 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 150 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 40.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 0 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 30 | 30 | 5 | 30 | 30 | 5 | 15 | 0 | 5 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 90 | 25 | 90 | 90 | 25 | 45 | 0 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 40 | 40 | 8 | 40 | 40 | 13 | 94 | 0 | 8 | 89 | 89 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 88 | 80 | 90 | 88 | 81 | 92 | 52 | 44 | 52 | 43 | 53 |
| g / C, Green / Cycle | 0.59 | 0.53 | 0.60 | 0.59 | 0.54 | 0.61 | 0.35 | 0.29 | 0.35 | 0.29 | 0.35 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.11 | 0.12 | 0.26 | 0.23 | 0.06 | 0.05 | 0.22 | 0.12 | 0.06 | 0.06 |
| s, saturation flow rate [veh/h] | 718 | 3359 | 1586 | 1067 | 3516 | 1576 | 1298 | 1836 | 1042 | 3356 | 1512 |
| c, Capacity [veh/h] | 410 | 1786 | 949 | 651 | 1887 | 962 | 460 | 541 | 229 | 966 | 536 |
| d1, Uniform Delay [s] | 14.49 | 18.40 | 13.77 | 17.83 | 20.87 | 12.08 | 33.36 | 47.90 | 43.50 | 40.24 | 33.38 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.33 | 0.29 | 0.11 | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.54 | 0.25 | 0.48 | 2.00 | 0.71 | 0.13 | 0.41 | 2.13 | 2.01 | 0.10 | 0.74 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

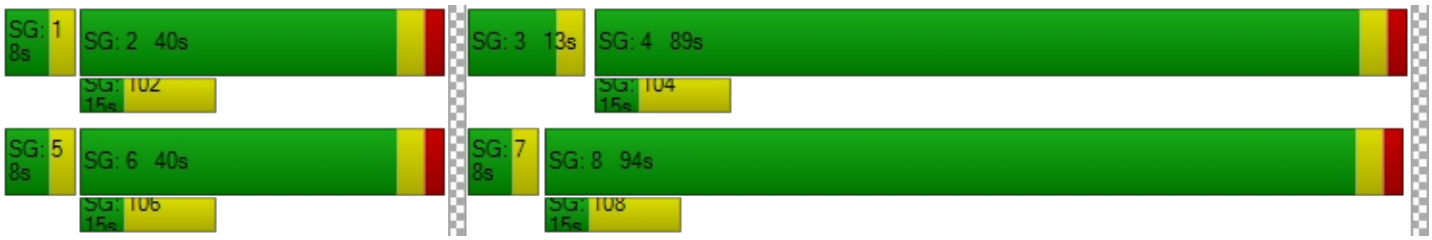
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.11 | 0.20 | 0.20 | 0.42 | 0.43 | 0.09 | 0.15 | 0.75 | 0.54 | 0.19 | 0.18 |
| d, Delay for Lane Group [s/veh] | 15.03 | 18.65 | 14.25 | 19.83 | 21.57 | 12.21 | 33.77 | 50.04 | 45.51 | 40.34 | 34.12 |
| Lane Group LOS | B | B | B | B | C | B | C | D | D | D | C |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 0.73 | 3.37 | 3.16 | 5.02 | 8.74 | 1.32 | 1.82 | 14.19 | 3.40 | 2.64 | 2.60 |
| 50th-Percentile Queue Length [ft] | 18.15 | 84.18 | 79.12 | 125.60 | 218.50 | 33.07 | 45.55 | 354.73 | 85.04 | 65.90 | 64.99 |
| 95th-Percentile Queue Length [veh] | 1.31 | 6.06 | 5.70 | 8.70 | 13.59 | 2.38 | 3.28 | 20.37 | 6.12 | 4.74 | 4.68 |
| 95th-Percentile Queue Length [ft] | 32.67 | 151.53 | 142.41 | 217.50 | 339.71 | 59.53 | 81.98 | 509.18 | 153.06 | 118.61 | 116.98 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 15.03 | 18.65 | 14.25 | 19.83 | 21.57 | 12.21 | 33.77 | 50.04 | 50.04 | 45.51 | 40.34 | 34.12 |
| Movement LOS | B | B | B | B | C | B | C | D | D | D | D | C |
| d_A, Approach Delay [s/veh] | 16.95 | | | 20.44 | | | 47.65 | | | 40.45 | | |
| Approach LOS | B | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 27.63 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.512 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 40: 38 - 19th Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.452 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 90.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 325.00 | 100.00 | 420.00 | 140.00 | 100.00 | 50.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 73 | 402 | 53 | 135 | 670 | 61 | 114 | 367 | 142 | 54 | 158 | 81 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.40 | 4.50 | 3.80 | 6.60 | 2.20 | 3.30 | 0.90 | 0.80 | 0.00 | 1.90 | 3.80 | 9.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 73 | 402 | 53 | 135 | 670 | 61 | 114 | 367 | 142 | 54 | 158 | 81 |
| Peak Hour Factor | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 19 | 106 | 14 | 35 | 176 | 16 | 29 | 94 | 36 | 14 | 40 | 21 |
| Total Analysis Volume [veh/h] | 77 | 423 | 56 | 142 | 705 | 64 | 116 | 374 | 145 | 55 | 161 | 83 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 28.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 30 | 0 | 5 | 30 | 0 | 5 | 15 | 15 | 5 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 35 | 0 | 8 | 35 | 0 | 14 | 39 | 39 | 8 | 33 | 33 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 53 | 45 | 45 | 53 | 45 | 45 | 27 | 21 | 31 | 27 | 18 | 28 |
| g / C, Green / Cycle | 0.58 | 0.50 | 0.50 | 0.58 | 0.50 | 0.50 | 0.30 | 0.23 | 0.34 | 0.30 | 0.20 | 0.31 |
| (v / s)_i Volume / Saturation Flow Rate | 0.09 | 0.13 | 0.13 | 0.15 | 0.21 | 0.21 | 0.08 | 0.20 | 0.09 | 0.05 | 0.09 | 0.06 |
| s, saturation flow rate [veh/h] | 825 | 1818 | 1745 | 966 | 1859 | 1805 | 1379 | 1885 | 1615 | 1139 | 1830 | 1471 |
| c, Capacity [veh/h] | 496 | 900 | 864 | 601 | 920 | 893 | 456 | 434 | 551 | 289 | 373 | 463 |
| d1, Uniform Delay [s] | 9.28 | 13.25 | 13.26 | 8.97 | 14.54 | 14.54 | 23.45 | 33.28 | 21.46 | 23.90 | 31.26 | 22.40 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.21 | 0.11 | 0.50 | 0.11 | 0.11 | 0.38 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.66 | 0.74 | 0.78 | 0.92 | 1.43 | 1.48 | 0.57 | 5.19 | 1.16 | 0.32 | 0.79 | 0.64 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.16 | 0.27 | 0.27 | 0.24 | 0.42 | 0.42 | 0.25 | 0.86 | 0.26 | 0.19 | 0.43 | 0.18 |
| d, Delay for Lane Group [s/veh] | 9.95 | 13.99 | 14.04 | 9.89 | 15.98 | 16.02 | 24.02 | 38.47 | 22.62 | 24.22 | 32.05 | 23.04 |
| Lane Group LOS | A | B | B | A | B | B | C | D | C | C | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 0.70 | 2.92 | 2.83 | 1.32 | 5.17 | 5.03 | 1.87 | 8.27 | 2.35 | 0.85 | 3.09 | 1.34 |
| 50th-Percentile Queue Length [ft] | 17.39 | 72.94 | 70.80 | 32.92 | 129.22 | 125.76 | 46.77 | 206.70 | 58.63 | 21.22 | 77.19 | 33.43 |
| 95th-Percentile Queue Length [veh] | 1.25 | 5.25 | 5.10 | 2.37 | 8.90 | 8.71 | 3.37 | 12.98 | 4.22 | 1.53 | 5.56 | 2.41 |
| 95th-Percentile Queue Length [ft] | 31.30 | 131.29 | 127.44 | 59.26 | 222.43 | 217.71 | 84.19 | 324.60 | 105.53 | 38.19 | 138.95 | 60.17 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.95 | 14.01 | 14.04 | 9.89 | 16.00 | 16.02 | 24.02 | 38.47 | 22.62 | 24.22 | 32.05 | 23.04 |
| Movement LOS | A | B | B | A | B | B | C | D | C | C | C | C |
| d_A, Approach Delay [s/veh] | 13.45 | | | 15.05 | | | 32.21 | | | 28.11 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 20.84 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.452 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 41: 39 - 7th Avenue / Durston Road / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 28.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.474 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Durston Road | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 70.00 | 100.00 | 100.00 | 50.00 | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Durston Road | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 36 | 308 | 19 | 73 | 552 | 81 | 103 | 250 | 78 | 21 | 106 | 35 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.80 | 4.50 | 0.00 | 1.40 | 3.60 | 2.50 | 0.00 | 1.20 | 2.60 | 9.50 | 4.70 | 14.30 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 36 | 308 | 19 | 73 | 552 | 81 | 103 | 250 | 78 | 21 | 106 | 35 |
| Peak Hour Factor | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 |
| Other Adjustment Factor | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Total 15-Minute Volume [veh/h] | 10 | 84 | 5 | 20 | 151 | 22 | 27 | 66 | 20 | 6 | 28 | 9 |
| Total Analysis Volume [veh/h] | 39 | 337 | 21 | 80 | 603 | 89 | 108 | 262 | 82 | 22 | 111 | 37 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 30 | 0 | 5 | 30 | 0 | 0 | 15 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 8 | 35 | 0 | 8 | 35 | 0 | 0 | 37 | 0 | 0 | 20 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 49 | 41 | 41 | 49 | 42 | 42 | 21 | 21 | 15 |
| g / C, Green / Cycle | 0.49 | 0.41 | 0.41 | 0.49 | 0.42 | 0.42 | 0.21 | 0.21 | 0.15 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.10 | 0.10 | 0.07 | 0.17 | 0.06 | 0.06 | 0.19 | 0.10 |
| s, saturation flow rate [veh/h] | 892 | 1818 | 1781 | 1111 | 3492 | 1576 | 1810 | 1802 | 1737 |
| c, Capacity [veh/h] | 435 | 748 | 733 | 572 | 1475 | 666 | 389 | 388 | 258 |
| d1, Uniform Delay [s] | 14.41 | 19.23 | 19.25 | 14.12 | 20.16 | 17.68 | 32.75 | 38.06 | 40.17 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.14 | 0.14 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.41 | 0.76 | 0.79 | 0.51 | 0.84 | 0.42 | 0.38 | 8.84 | 3.73 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

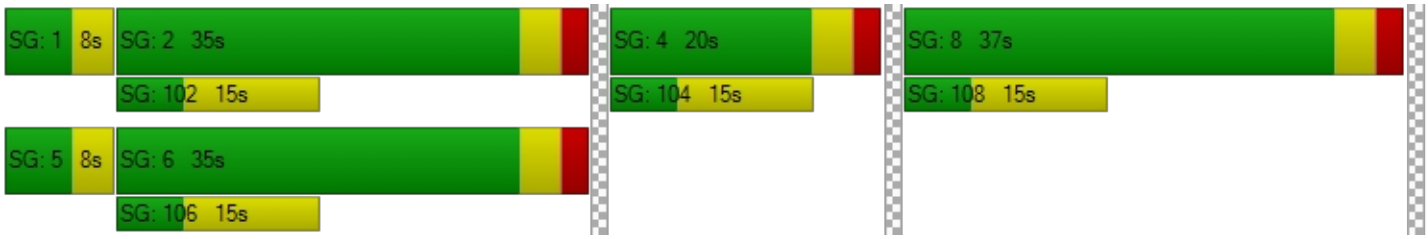
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.09 | 0.24 | 0.24 | 0.14 | 0.41 | 0.13 | 0.28 | 0.89 | 0.66 |
| d, Delay for Lane Group [s/veh] | 14.82 | 20.00 | 20.03 | 14.63 | 21.00 | 18.09 | 33.13 | 46.90 | 43.90 |
| Lane Group LOS | B | B | C | B | C | B | C | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | Yes | Yes |
| 50th-Percentile Queue Length [veh] | 0.50 | 2.85 | 2.82 | 1.03 | 4.96 | 1.32 | 2.22 | 9.00 | 4.18 |
| 50th-Percentile Queue Length [ft] | 12.57 | 71.22 | 70.41 | 25.85 | 123.98 | 32.90 | 55.39 | 225.03 | 104.51 |
| 95th-Percentile Queue Length [veh] | 0.91 | 5.13 | 5.07 | 1.86 | 8.61 | 2.37 | 3.99 | 13.92 | 7.52 |
| 95th-Percentile Queue Length [ft] | 22.63 | 128.19 | 126.74 | 46.53 | 215.28 | 59.22 | 99.71 | 348.04 | 188.12 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 14.82 | 20.01 | 20.03 | 14.63 | 21.00 | 18.09 | 33.13 | 46.90 | 46.90 | 43.90 | 43.90 | 43.90 |
| Movement LOS | B | C | C | B | C | B | C | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 19.50 | | | 20.00 | | | 43.61 | | | 43.90 | | |
| Approach LOS | B | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 28.12 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.474 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 42: 40 - 19th Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 44.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.523 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 230.00 | 100.00 | 113.00 | 200.00 | 100.00 | 100.00 | 250.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 60 | 323 | 120 | 107 | 655 | 203 | 142 | 753 | 42 | 103 | 350 | 61 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.70 | 0.80 | 0.90 | 2.30 | 3.90 | 3.50 | 1.30 | 0.00 | 1.00 | 2.80 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 60 | 323 | 120 | 107 | 655 | 203 | 142 | 753 | 42 | 103 | 350 | 61 |
| Peak Hour Factor | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 15 | 82 | 30 | 27 | 166 | 51 | 36 | 191 | 11 | 26 | 89 | 15 |
| Total Analysis Volume [veh/h] | 61 | 327 | 122 | 108 | 664 | 206 | 144 | 763 | 43 | 104 | 355 | 62 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 170 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 84.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 0 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lag | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 15 | 15 | 5 | 15 | 15 | 5 | 15 | 0 | 5 | 15 | 15 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 14 | 58 | 58 | 23 | 67 | 67 | 27 | 76 | 0 | 13 | 62 | 62 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 3.00 | 5.00 | 3.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 1.00 | 3.00 | 1.00 | 1.00 | 3.00 | 3.00 | 1.00 | 3.00 | 3.00 | 1.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 11 | 53 | 68 | 20 | 62 | 103 | 24 | 71 | 71 | 10 | 57 | 109 |
| g / C, Green / Cycle | 0.06 | 0.31 | 0.40 | 0.12 | 0.36 | 0.61 | 0.14 | 0.42 | 0.42 | 0.06 | 0.34 | 0.64 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.09 | 0.08 | 0.06 | 0.19 | 0.13 | 0.05 | 0.22 | 0.22 | 0.03 | 0.10 | 0.04 |
| s, saturation flow rate [veh/h] | 1440 | 3522 | 1602 | 1793 | 3536 | 1554 | 2702 | 1876 | 1841 | 3479 | 3519 | 1615 |
| c, Capacity [veh/h] | 119 | 1098 | 641 | 211 | 1290 | 942 | 392 | 783 | 769 | 205 | 1180 | 1036 |
| d1, Uniform Delay [s] | 79.61 | 44.38 | 33.12 | 70.42 | 42.24 | 15.22 | 68.05 | 36.81 | 36.81 | 77.61 | 41.77 | 11.38 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 15.04 | 0.69 | 0.66 | 8.61 | 1.47 | 0.53 | 2.64 | 2.45 | 2.50 | 8.74 | 0.66 | 0.11 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.51 | 0.30 | 0.19 | 0.51 | 0.51 | 0.22 | 0.37 | 0.52 | 0.52 | 0.51 | 0.30 | 0.06 |
| d, Delay for Lane Group [s/veh] | 94.66 | 45.08 | 33.78 | 79.03 | 43.71 | 15.75 | 70.69 | 39.26 | 39.31 | 86.36 | 42.42 | 11.49 |
| Lane Group LOS | F | D | C | E | D | B | E | D | D | F | D | B |
| Critical Lane Group | Yes | No | Yes | No | Yes | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 3.16 | 5.44 | 3.48 | 4.96 | 11.35 | 3.87 | 3.05 | 13.32 | 13.08 | 2.48 | 5.73 | 0.94 |
| 50th-Percentile Queue Length [ft] | 79.01 | 136.09 | 86.95 | 124.04 | 283.68 | 96.86 | 76.28 | 333.02 | 327.06 | 61.90 | 143.37 | 23.46 |
| 95th-Percentile Queue Length [veh] | 5.69 | 9.27 | 6.26 | 8.61 | 16.87 | 6.97 | 5.49 | 19.31 | 19.01 | 4.46 | 9.66 | 1.69 |
| 95th-Percentile Queue Length [ft] | 142.23 | 231.74 | 156.51 | 215.36 | 421.79 | 174.35 | 137.30 | 482.66 | 475.36 | 111.43 | 241.55 | 42.23 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 94.66 | 45.08 | 33.78 | 79.03 | 43.71 | 15.75 | 70.69 | 39.29 | 39.31 | 86.36 | 42.42 | 11.49 |
| Movement LOS | F | D | C | E | D | B | E | D | D | F | D | B |
| d_A, Approach Delay [s/veh] | 48.30 | | | 41.72 | | | 44.05 | | | 47.51 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 44.62 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.523 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 43: 41 - 7th Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 14.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.319 |

**Intersection Setup**

| Name | 7th Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | Yes | |

**volumes**

| Name | 7th Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 169 | 219 | 118 | 302 | 233 | 59 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.40 | 3.60 | 1.70 | 3.50 | 3.00 | 3.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 169 | 219 | 118 | 302 | 233 | 59 |
| Peak Hour Factor | 0.8540 | 0.8540 | 0.8540 | 0.8540 | 0.8540 | 0.8540 |
| Other Adjustment Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Total 15-Minute Volume [veh/h] | 46 | 60 | 32 | 82 | 63 | 16 |
| Total Analysis Volume [veh/h] | 184 | 238 | 129 | 329 | 254 | 64 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protected | Overlap | Protected | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 6 | 3 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | 3,6 | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 5 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 27 | 27 | 18 | 38 | 20 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | Yes | No | No | |
| Maximum Recall | No | No | No | No | No | |
| Pedestrian Recall | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | C | C |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 10 | 26 | 11 | 45 | 45 | 29 | 29 |
| g / C, Green / Cycle | 0.16 | 0.41 | 0.17 | 0.69 | 0.69 | 0.44 | 0.44 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.17 | 0.08 | 0.11 | 0.10 | 0.10 | 0.10 |
| s, saturation flow rate [veh/h] | 1590 | 1403 | 1601 | 1652 | 1503 | 1660 | 1550 |
| c, Capacity [veh/h] | 255 | 570 | 270 | 1239 | 1031 | 731 | 682 |
| d1, Uniform Delay [s] | 25.90 | 13.81 | 24.43 | 3.62 | 3.55 | 11.27 | 11.35 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.82 | 0.49 | 1.31 | 0.06 | 0.28 | 0.68 | 0.80 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

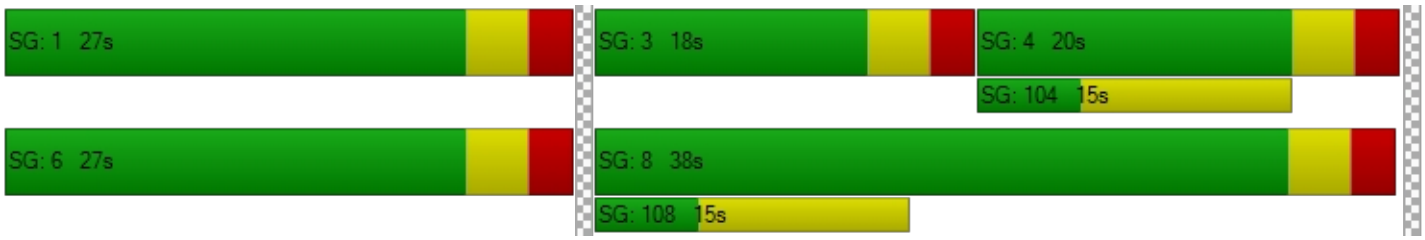
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.72 | 0.42 | 0.48 | 0.15 | 0.14 | 0.22 | 0.23 |
| d, Delay for Lane Group [s/veh] | 29.73 | 14.30 | 25.74 | 3.67 | 3.83 | 11.95 | 12.15 |
| Lane Group LOS | C | B | C | A | A | B | B |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 2.83 | 2.33 | 1.80 | 0.59 | 0.52 | 1.41 | 1.43 |
| 50th-Percentile Queue Length [ft] | 70.76 | 58.14 | 44.91 | 14.86 | 13.04 | 35.21 | 35.77 |
| 95th-Percentile Queue Length [veh] | 5.09 | 4.19 | 3.23 | 1.07 | 0.94 | 2.54 | 2.58 |
| 95th-Percentile Queue Length [ft] | 127.37 | 104.66 | 80.84 | 26.75 | 23.48 | 63.38 | 64.39 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.73 | 14.30 | 25.74 | 3.74 | 12.03 | 12.15 |
| Movement LOS | C | B | C | A | B | B |
| d_A, Approach Delay [s/veh] | 21.02 | | 9.94 | | 12.05 | |
| Approach LOS | C | | A | | B | |
| d_I, Intersection Delay [s/veh] | 14.40 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.319 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | - | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 44: 42 - 19th Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 0.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 39.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 108 | 0 | 0 | 108 | 0 | 0 | 12 | 0 | 0 | 12 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | C | C | C | C |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 103 | 103 | 103 | 103 | 103 | 7 | 7 |
| g / C, Green / Cycle | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.06 | 0.06 |
| (v / s)_i Volume / Saturation Flow Rate | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| s, saturation flow rate [veh/h] | 1296 | 1710 | 1710 | 1710 | 1710 | 1710 | 1710 |
| c, Capacity [veh/h] | 1123 | 1432 | 1432 | 1432 | 1432 | 127 | 127 |
| d1, Uniform Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d, Delay for Lane Group [s/veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Group LOS | A | A | A | A | A | A | A |
| Critical Lane Group | No | No | No | No | No | No | No |
| 50th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50th-Percentile Queue Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | A | A | A | | A | A | A | A | A | A | A | A |
| d_A, Approach Delay [s/veh] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.000 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 45: 43 - 19th Avenue / Koch Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 9.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.305 |

**Intersection Setup**

| Name | | | | 19th Avenue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 160.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | | | | 19th Avenue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 10 | 447 | 26 | 42 | 687 | 18 | 27 | 53 | 94 | 27 | 16 | 18 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 10.00 | 1.70 | 3.80 | 0.00 | 1.60 | 0.00 | 3.70 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 10 | 447 | 26 | 42 | 687 | 18 | 27 | 53 | 94 | 27 | 16 | 18 |
| Peak Hour Factor | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 3 | 115 | 7 | 11 | 177 | 5 | 7 | 14 | 25 | 7 | 4 | 5 |
| Total Analysis Volume [veh/h] | 10 | 461 | 27 | 43 | 709 | 19 | 29 | 56 | 100 | 28 | 17 | 19 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 73.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 58 | 0 | 0 | 58 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 68 | 68 | 68 | 68 | 68 | 68 | 12 | 12 |
| g / C, Green / Cycle | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.13 | 0.13 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.13 | 0.13 | 0.05 | 0.20 | 0.20 | 0.11 | 0.05 |
| s, saturation flow rate [veh/h] | 671 | 1868 | 1832 | 922 | 1870 | 1853 | 1694 | 1185 |
| c, Capacity [veh/h] | 527 | 1413 | 1386 | 715 | 1414 | 1401 | 271 | 215 |
| d1, Uniform Delay [s] | 5.12 | 3.08 | 3.08 | 4.58 | 3.32 | 3.32 | 37.92 | 35.13 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.07 | 0.27 | 0.27 | 0.16 | 0.44 | 0.45 | 3.03 | 0.77 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

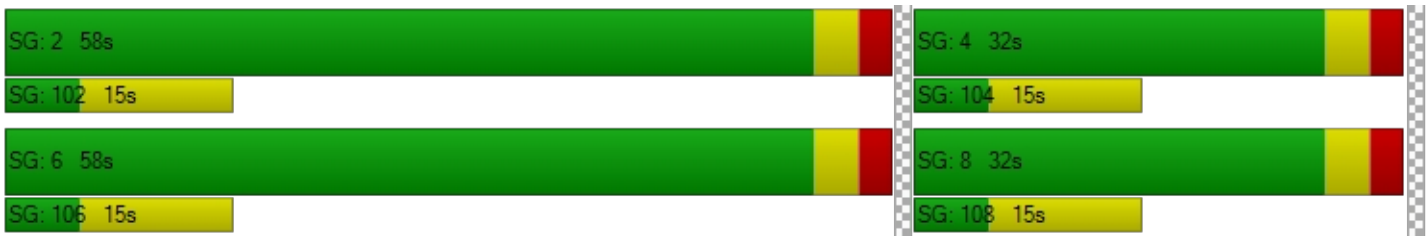
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.02 | 0.17 | 0.17 | 0.06 | 0.26 | 0.26 | 0.68 | 0.30 |
| d, Delay for Lane Group [s/veh] | 5.19 | 3.34 | 3.35 | 4.74 | 3.76 | 3.77 | 40.95 | 35.89 |
| Lane Group LOS | A | A | A | A | A | A | D | D |
| Critical Lane Group | No | No | No | No | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh] | 0.07 | 1.01 | 0.99 | 0.25 | 1.62 | 1.61 | 4.13 | 1.30 |
| 50th-Percentile Queue Length [ft] | 1.63 | 25.13 | 24.83 | 6.30 | 40.48 | 40.17 | 103.32 | 32.38 |
| 95th-Percentile Queue Length [veh] | 0.12 | 1.81 | 1.79 | 0.45 | 2.91 | 2.89 | 7.44 | 2.33 |
| 95th-Percentile Queue Length [ft] | 2.93 | 45.24 | 44.69 | 11.33 | 72.86 | 72.30 | 185.98 | 58.29 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 5.19 | 3.35 | 3.35 | 4.74 | 3.77 | 3.77 | 40.95 | 40.95 | 40.95 | 35.89 | 35.89 | 35.89 |
| Movement LOS | A | A | A | A | A | A | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 3.39 | | | 3.82 | | | 40.95 | | | 35.89 | | |
| Approach LOS | A | | | A | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 9.56 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.305 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 46: 44 - 19th Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.431 |

**Intersection Setup**

| Name | 19th Avenue | | | | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 450.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 300.00 | 100.00 | 300.00 | 175.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 120 | 407 | 88 | 168 | 529 | 33 | 67 | 329 | 218 | 63 | 150 | 53 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.80 | 1.00 | 0.00 | 0.60 | 1.00 | 3.00 | 1.50 | 0.00 | 0.00 | 0.00 | 1.30 | 5.70 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 120 | 407 | 88 | 168 | 529 | 33 | 67 | 329 | 218 | 63 | 150 | 53 |
| Peak Hour Factor | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 34 | 115 | 25 | 47 | 149 | 9 | 19 | 93 | 61 | 18 | 42 | 15 |
| Total Analysis Volume [veh/h] | 135 | 459 | 99 | 189 | 597 | 37 | 76 | 371 | 246 | 71 | 169 | 60 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 38.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 30 | 0 | 5 | 30 | 0 | 5 | 15 | 15 | 5 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 35 | 0 | 8 | 35 | 0 | 11 | 39 | 39 | 8 | 36 | 36 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 52 | 44 | 44 | 52 | 44 | 44 | 28 | 21 | 31 | 28 | 20 | 30 |
| g / C, Green / Cycle | 0.58 | 0.49 | 0.49 | 0.58 | 0.49 | 0.49 | 0.31 | 0.23 | 0.34 | 0.31 | 0.23 | 0.34 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.15 | 0.15 | 0.20 | 0.17 | 0.17 | 0.06 | 0.20 | 0.15 | 0.06 | 0.09 | 0.04 |
| s, saturation flow rate [veh/h] | 914 | 1881 | 1767 | 967 | 1881 | 1843 | 1327 | 1900 | 1615 | 1173 | 1876 | 1528 |
| c, Capacity [veh/h] | 556 | 925 | 869 | 591 | 925 | 906 | 445 | 435 | 549 | 304 | 425 | 516 |
| d1, Uniform Delay [s] | 9.32 | 13.73 | 13.74 | 9.49 | 14.02 | 14.02 | 22.70 | 33.26 | 23.13 | 23.85 | 29.58 | 20.54 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.17 | 0.11 | 0.50 | 0.11 | 0.11 | 0.18 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.04 | 0.87 | 0.94 | 1.42 | 1.03 | 1.05 | 0.27 | 4.86 | 2.64 | 0.39 | 0.60 | 0.16 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.24 | 0.31 | 0.31 | 0.32 | 0.35 | 0.35 | 0.17 | 0.85 | 0.45 | 0.23 | 0.40 | 0.12 |
| d, Delay for Lane Group [s/veh] | 10.36 | 14.60 | 14.68 | 10.91 | 15.05 | 15.07 | 22.98 | 38.12 | 25.77 | 24.24 | 30.18 | 20.71 |
| Lane Group LOS | B | B | B | B | B | B | C | D | C | C | C | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 1.27 | 3.55 | 3.36 | 1.84 | 4.05 | 3.97 | 1.18 | 8.15 | 4.36 | 1.10 | 3.13 | 0.88 |
| 50th-Percentile Queue Length [ft] | 31.67 | 88.64 | 84.12 | 45.89 | 101.20 | 99.33 | 29.48 | 203.87 | 108.99 | 27.47 | 78.19 | 21.94 |
| 95th-Percentile Queue Length [veh] | 2.28 | 6.38 | 6.06 | 3.30 | 7.29 | 7.15 | 2.12 | 12.84 | 7.78 | 1.98 | 5.63 | 1.58 |
| 95th-Percentile Queue Length [ft] | 57.01 | 159.55 | 151.41 | 82.60 | 182.15 | 178.79 | 53.06 | 320.95 | 194.60 | 49.45 | 140.74 | 39.49 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10.36 | 14.63 | 14.68 | 10.91 | 15.06 | 15.07 | 22.98 | 38.12 | 25.77 | 24.24 | 30.18 | 20.71 |
| Movement LOS | B | B | B | B | B | B | C | D | C | C | C | C |
| d_A, Approach Delay [s/veh] | 13.81 | | | 14.11 | | | 32.08 | | | 26.88 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 20.52 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.431 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 47: 45 - 19th Avenue / Graf Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.152 |

**Intersection Setup**

| Name | 19th Avenue | | 19th Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 400.00 | 100.00 | 100.00 | 380.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | 19th Avenue | | 19th Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 22 | 502 | 180 | 14 | 45 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.60 | 5.50 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 22 | 502 | 180 | 14 | 45 | 2 |
| Peak Hour Factor | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 | 0.8690 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 6 | 140 | 50 | 4 | 13 | 1 |
| Total Analysis Volume [veh/h] | 25 | 560 | 201 | 16 | 52 | 2 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.02 | 0.01 | 0.00 | 0.00 | 0.15 | 0.00 |
| d_M, Delay for Movement [s/veh] | 7.69 | 0.00 | 0.00 | 0.00 | 17.43 | 9.31 |
| Movement LOS | A | A | A | A | C | A |
| 95th-Percentile Queue Length [veh] | 0.06 | 0.00 | 0.00 | 0.00 | 0.53 | 0.01 |
| 95th-Percentile Queue Length [ft] | 1.40 | 0.00 | 0.00 | 0.00 | 13.28 | 0.18 |
| d_A, Approach Delay [s/veh] | 0.33 | | 0.00 | | 17.13 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 1.30 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 48: 46 - Harper Puckett Road / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 11.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.101 |

**Intersection Setup**

| Name | Harper Puckett Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Harper Puckett Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 57 | 18 | 13 | 121 | 108 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 5.30 | 0.00 | 0.00 | 1.70 | 3.70 | 7.10 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 57 | 18 | 13 | 121 | 108 | 14 |
| Peak Hour Factor | 0.8360 | 0.8360 | 0.8360 | 0.8360 | 0.8360 | 0.8360 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 17 | 5 | 4 | 35 | 31 | 4 |
| Total Analysis Volume [veh/h] | 68 | 22 | 15 | 139 | 124 | 16 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.10 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 11.03 | 9.61 | 7.50 | 0.00 | 0.00 | 0.00 |
| Movement LOS | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.42 | 0.42 | 0.35 | 0.35 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 10.60 | 10.60 | 8.85 | 8.85 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 10.68 | | 0.73 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 2.80 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 49: 47 - Flanders Mill Road / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.070 |

**Intersection Setup**

| Name | Flanders Mill Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Flanders Mill Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 30 | 101 | 137 | 84 | 87 | 111 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 2.20 | 4.80 | 3.30 | 4.50 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 30 | 101 | 137 | 84 | 87 | 111 |
| Peak Hour Factor | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 9 | 29 | 38 | 23 | 24 | 30 |
| Total Analysis Volume [veh/h] | 34 | 115 | 150 | 92 | 95 | 122 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.07 | 0.14 | 0.00 | 0.00 | 0.07 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 13.67 | 10.52 | 0.00 | 0.00 | 7.95 | 0.00 |
| Movement LOS | B | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.77 | 0.77 | 0.00 | 0.00 | 0.59 | 0.59 |
| 95th-Percentile Queue Length [ft] | 19.19 | 19.19 | 0.00 | 0.00 | 14.73 | 14.73 |
| d_A, Approach Delay [s/veh] | 11.24 | | 0.00 | | 3.48 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.00 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 50: 48 - Davis Lane / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 54.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Davis Lane | | | Davis Lane | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | Yes | | | No | | |

**volumes**

| Name | Davis Lane | | | Davis Lane | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 138 | 85 | 41 | 17 | 168 | 84 | 57 | 295 | 70 | 25 | 205 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 138 | 85 | 41 | 17 | 168 | 84 | 57 | 295 | 70 | 25 | 205 | 12 |
| Peak Hour Factor | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 | 0.8290 |
| Other Adjustment Factor | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 45 | 28 | 13 | 6 | 55 | 28 | 17 | 89 | 21 | 8 | 62 | 4 |
| Total Analysis Volume [veh/h] | 181 | 112 | 54 | 22 | 221 | 110 | 69 | 356 | 84 | 30 | 247 | 14 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | | |
|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 5.66 | 0.40 | 7.12 | 17.16 | 4.92 |
| 95th-Percentile Queue Length [ft] | 141.38 | 10.03 | 177.98 | 428.98 | 122.90 |
| Approach Delay [s/veh] | 28.84 | | 35.70 | 101.03 | 27.29 |
| Approach LOS | D | | E | F | D |
| Intersection Delay [s/veh] | 54.65 | | | | |
| Intersection LOS | F | | | | |

**Intersection Level Of Service Report**
**Intersection 51: 49 - Laurel Parkway / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Laurel Parkway | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 35.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Laurel Parkway | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 187 | 13 | 5 | 241 | 170 | 34 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.40 | 3.50 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 187 | 13 | 5 | 241 | 170 | 34 |
| Peak Hour Factor | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 50 | 3 | 1 | 62 | 44 | 9 |
| Total Analysis Volume [veh/h] | 200 | 14 | 5 | 248 | 175 | 35 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.50 | 0.06 | 1.52 | 1.16 |
| 95th-Percentile Queue Length [ft] | 37.60 | 1.46 | 37.90 | 29.09 |
| Approach Delay [s/veh] | 11.69 | | 10.35 | 9.75 |
| Approach LOS | B | | B | A |
| Intersection Delay [s/veh] | 10.59 | | | |
| Intersection LOS | B | | | |

**Intersection Level Of Service Report**
**Intersection 52: 50 - Cottonwood Road / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.526 |

**Intersection Setup**

| Name | Cottonwood Road | | | Cottonwood Road | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | Yes | | |

**volumes**

| Name | Cottonwood Road | | | Cottonwood Road | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 32 | 6 | 176 | 16 | 13 | 1 | 2 | 307 | 163 | 168 | 162 | 8 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.10 | 0.00 | 3.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.30 | 0.00 | 1.80 | 3.80 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 32 | 6 | 176 | 16 | 13 | 1 | 2 | 307 | 163 | 168 | 162 | 8 |
| Peak Hour Factor | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 9 | 2 | 47 | 4 | 3 | 0 | 1 | 79 | 42 | 43 | 42 | 2 |
| Total Analysis Volume [veh/h] | 34 | 6 | 188 | 17 | 14 | 1 | 2 | 316 | 168 | 173 | 167 | 8 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 6 | 34 | 0 | 6 | 34 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | No | No | |
| Maximum Recall | | No | | | No | | No | No | | No | No | |
| Pedestrian Recall | | No | | | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | L | C | L | C |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 24 | 24 | 27 | 20 | 26 | 25 |
| g / C, Green / Cycle | 0.40 | 0.40 | 0.45 | 0.34 | 0.44 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.16 | 0.03 | 0.00 | 0.30 | 0.18 | 0.11 |
| s, saturation flow rate [veh/h] | 1456 | 1213 | 1106 | 1606 | 940 | 1634 |
| c, Capacity [veh/h] | 644 | 571 | 536 | 541 | 349 | 682 |
| d1, Uniform Delay [s] | 12.98 | 11.21 | 12.17 | 18.92 | 13.82 | 11.45 |
| k, delay calibration | 0.50 | 0.50 | 0.11 | 0.16 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.52 | 0.19 | 0.00 | 7.83 | 1.09 | 0.20 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

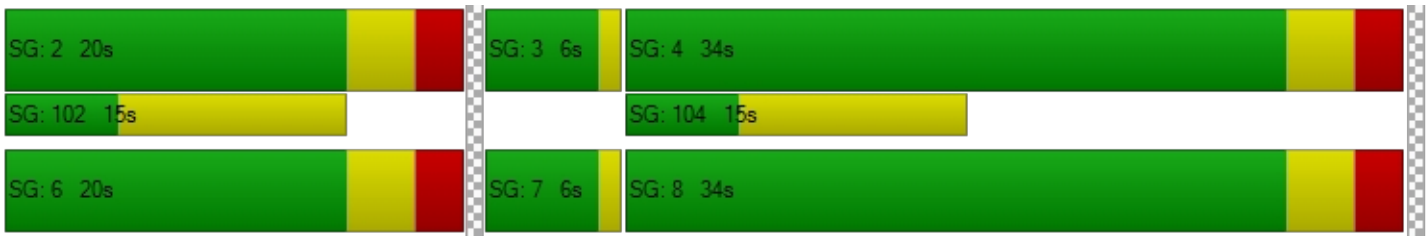
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.35 | 0.06 | 0.00 | 0.89 | 0.50 | 0.26 |
| d, Delay for Lane Group [s/veh] | 14.50 | 11.39 | 12.17 | 26.75 | 14.91 | 11.64 |
| Lane Group LOS | B | B | B | C | B | B |
| Critical Lane Group | Yes | No | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh] | 2.21 | 0.26 | 0.01 | 6.85 | 1.37 | 1.38 |
| 50th-Percentile Queue Length [ft] | 55.18 | 6.60 | 0.34 | 171.25 | 34.21 | 34.49 |
| 95th-Percentile Queue Length [veh] | 3.97 | 0.48 | 0.02 | 11.14 | 2.46 | 2.48 |
| 95th-Percentile Queue Length [ft] | 99.33 | 11.89 | 0.60 | 278.55 | 61.58 | 62.08 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 14.50 | 14.50 | 14.50 | 11.39 | 11.39 | 11.39 | 12.17 | 26.75 | 26.75 | 14.91 | 11.64 | 11.64 |
| Movement LOS | B | B | B | B | B | B | B | C | C | B | B | B |
| d_A, Approach Delay [s/veh] | 14.50 | | | 11.39 | | | 26.69 | | | 13.27 | | |
| Approach LOS | B | | | B | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 19.43 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.526 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 53: 51 - Flanders Mill Road / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 26.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.278 |

**Intersection Setup**

| Name | Flanders Mill Road | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | No | |

**volumes**

| Name | Flanders Mill Road | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 65 | 99 | 94 | 432 | 347 | 41 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.50 | 6.10 | 1.10 | 1.90 | 2.30 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 65 | 99 | 94 | 432 | 347 | 41 |
| Peak Hour Factor | 0.9460 | 0.9460 | 0.9460 | 0.9460 | 0.9460 | 0.9460 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 17 | 26 | 24 | 110 | 88 | 10 |
| Total Analysis Volume [veh/h] | 69 | 105 | 95 | 438 | 352 | 42 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.28 | 0.16 | 0.08 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 26.34 | 17.24 | 8.35 | 0.00 | 0.00 | 0.00 |
| Movement LOS | D | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 2.16 | 2.16 | 0.26 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 53.96 | 53.96 | 6.62 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 20.85 | | 1.49 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.02 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 54: 52 - Ferguson Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 17.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 68 | 114 | 53 | 2 | 166 | 107 | 154 | 189 | 133 | 74 | 198 | 4 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 0.00 | 0.00 | 3.60 | 1.80 | 3.20 | 0.00 | 1.50 | 0.00 | 1.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 68 | 114 | 53 | 2 | 166 | 107 | 154 | 189 | 133 | 74 | 198 | 4 |
| Peak Hour Factor | 0.9650 | 0.9650 | 0.9650 | 0.9650 | 0.9650 | 0.9650 | 0.9650 | 0.9650 | 0.9650 | 0.9650 | 0.9650 | 0.9650 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 17 | 28 | 13 | 1 | 43 | 28 | 38 | 47 | 33 | 18 | 49 | 1 |
| Total Analysis Volume [veh/h] | 68 | 113 | 53 | 2 | 172 | 111 | 153 | 188 | 132 | 74 | 197 | 4 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | | |
|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.30 | 3.06 | 5.06 | 0.87 | 3.04 |
| 95th-Percentile Queue Length [ft] | 57.55 | 76.40 | 126.46 | 21.80 | 76.00 |
| Approach Delay [s/veh] | 15.44 | 16.86 | 20.04 | | 17.31 |
| Approach LOS | C | C | C | | C |
| Intersection Delay [s/veh] | 17.88 | | | | |
| Intersection LOS | C | | | | |

**Intersection Level Of Service Report**
**Intersection 55: 53 - Fowler Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 14.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.023 |

**Intersection Setup**

| Name | Fowler Avenue | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Fowler Avenue | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 20 | 422 | 1 | 2 | 275 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.10 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 8 | 20 | 422 | 1 | 2 | 275 |
| Peak Hour Factor | 0.9240 | 0.9240 | 0.9240 | 0.9240 | 0.9240 | 0.9240 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 2 | 5 | 110 | 0 | 1 | 71 |
| Total Analysis Volume [veh/h] | 9 | 22 | 438 | 1 | 2 | 286 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.02 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 14.59 | 11.20 | 0.00 | 0.00 | 8.19 | 0.00 |
| Movement LOS | B | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.19 | 0.19 | 0.00 | 0.00 | 0.01 | 0.00 |
| 95th-Percentile Queue Length [ft] | 4.63 | 4.63 | 0.00 | 0.00 | 0.13 | 0.00 |
| d_A, Approach Delay [s/veh] | 12.19 | | 0.00 | | 0.06 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.52 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 56: 54 - Cottonwood Road / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.160 |

**Intersection Setup**

| Name | Cottonwood Road | | | Cottonwood Road | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 265.00 | 100.00 | 100.00 | 210.00 | 100.00 | 210.00 | 100.00 | 100.00 | 100.00 | 50.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Cottonwood Road | | | Cottonwood Road | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 6 | 199 | 32 | 21 | 313 | 12 | 17 | 12 | 5 | 50 | 5 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 0.00 | 0.00 | 0.30 | 8.30 | 5.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 6 | 199 | 32 | 21 | 313 | 12 | 17 | 12 | 5 | 50 | 5 | 12 |
| Peak Hour Factor | 0.8720 | 0.8720 | 0.8720 | 0.8720 | 0.8720 | 0.8720 | 0.8720 | 0.8720 | 0.8720 | 0.8720 | 0.8720 | 0.8720 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 57 | 9 | 6 | 90 | 3 | 5 | 3 | 1 | 14 | 1 | 3 |
| Total Analysis Volume [veh/h] | 7 | 228 | 37 | 24 | 359 | 14 | 19 | 14 | 6 | 57 | 6 | 14 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.06 | 0.04 | 0.01 | 0.16 | 0.02 | 0.02 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.03 | 0.00 | 0.00 | 7.80 | 0.00 | 0.00 | 16.20 | 15.42 | 10.69 | 17.01 | 14.81 | 9.61 |
| Movement LOS | A | A | A | A | A | A | C | C | B | C | B | A |
| 95th-Percentile Queue Length [veh] | 0.02 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.18 | 0.15 | 0.15 | 0.56 | 0.10 | 0.10 |
| 95th-Percentile Queue Length [ft] | 0.44 | 0.00 | 0.00 | 1.40 | 0.00 | 0.00 | 4.41 | 3.74 | 3.74 | 14.07 | 2.57 | 2.57 |
| d_A, Approach Delay [s/veh] | 0.21 | | | 0.47 | | | 15.07 | | | 15.50 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 2.58 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 58: 55 - 19th Avenue / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.558 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 325.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 245.00 | 100.00 | 100.00 | 150.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 75 | 342 | 48 | 120 | 986 | 63 | 117 | 214 | 179 | 60 | 134 | 46 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.70 | 3.50 | 2.10 | 1.60 | 2.10 | 0.00 | 0.90 | 1.90 | 1.70 | 6.70 | 6.00 | 2.20 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 75 | 342 | 48 | 120 | 986 | 63 | 117 | 214 | 179 | 60 | 134 | 46 |
| Peak Hour Factor | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 20 | 89 | 13 | 31 | 258 | 16 | 30 | 55 | 46 | 16 | 35 | 12 |
| Total Analysis Volume [veh/h] | 78 | 358 | 50 | 126 | 1032 | 66 | 121 | 222 | 185 | 62 | 139 | 48 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 36.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 10 | 30 | 0 | 0 | 15 | 0 | 0 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 13 | 35 | 0 | 22 | 44 | 0 | 0 | 38 | 0 | 0 | 38 | 38 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | No |
| Maximum Recall | No | No | | No | No | | | No | | | No | No |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 54 | 44 | 44 | 54 | 42 | 42 | 31 | 31 | 31 | 31 | 43 |
| g / C, Green / Cycle | 0.57 | 0.46 | 0.46 | 0.57 | 0.45 | 0.45 | 0.33 | 0.33 | 0.33 | 0.33 | 0.45 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.11 | 0.11 | 0.11 | 0.30 | 0.30 | 0.10 | 0.24 | 0.07 | 0.08 | 0.03 |
| s, saturation flow rate [veh/h] | 734 | 1836 | 1758 | 1100 | 1861 | 1822 | 1258 | 1726 | 931 | 1792 | 1580 |
| c, Capacity [veh/h] | 417 | 847 | 811 | 677 | 829 | 812 | 378 | 562 | 156 | 584 | 718 |
| d1, Uniform Delay [s] | 12.05 | 15.54 | 15.56 | 9.72 | 20.80 | 20.81 | 30.32 | 28.26 | 42.48 | 23.41 | 14.58 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.14 | 0.50 | 0.50 | 0.11 | 0.20 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.99 | 0.69 | 0.73 | 0.17 | 4.26 | 4.37 | 0.48 | 3.33 | 1.63 | 0.21 | 0.04 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.19 | 0.24 | 0.25 | 0.19 | 0.67 | 0.67 | 0.32 | 0.72 | 0.40 | 0.24 | 0.07 |
| d, Delay for Lane Group [s/veh] | 13.04 | 16.22 | 16.29 | 9.89 | 25.06 | 25.18 | 30.81 | 31.59 | 44.11 | 23.62 | 14.62 |
| Lane Group LOS | B | B | B | A | C | C | C | C | D | C | B |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 0.81 | 2.81 | 2.73 | 1.18 | 10.25 | 10.07 | 2.35 | 8.47 | 1.48 | 2.28 | 0.58 |
| 50th-Percentile Queue Length [ft] | 20.17 | 70.13 | 68.17 | 29.55 | 256.19 | 251.87 | 58.74 | 211.68 | 37.04 | 57.05 | 14.46 |
| 95th-Percentile Queue Length [veh] | 1.45 | 5.05 | 4.91 | 2.13 | 15.50 | 15.28 | 4.23 | 13.24 | 2.67 | 4.11 | 1.04 |
| 95th-Percentile Queue Length [ft] | 36.30 | 126.23 | 122.70 | 53.19 | 387.44 | 382.00 | 105.74 | 330.99 | 66.66 | 102.70 | 26.04 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 13.04 | 16.25 | 16.29 | 9.89 | 25.11 | 25.18 | 30.81 | 31.59 | 31.59 | 44.11 | 23.62 | 14.62 |
| Movement LOS | B | B | B | A | C | C | C | C | C | D | C | B |
| d_A, Approach Delay [s/veh] | 15.74 | | | 23.55 | | | 31.41 | | | 26.99 | | |
| Approach LOS | B | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.04 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.558 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 59: 56 - 7th Avenue / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.636 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Baxter Lane | | | Driveway | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 80.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Baxter Lane | | | Driveway | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 160 | 590 | 17 | 60 | 863 | 135 | 0 | 0 | 266 | 0 | 0 | 49 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 5.00 | 3.70 | 5.90 | 6.70 | 2.90 | 4.40 | 2.00 | 2.00 | 4.10 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 160 | 590 | 17 | 60 | 863 | 135 | 0 | 0 | 266 | 0 | 0 | 49 |
| Peak Hour Factor | 0.8660 | 0.8660 | 0.8660 | 0.8660 | 0.8660 | 0.8660 | 1.0000 | 1.0000 | 0.8660 | 1.0000 | 1.0000 | 0.8660 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 45 | 165 | 5 | 17 | 242 | 38 | 0 | 0 | 74 | 0 | 0 | 14 |
| Total Analysis Volume [veh/h] | 179 | 661 | 19 | 67 | 967 | 151 | 0 | 0 | 295 | 0 | 0 | 57 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 3 | | | 2 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.30 | 0.01 | 0.00 | 0.08 | 0.01 | 0.00 | 0.00 | 0.00 | 0.64 | 0.00 | 0.00 | 0.09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 13.53 | 0.00 | 0.00 | 9.46 | 0.00 | 0.00 | 0.00 | 0.00 | 25.38 | 0.00 | 0.00 | 11.04 |
| Movement LOS | B | A | A | A | A | A | | | D | | | B |
| 95th-Percentile Queue Length [veh] | 1.25 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 | 0.00 | 4.35 | 0.00 | 0.00 | 0.29 |
| 95th-Percentile Queue Length [ft] | 31.15 | 0.00 | 0.00 | 6.21 | 0.00 | 0.00 | 0.00 | 0.00 | 108.76 | 0.00 | 0.00 | 7.15 |
| d_A, Approach Delay [s/veh] | 2.82 | | | 0.53 | | | 25.38 | | | 11.04 | | |
| Approach LOS | A | | | A | | | D | | | B | | |
| d_I, Intersection Delay [s/veh] | 4.66 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 60: 57 - 7th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 21.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.522 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 150.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 160.00 | 100.00 | 100.00 | 215.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 63 | 359 | 51 | 207 | 651 | 204 | 252 | 224 | 113 | 37 | 142 | 89 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.20 | 5.60 | 3.90 | 4.30 | 2.30 | 5.40 | 2.00 | 4.90 | 3.50 | 8.10 | 8.50 | 7.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 63 | 359 | 51 | 207 | 651 | 204 | 252 | 224 | 113 | 37 | 142 | 89 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 0.9800 | 0.9800 | 0.9800 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 19 | 106 | 15 | 61 | 193 | 60 | 71 | 63 | 32 | 11 | 41 | 26 |
| Total Analysis Volume [veh/h] | 75 | 425 | 60 | 245 | 771 | 242 | 284 | 252 | 127 | 43 | 163 | 102 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | 6,8 | | | 5,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 10 | 30 | 30 | 10 | 30 | 30 | 8 | 15 | 15 | 8 | 15 | 0 |
| Maximum Green [s] | 25 | 90 | 90 | 25 | 90 | 90 | 25 | 45 | 45 | 25 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 14 | 36 | 36 | 13 | 35 | 35 | 11 | 30 | 30 | 11 | 30 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 46 | 33 | 45 | 46 | 34 | 72 | 34 | 24 | 39 | 34 | 23 |
| g / C, Green / Cycle | 0.52 | 0.37 | 0.50 | 0.52 | 0.38 | 0.80 | 0.37 | 0.27 | 0.43 | 0.37 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.12 | 0.04 | 0.22 | 0.22 | 0.16 | 0.22 | 0.14 | 0.08 | 0.04 | 0.16 |
| s, saturation flow rate [veh/h] | 931 | 3426 | 1554 | 1126 | 3536 | 1532 | 1287 | 1811 | 1560 | 1191 | 1640 |
| c, Capacity [veh/h] | 483 | 1268 | 769 | 620 | 1324 | 1233 | 434 | 493 | 678 | 431 | 414 |
| d1, Uniform Delay [s] | 12.51 | 20.39 | 11.95 | 12.78 | 22.53 | 2.04 | 24.23 | 27.70 | 15.68 | 18.80 | 30.00 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.19 | 0.11 | 0.12 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.68 | 0.71 | 0.20 | 1.88 | 1.88 | 0.36 | 7.47 | 0.82 | 0.24 | 0.10 | 1.89 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.16 | 0.34 | 0.08 | 0.40 | 0.58 | 0.20 | 0.65 | 0.51 | 0.19 | 0.10 | 0.64 |
| d, Delay for Lane Group [s/veh] | 13.19 | 21.10 | 12.14 | 14.66 | 24.40 | 2.40 | 31.70 | 28.52 | 15.92 | 18.90 | 31.88 |
| Lane Group LOS | B | C | B | B | C | A | C | C | B | B | C |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.82 | 3.24 | 0.65 | 2.96 | 6.62 | 0.70 | 5.22 | 4.60 | 1.60 | 0.58 | 5.22 |
| 50th-Percentile Queue Length [ft] | 20.39 | 81.03 | 16.23 | 73.99 | 165.58 | 17.43 | 130.49 | 115.03 | 40.11 | 14.39 | 130.49 |
| 95th-Percentile Queue Length [veh] | 1.47 | 5.83 | 1.17 | 5.33 | 10.84 | 1.25 | 8.97 | 8.12 | 2.89 | 1.04 | 8.97 |
| 95th-Percentile Queue Length [ft] | 36.70 | 145.86 | 29.22 | 133.18 | 271.09 | 31.37 | 224.16 | 202.97 | 72.20 | 25.90 | 224.16 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 13.19 | 21.10 | 12.14 | 14.66 | 24.40 | 2.40 | 31.70 | 28.52 | 15.92 | 18.90 | 31.88 | 31.88 |
| Movement LOS | B | C | B | B | C | A | C | C | B | B | C | C |
| d_A, Approach Delay [s/veh] | 19.08 | | | 18.27 | | | 27.47 | | | 30.07 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 21.93 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.522 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 61: 58 - 15th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 18.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.258 |

**Intersection Setup**

| Name | 15th Avenue | | | 15th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 105.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 15th Avenue | | | 15th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 52 | 4 | 57 | 8 | 11 | 15 | 9 | 561 | 145 | 34 | 284 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.90 | 0.00 | 3.50 | 0.00 | 0.00 | 6.70 | 0.00 | 1.40 | 2.80 | 2.90 | 5.60 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 52 | 4 | 57 | 8 | 11 | 15 | 9 | 561 | 145 | 34 | 284 | 2 |
| Peak Hour Factor | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 |
| Total 15-Minute Volume [veh/h] | 15 | 1 | 16 | 2 | 3 | 4 | 2 | 154 | 40 | 9 | 78 | 1 |
| Total Analysis Volume [veh/h] | 58 | 4 | 64 | 9 | 12 | 17 | 10 | 618 | 160 | 37 | 313 | 2 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 34 | 34 | 34 | 34 | 21 | 21 | 21 | 21 | 21 | 21 |
| g / C, Green / Cycle | 0.52 | 0.52 | 0.52 | 0.52 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.04 | 0.01 | 0.02 | 0.01 | 0.21 | 0.22 | 0.05 | 0.09 | 0.09 |
| s, saturation flow rate [veh/h] | 1377 | 1629 | 1354 | 1722 | 1081 | 1874 | 1743 | 685 | 1799 | 1795 |
| c, Capacity [veh/h] | 790 | 851 | 762 | 899 | 345 | 607 | 564 | 174 | 583 | 581 |
| d1, Uniform Delay [s] | 8.71 | 7.74 | 8.80 | 7.54 | 20.14 | 18.92 | 18.94 | 28.30 | 16.28 | 16.29 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.18 | 0.18 | 0.03 | 0.07 | 0.03 | 1.25 | 1.36 | 0.60 | 0.25 | 0.25 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

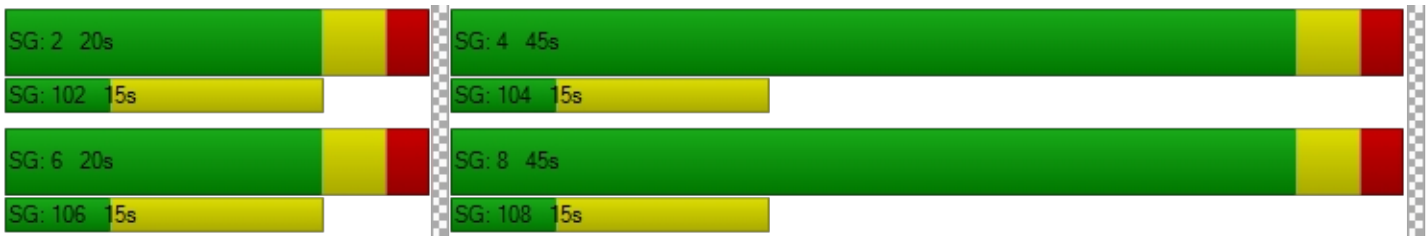
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.07 | 0.08 | 0.01 | 0.03 | 0.03 | 0.66 | 0.67 | 0.21 | 0.27 | 0.27 |
| d, Delay for Lane Group [s/veh] | 8.89 | 7.92 | 8.83 | 7.61 | 20.18 | 20.18 | 20.29 | 28.90 | 16.53 | 16.53 |
| Lane Group LOS | A | A | A | A | C | C | C | C | B | B |
| Critical Lane Group | Yes | No | No | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 0.42 | 0.45 | 0.06 | 0.19 | 0.12 | 4.98 | 4.66 | 0.56 | 1.65 | 1.64 |
| 50th-Percentile Queue Length [ft] | 10.50 | 11.31 | 1.62 | 4.67 | 2.92 | 124.53 | 116.58 | 13.91 | 41.17 | 41.12 |
| 95th-Percentile Queue Length [veh] | 0.76 | 0.81 | 0.12 | 0.34 | 0.21 | 8.64 | 8.20 | 1.00 | 2.96 | 2.96 |
| 95th-Percentile Queue Length [ft] | 18.91 | 20.36 | 2.92 | 8.40 | 5.25 | 216.04 | 205.12 | 25.04 | 74.11 | 74.02 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.89 | 7.92 | 7.92 | 8.83 | 7.61 | 7.61 | 20.18 | 20.22 | 20.29 | 28.90 | 16.53 | 16.53 |
| Movement LOS | A | A | A | A | A | A | C | C | C | C | B | B |
| d_A, Approach Delay [s/veh] | 8.37 | | | 7.90 | | | 20.23 | | | 17.83 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 18.08 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.258 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 62: 59 - 27th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.112 |

**Intersection Setup**

| Name | 27th Avenue | | | 27th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | Yes | | | No | | |

**volumes**

| Name | 27th Avenue | | | 27th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 18 | 54 | 51 | 23 | 46 | 29 | 40 | 358 | 29 | 15 | 218 | 28 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 11.10 | 1.90 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.40 | 0.00 | 6.70 | 7.30 | 3.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 18 | 54 | 51 | 23 | 46 | 29 | 40 | 358 | 29 | 15 | 218 | 28 |
| Peak Hour Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 5 | 15 | 14 | 6 | 12 | 8 | 11 | 96 | 8 | 4 | 59 | 8 |
| Total Analysis Volume [veh/h] | 19 | 58 | 55 | 25 | 49 | 31 | 43 | 385 | 31 | 16 | 234 | 30 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 1 | 1 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.08 | 0.19 | 0.08 | 0.11 | 0.16 | 0.04 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 25.00 | 21.70 | 15.62 | 25.85 | 21.21 | 14.19 | 7.84 | 0.00 | 0.00 | 8.27 | 0.00 | 0.00 |
| Movement LOS | D | C | C | D | C | B | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.54 | 1.54 | 1.54 | 1.28 | 1.28 | 1.28 | 0.10 | 0.00 | 0.00 | 0.43 | 0.21 | 0.00 |
| 95th-Percentile Queue Length [ft] | 38.56 | 38.56 | 38.56 | 32.09 | 32.09 | 32.09 | 2.54 | 0.00 | 0.00 | 10.70 | 5.35 | 0.00 |
| d_A, Approach Delay [s/veh] | 19.64 | | | 20.24 | | | 0.73 | | | 0.47 | | |
| Approach LOS | C | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 5.31 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 63: 60 - Davis Lane / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 46.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.701 |

**Intersection Setup**

| Name | Davis Lane | | Oak Street | | Oak Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | Yes | | No | |

**volumes**

| Name | Davis Lane | | Oak Street | | Oak Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 150 | 156 | 136 | 258 | 172 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.30 | 4.50 | 6.60 | 2.30 | 5.80 | 5.70 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 150 | 156 | 136 | 258 | 172 | 122 |
| Peak Hour Factor | 0.8400 | 0.8400 | 0.8400 | 0.8400 | 0.8400 | 0.8400 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 45 | 46 | 40 | 77 | 51 | 36 |
| Total Analysis Volume [veh/h] | 179 | 186 | 162 | 307 | 205 | 145 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.70 | 0.25 | 0.14 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 46.61 | 11.32 | 8.52 | 0.00 | 0.00 | 0.00 |
| Movement LOS | E | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 4.71 | 0.97 | 1.93 | 1.93 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 117.85 | 24.17 | 48.18 | 48.18 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 28.63 | | 2.94 | | 0.00 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 9.99 | | | | | |
| Intersection LOS | E | | | | | |

**Intersection Level Of Service Report**
**Intersection 64: 61 - Rouse Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 14.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.360 |

**Intersection Setup**

| Name | Rouse Avenue | | | Rouse Avenue | | | Oak Street | | | Birch Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 190.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Rouse Avenue | | | Rouse Avenue | | | Oak Street | | | Birch Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 119 | 315 | 0 | 0 | 317 | 94 | 139 | 4 | 194 | 2 | 1 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 10.10 | 3.20 | 0.00 | 0.00 | 4.40 | 5.30 | 2.20 | 0.00 | 3.60 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 119 | 315 | 0 | 0 | 317 | 94 | 139 | 4 | 194 | 2 | 1 | 0 |
| Peak Hour Factor | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 82 | 0 | 0 | 83 | 25 | 37 | 1 | 52 | 1 | 0 | 0 |
| Total Analysis Volume [veh/h] | 124 | 328 | 0 | 0 | 330 | 98 | 148 | 4 | 206 | 2 | 1 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 17 | 63 | 0 | 0 | 46 | 0 | 0 | 27 | 27 | 0 | 27 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | | No | | | No | No | | No | |
| Maximum Recall | No | No | | | No | | | No | No | | No | |
| Pedestrian Recall | No | No | | | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | R | C | R | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 66 | 66 | 51 | 51 | 51 | 14 | 31 | 14 |
| g / C, Green / Cycle | 0.74 | 0.74 | 0.57 | 0.57 | 0.57 | 0.15 | 0.34 | 0.15 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.20 | 0.00 | 0.20 | 0.07 | 0.12 | 0.15 | 0.01 |
| s, saturation flow rate [veh/h] | 992 | 1657 | 962 | 1638 | 1380 | 1228 | 1403 | 508 |
| c, Capacity [veh/h] | 721 | 1219 | 514 | 929 | 783 | 267 | 482 | 145 |
| d1, Uniform Delay [s] | 4.46 | 3.93 | 0.00 | 10.55 | 9.07 | 37.01 | 22.72 | 32.76 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.41 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.52 | 0.54 | 0.00 | 1.06 | 0.33 | 1.90 | 2.24 | 0.06 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.17 | 0.27 | 0.00 | 0.36 | 0.13 | 0.57 | 0.43 | 0.02 |
| d, Delay for Lane Group [s/veh] | 4.98 | 4.47 | 0.00 | 11.61 | 9.39 | 38.91 | 24.96 | 32.82 |
| Lane Group LOS | A | A | A | B | A | D | C | C |
| Critical Lane Group | Yes | No | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 0.61 | 1.70 | 0.00 | 3.55 | 0.91 | 3.33 | 3.57 | 0.06 |
| 50th-Percentile Queue Length [ft] | 15.14 | 42.51 | 0.00 | 88.79 | 22.70 | 83.20 | 89.15 | 1.43 |
| 95th-Percentile Queue Length [veh] | 1.09 | 3.06 | 0.00 | 6.39 | 1.63 | 5.99 | 6.42 | 0.10 |
| 95th-Percentile Queue Length [ft] | 27.25 | 76.52 | 0.00 | 159.83 | 40.86 | 149.75 | 160.46 | 2.58 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 4.98 | 4.47 | 4.47 | 0.00 | 11.61 | 9.39 | 38.91 | 38.91 | 24.96 | 32.82 | 32.82 | 32.82 |
| Movement LOS | A | A | A | A | B | A | D | D | C | C | C | C |
| d_A, Approach Delay [s/veh] | 4.61 | | | 11.10 | | | 30.88 | | | 32.82 | | |
| Approach LOS | A | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 14.50 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.360 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 65: 62 - 19th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 14.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.471 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 350.00 | 100.00 | 300.00 | 350.00 | 100.00 | 100.00 | 150.00 | 100.00 | 150.00 | 135.00 | 100.00 | 135.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 360 | 322 | 349 | 252 | 21 | 24 | 26 | 7 | 135 | 24 | 260 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.90 | 0.80 | 0.90 | 2.30 | 4.00 | 9.50 | 4.20 | 7.70 | 0.00 | 4.40 | 0.00 | 0.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 360 | 322 | 349 | 252 | 21 | 24 | 26 | 7 | 135 | 24 | 260 |
| Peak Hour Factor | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 9 | 100 | 90 | 97 | 70 | 6 | 7 | 8 | 2 | 38 | 7 | 73 |
| Total Analysis Volume [veh/h] | 38 | 402 | 359 | 390 | 281 | 23 | 28 | 30 | 8 | 151 | 27 | 290 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 69.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 35 | 0 | 27 | 54 | 0 | 0 | 28 | 0 | 0 | 28 | 28 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | No |
| Maximum Recall | No | No | | No | No | | | No | | | No | No |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 65 | 47 | 47 | 65 | 59 | 59 | 15 | 15 | 15 | 15 | 15 | 35 |
| g / C, Green / Cycle | 0.72 | 0.52 | 0.52 | 0.72 | 0.65 | 0.65 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.39 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.11 | 0.22 | 0.33 | 0.08 | 0.08 | 0.02 | 0.02 | 0.00 | 0.11 | 0.01 | 0.18 |
| s, saturation flow rate [veh/h] | 1107 | 3589 | 1601 | 1177 | 1827 | 1779 | 1349 | 1764 | 1615 | 1342 | 1900 | 1609 |
| c, Capacity [veh/h] | 867 | 1852 | 826 | 885 | 1192 | 1161 | 274 | 296 | 271 | 270 | 318 | 635 |
| d1, Uniform Delay [s] | 3.68 | 11.86 | 13.58 | 5.03 | 5.93 | 5.93 | 33.66 | 31.73 | 31.34 | 37.34 | 31.64 | 20.10 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.22 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.10 | 0.27 | 1.66 | 1.59 | 0.22 | 0.23 | 0.16 | 0.15 | 0.04 | 1.80 | 0.11 | 1.07 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

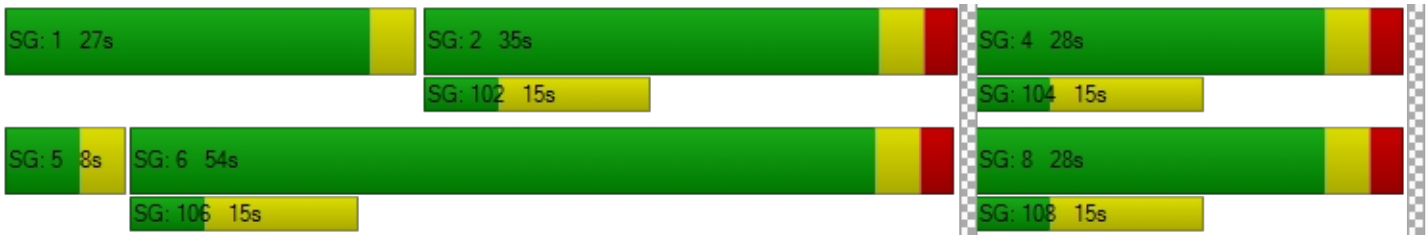
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.04 | 0.22 | 0.43 | 0.44 | 0.13 | 0.13 | 0.10 | 0.10 | 0.03 | 0.56 | 0.08 | 0.46 |
| d, Delay for Lane Group [s/veh] | 3.77 | 12.13 | 15.25 | 6.63 | 6.15 | 6.16 | 33.82 | 31.88 | 31.39 | 39.15 | 31.75 | 21.16 |
| Lane Group LOS | A | B | B | A | A | A | C | C | C | D | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.18 | 2.15 | 4.64 | 2.43 | 1.04 | 1.02 | 0.54 | 0.56 | 0.15 | 3.30 | 0.50 | 4.53 |
| 50th-Percentile Queue Length [ft] | 4.53 | 53.76 | 115.93 | 60.72 | 26.10 | 25.52 | 13.55 | 13.99 | 3.69 | 82.42 | 12.53 | 113.13 |
| 95th-Percentile Queue Length [veh] | 0.33 | 3.87 | 8.17 | 4.37 | 1.88 | 1.84 | 0.98 | 1.01 | 0.27 | 5.93 | 0.90 | 8.01 |
| 95th-Percentile Queue Length [ft] | 8.15 | 96.77 | 204.22 | 109.30 | 46.98 | 45.94 | 24.39 | 25.18 | 6.64 | 148.35 | 22.56 | 200.34 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 3.77 | 12.13 | 15.25 | 6.63 | 6.16 | 6.16 | 33.82 | 31.88 | 31.39 | 39.15 | 31.75 | 21.16 |
| Movement LOS | A | B | B | A | A | A | C | C | C | D | C | C |
| d_A, Approach Delay [s/veh] | 13.13 | | | 6.42 | | | 32.64 | | | 27.57 | | |
| Approach LOS | B | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 14.81 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.471 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 66: 63 - Willson Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.650 |

**Intersection Setup**

| Name | Kagy Boulevard | | | Kagy Boulevard | | | 3rd Avenue | | | Willson Avenue | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Eastbound | | | Westbound | | | Northeastbound | | | Southwestbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Pocket Length [ft] | 170.00 | 100.00 | 100.00 | 325.00 | 100.00 | 100.00 | 350.00 | 100.00 | 110.00 | 160.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Kagy Boulevard | | | Kagy Boulevard | | | 3rd Avenue | | | Willson Avenue | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 390 | 331 | 107 | 80 | 117 | 73 | 85 | 283 | 94 | 90 | 405 | 152 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.40 | 2.10 | 0.90 | 3.80 | 3.40 | 0.00 | 1.20 | 0.70 | 1.10 | 3.30 | 1.20 | 1.30 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 390 | 331 | 107 | 80 | 117 | 73 | 85 | 283 | 94 | 90 | 405 | 152 |
| Peak Hour Factor | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 | 0.8700 |
| Other Adjustment Factor | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 |
| Total 15-Minute Volume [veh/h] | 110 | 93 | 30 | 23 | 33 | 21 | 24 | 80 | 26 | 25 | 114 | 43 |
| Total Analysis Volume [veh/h] | 439 | 373 | 121 | 90 | 132 | 82 | 96 | 319 | 106 | 101 | 456 | 171 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 3 | 8 | 8 | 7 | 4 | 4 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | 8 | | | 1,4 | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 8 | 20 | 20 | 8 | 20 | 20 | 8 | 45 | 0 | 17 | 54 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 38 | 31 | 31 | 38 | 16 | 26 | 42 | 34 | 34 | 42 | 34 |
| g / C, Green / Cycle | 0.43 | 0.34 | 0.34 | 0.43 | 0.18 | 0.29 | 0.46 | 0.37 | 0.37 | 0.46 | 0.38 |
| (v / s)_i Volume / Saturation Flow Rate | 0.29 | 0.20 | 0.08 | 0.08 | 0.07 | 0.05 | 0.10 | 0.17 | 0.07 | 0.09 | 0.35 |
| s, saturation flow rate [veh/h] | 1531 | 1861 | 1601 | 1095 | 1838 | 1615 | 933 | 1887 | 1597 | 1144 | 1791 |
| c, Capacity [veh/h] | 702 | 640 | 551 | 424 | 339 | 475 | 282 | 706 | 597 | 515 | 677 |
| d1, Uniform Delay [s] | 19.81 | 24.21 | 20.94 | 16.91 | 32.26 | 23.62 | 19.51 | 21.22 | 18.89 | 14.64 | 26.80 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.13 | 0.19 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.18 | 3.84 | 0.92 | 1.14 | 3.36 | 0.17 | 0.71 | 0.45 | 0.14 | 0.22 | 9.67 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.63 | 0.58 | 0.22 | 0.21 | 0.39 | 0.17 | 0.34 | 0.45 | 0.18 | 0.20 | 0.93 |
| d, Delay for Lane Group [s/veh] | 23.99 | 28.05 | 21.86 | 18.05 | 35.62 | 23.79 | 20.22 | 21.67 | 19.03 | 14.86 | 36.47 |
| Lane Group LOS | C | C | C | B | D | C | C | C | B | B | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 7.47 | 6.99 | 1.91 | 1.22 | 2.81 | 1.30 | 1.13 | 4.99 | 1.47 | 1.17 | 14.04 |
| 50th-Percentile Queue Length [ft] | 186.85 | 174.68 | 47.73 | 30.49 | 70.24 | 32.49 | 28.20 | 124.79 | 36.83 | 29.13 | 351.00 |
| 95th-Percentile Queue Length [veh] | 11.96 | 11.32 | 3.44 | 2.20 | 5.06 | 2.34 | 2.03 | 8.66 | 2.65 | 2.10 | 20.19 |
| 95th-Percentile Queue Length [ft] | 298.93 | 283.06 | 85.91 | 54.88 | 126.44 | 58.48 | 50.76 | 216.39 | 66.29 | 52.44 | 504.63 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 23.99 | 28.05 | 21.86 | 18.05 | 35.62 | 23.79 | 20.22 | 21.67 | 19.03 | 14.86 | 36.47 | 36.47 |
| Movement LOS | C | C | C | B | D | C | C | C | B | B | D | D |
| d_A, Approach Delay [s/veh] | 25.34 | | | 27.23 | | | 20.87 | | | 33.47 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.01 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.650 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



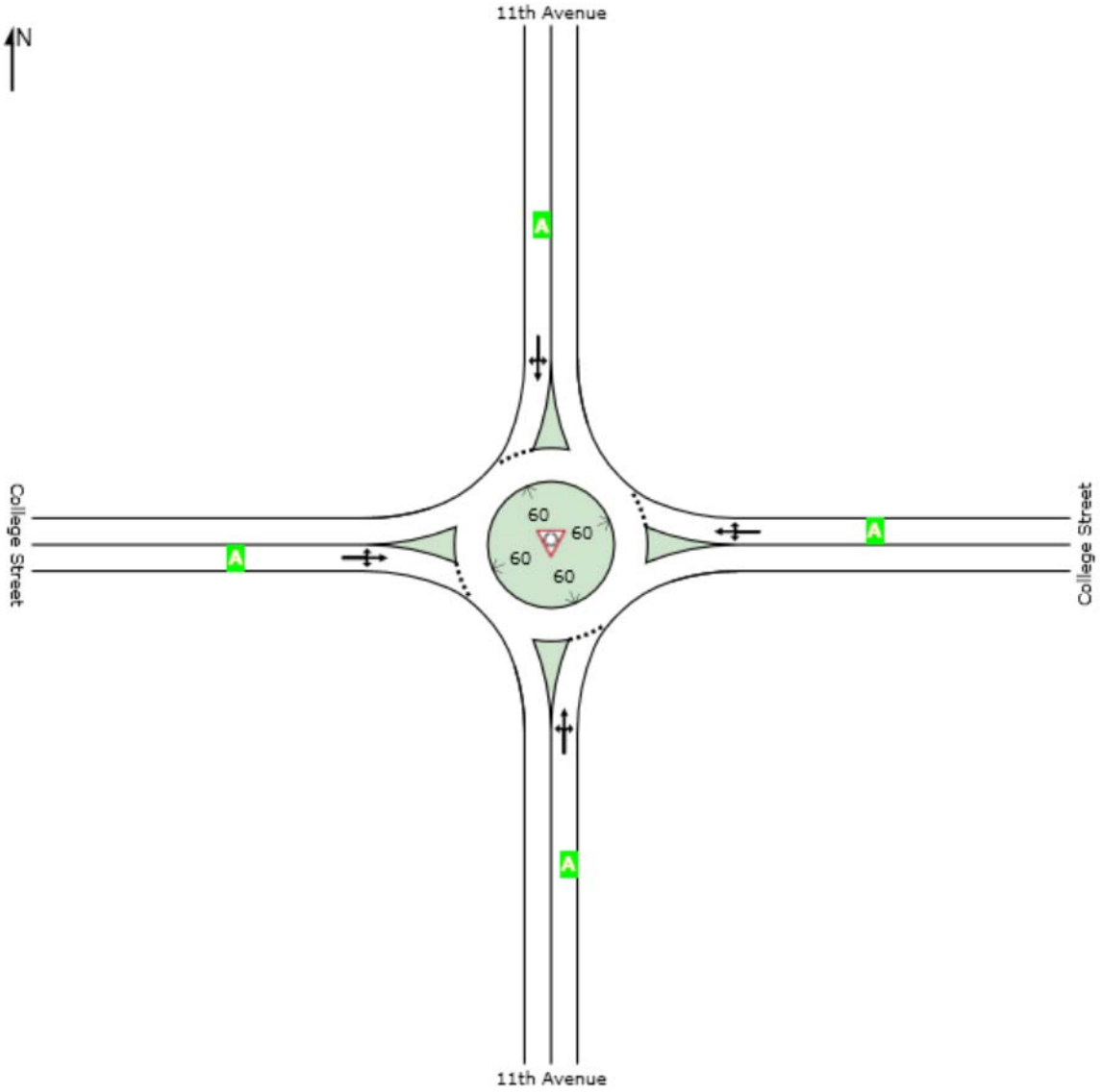
# LEVEL OF SERVICE

## Site: AM-2015-11th Avenue / College Street

New Site
Roundabout

**All Movement Classes**

| | South | East | North | West | Intersection |
|---|---|---|---|---|---|
| LOS | A | A | A | A | A |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

# MOVEMENT SUMMARY

## Site: AM-2015-11th Avenue / College Street

New Site
Roundabout

| Movement Performance - Vehicles | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
| South: 11th Avenue | | | | | | | | | | | |
| 3 | L2 | 73 | 0.0 | 0.215 | 6.1 | LOS A | 0.7 | 18.8 | 0.43 | 0.38 | 23.5 |
| 8 | T1 | 93 | 1.3 | 0.215 | 6.1 | LOS A | 0.7 | 18.8 | 0.43 | 0.38 | 23.3 |
| 18 | R2 | 31 | 0.0 | 0.215 | 6.1 | LOS A | 0.7 | 18.8 | 0.43 | 0.38 | 22.9 |
| Approach | | 198 | 0.6 | 0.215 | 6.1 | LOS A | 0.7 | 18.8 | 0.43 | 0.38 | 23.3 |
| East: College Street | | | | | | | | | | | |
| 1 | L2 | 57 | 0.0 | 0.411 | 7.8 | LOS A | 1.8 | 46.2 | 0.40 | 0.31 | 26.9 |
| 6 | T1 | 228 | 0.5 | 0.411 | 7.8 | LOS A | 1.8 | 46.2 | 0.40 | 0.31 | 27.0 |
| 16 | R2 | 153 | 0.0 | 0.411 | 7.8 | LOS A | 1.8 | 46.2 | 0.40 | 0.31 | 26.5 |
| Approach | | 438 | 0.3 | 0.411 | 7.8 | LOS A | 1.8 | 46.2 | 0.40 | 0.31 | 26.8 |
| North: 11th Avenue | | | | | | | | | | | |
| 7 | L2 | 89 | 0.0 | 0.454 | 9.0 | LOS A | 2.1 | 52.8 | 0.51 | 0.47 | 26.4 |
| 4 | T1 | 195 | 0.6 | 0.454 | 9.0 | LOS A | 2.1 | 52.8 | 0.51 | 0.47 | 26.5 |
| 14 | R2 | 156 | 0.0 | 0.454 | 9.0 | LOS A | 2.1 | 52.8 | 0.51 | 0.47 | 26.0 |
| Approach | | 440 | 0.3 | 0.454 | 9.0 | LOS A | 2.1 | 52.8 | 0.51 | 0.47 | 26.3 |
| West: College Street | | | | | | | | | | | |
| 5 | L2 | 66 | 0.0 | 0.446 | 8.9 | LOS A | 2.0 | 49.8 | 0.49 | 0.44 | 26.5 |
| 2 | T1 | 263 | 1.8 | 0.446 | 8.9 | LOS A | 2.0 | 49.8 | 0.49 | 0.44 | 26.6 |
| 12 | R2 | 99 | 1.2 | 0.446 | 8.9 | LOS A | 2.0 | 49.8 | 0.49 | 0.44 | 26.1 |
| Approach | | 429 | 1.4 | 0.446 | 8.9 | LOS A | 2.0 | 49.8 | 0.49 | 0.44 | 26.5 |
| All Vehicles | | 1504 | 0.6 | 0.454 | 8.3 | LOS A | 2.1 | 52.8 | 0.46 | 0.40 | 26.0 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Bozeman TMP

Vistro File: F:\...\BozemanTMP_LOS_+Future.vistro
Report File: F:\...\Existing PM.pdf

Scenario 2: Existing - PM
4/1/2016

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | 01 - Ferguson Avenue / Babcock Street | Two-way stop | HCM 2010 | WB Left | 0.498 | 67.4 | F |
| 2 | 02 - Fowler Avenue / Babcock Street | Two-way stop | HCM 2010 | NB Left | 0.610 | 45.0 | E |
| 3 | 03 - Ferguson Avenue / Huffine Lane | Signalized | HCM 2010 | SB Right | 0.468 | 13.6 | B |
| 4 | 04 - Fowler Avenue / Huffine Lane | Signalized | HCM 2010 | EB Left | 0.508 | 26.5 | C |
| 5 | 05 - 19th Avenue / Garfield Street | Signalized | HCM 2010 | EB Left | 0.500 | 12.6 | B |
| 6 | 06 - 19th Avenue / Stucky Road | Signalized | HCM 2010 | EB Left | 0.418 | 12.6 | B |
| 7 | 07 - 19th Avenue / Goldenstein Lane | Two-way stop | HCM 2010 | WB Left | 0.088 | 18.1 | C |
| 8 | 08 - 7th Avenue / Griffin Drive | Signalized | HCM 2010 | SB Left | 0.706 | 24.9 | C |
| 9 | 09 - Manley Road / Griffin Drive | Two-way stop | HCM 2010 | SB Left | 0.217 | 20.3 | C |
| 10 | 10 - Rouse Avenue / Griffin Drive | Signalized | HCM 2010 | EB Left | 0.294 | 13.7 | B |
| 11 | 11 - Story Mill Road / Bridger Drive | Two-way stop | HCM 2010 | NB Left | 0.029 | 18.0 | C |
| 12 | 12 - Wilson Avenue / Peach Street | Two-way stop | HCM 2010 | NB Left | 0.279 | 18.9 | C |
| 13 | 13 - Rouse Avenue / Peach Street | Two-way stop | HCM 2010 | EB Left | 0.346 | 74.4 | F |
| 14 | 14 - Willson Avenue / Mendenhall Street | Signalized | HCM 2010 | WB Right | 0.443 | 18.0 | B |
| 15 | 15 - Willson Avenue / Babcock Street | Signalized | HCM 2010 | EB Right | 0.370 | 12.5 | B |
| 16 | 16 - Broadway Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.439 | 9.7 | A |
| 17 | 17 - Highland Boulevard / Main Street | Signalized | HCM 2010 | NEB Left | 0.640 | 36.7 | D |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18 | 18 - Haggerty Lane / Main Street | Two-way stop | HCM 2010 | NEB Thru | 0.000 | 519.3 | F |
| 19 | 19 - Willson Avenue / College Street | Two-way stop | HCM 2010 | WB Left | 0.000 | 56.1 | F |
| 20 | 20 - Highland Boulevard / Ellis Street | Two-way stop | HCM 2010 | EB Left | 0.860 | 93.0 | F |
| 21 | 21 - Sourdough Road / Kagy Boulevard | Two-way stop | HCM 2010 | NB Left | 0.503 | 103.4 | F |
| 22 | 22 - Highland Boulevard / Kagy Boulevard | Two-way stop | HCM 2010 | NB Left | 0.030 | 59.8 | F |
| 23 | 23 - Wagon Wheel Road / 3rd Avenue | All-way stop | HCM 2010 | EB Left | | 9.1 | A |
| 27 | 25 - 11th Avenue / Grant Street | All-way stop | HCM 2010 | NB Thru | | 15.8 | C |
| 28 | 26 - 11th Avenue / Lincoln Street | All-way stop | HCM 2010 | NB Thru | | 14.4 | B |
| 29 | 27 - 11th Avenue / Kagy Boulevard | Signalized | HCM 2010 | NB Left | 0.744 | 28.5 | C |
| 30 | 28 - 8th Avenue / College Street | All-way stop | HCM 2010 | EB Thru | | 17.9 | C |
| 31 | 29 - 7th Avenue / Grant Street | All-way stop | HCM 2010 | EB Thru | | 10.3 | B |
| 32 | 30 - 7th Avenue / Kagy Boulevard | Two-way stop | HCM 2010 | SB Left | 0.344 | 71.1 | F |
| 33 | 31 - Valley Center Spur / Frontage Road | Two-way stop | HCM 2010 | NEB Left | 0.389 | 25.0 | C |
| 34 | 32 - Valley Center Spur / Valley Center Road | Two-way stop | HCM 2010 | SB Left | 0.322 | 19.7 | C |
| 35 | 33 - Nelson Road / Frontage Road | Two-way stop | HCM 2010 | SWB Left | 0.057 | 19.7 | C |
| 36 | 34 - 19th Avenue / I-90 EB Ramp | Two-way stop | HCM 2010 | SEB Left | 0.320 | 91.8 | F |
| 37 | 35 - 19th Avenue / I-90 WB Ramp | Signalized | HCM 2010 | NWB Left | 0.519 | 15.5 | B |
| 38 | 36 - 19th Avenue / Tschache Way | Signalized | HCM 2010 | EB Left | 0.422 | 14.5 | B |
| 39 | 37 - 19th Avenue / Oak Street | Signalized | HCM 2010 | WB Left | 0.556 | 24.5 | C |
| 40 | 38 - 19th Avenue / Durston Road | Signalized | HCM 2010 | EB Left | 0.562 | 27.6 | C |
| 41 | 39 - 7th Avenue / Durston Road / Peach Street | Signalized | HCM 2010 | WB Thru | 0.586 | 32.7 | C |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 42 | 40 - 19th Avenue / Main Street | Signalized | HCM 2010 | NB Left | 0.698 | 53.2 | D |
| 43 | 41 - 7th Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.398 | 12.7 | B |
| 44 | 42 - 19th Avenue / Babcock Street | Signalized | HCM 2010 | WB Right | 0.351 | 23.4 | C |
| 45 | 43 - 19th Avenue / Koch Street | Signalized | HCM 2010 | EB Right | 0.344 | 10.4 | B |
| 46 | 44 - 19th Avenue / College Street | Signalized | HCM 2010 | WB Thru | 0.443 | 20.8 | C |
| 47 | 45 - 19th Avenue / Graf Street | Two-way stop | HCM 2010 | EB Left | 0.088 | 16.1 | C |
| 48 | 46 - Harper Puckett Road / Baxter Lane | Two-way stop | HCM 2010 | SB Left | 0.067 | 11.2 | B |
| 49 | 47 - Flanders Mill Road / Baxter Lane | Two-way stop | HCM 2010 | NB Left | 0.177 | 16.0 | C |
| 50 | 48 - Davis Lane / Baxter Lane | All-way stop | HCM 2010 | EB Thru | | 32.8 | D |
| 51 | 49 - Laurel Parkway / Durston Road | All-way stop | HCM 2010 | WB Thru | | 11.2 | B |
| 52 | 50 - Cottonwood Road / Durston Road | Signalized | HCM 2010 | EB Thru | 0.504 | 18.7 | B |
| 53 | 51 - Flanders Mill Road / Durston Road | Two-way stop | HCM 2010 | SB Left | 0.261 | 34.8 | D |
| 54 | 52 - Ferguson Avenue / Durston Road | All-way stop | HCM 2010 | NB Thru | | 25.4 | D |
| 55 | 53 - Fowler Avenue / Durston Road | Two-way stop | HCM 2010 | NB Left | 0.010 | 16.8 | C |
| 56 | 54 - Cottonwood Road / Babcock Street | Two-way stop | HCM 2010 | EB Left | 0.124 | 23.9 | C |
| 58 | 55 - 19th Avenue / Baxter Lane | Signalized | HCM 2010 | WB Left | 0.523 | 24.5 | C |
| 59 | 56 - 7th Avenue / Baxter Lane | Two-way stop | HCM 2010 | EB Right | 0.628 | 23.5 | C |
| 60 | 57 - 7th Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 0.816 | 44.6 | D |
| 61 | 58 - 15th Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 0.385 | 16.9 | B |
| 62 | 59 - 27th Avenue / Oak Street | Two-way stop | HCM 2010 | SB Left | 0.092 | 34.1 | D |
| 63 | 60 - Davis Lane / Oak Street | Two-way stop | HCM 2010 | SB Left | 0.322 | 26.5 | D |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 64 | 61 - Rouse Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 0.460 | 13.2 | B |
| 65 | 62 - 19th Avenue / Kagy Boulevard | Signalized | HCM 2010 | WB Left | 0.497 | 18.5 | B |
| 66 | 63 - Willson Avenue / Kagy Boulevard | Signalized | HCM 2010 | EB Thru | 0.506 | 24.7 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 1: 01 - Ferguson Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 67.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.498 |

**Intersection Setup**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | Yes | | |

**volumes**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 64 | 400 | 43 | 38 | 340 | 12 | 4 | 64 | 44 | 47 | 90 | 73 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.80 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 64 | 400 | 43 | 38 | 340 | 12 | 4 | 64 | 44 | 47 | 90 | 73 |
| Peak Hour Factor | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 | 0.8730 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 18 | 110 | 12 | 10 | 93 | 3 | 1 | 18 | 12 | 13 | 26 | 21 |
| Total Analysis Volume [veh/h] | 70 | 440 | 47 | 42 | 374 | 13 | 4 | 70 | 48 | 54 | 103 | 84 |
| Pedestrian Volume [ped/h] | 0 | | | 3 | | | 0 | | | 4 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.06 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.05 | 0.37 | 0.07 | 0.50 | 0.54 | 0.14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.24 | 0.00 | 0.00 | 8.47 | 0.00 | 0.00 | 65.25 | 38.02 | 24.11 | 67.43 | 47.75 | 34.99 |
| Movement LOS | A | A | A | A | A | A | F | E | C | F | E | D |
| 95th-Percentile Queue Length [veh] | 2.59 | 2.59 | 2.59 | 1.93 | 1.93 | 1.93 | 2.55 | 2.55 | 2.55 | 2.24 | 4.52 | 4.52 |
| 95th-Percentile Queue Length [ft] | 64.65 | 64.65 | 64.65 | 48.37 | 48.37 | 48.37 | 63.81 | 63.81 | 63.81 | 56.02 | 113.10 | 113.10 |
| d_A, Approach Delay [s/veh] | 1.04 | | | 0.83 | | | 33.44 | | | 47.71 | | |
| Approach LOS | A | | | A | | | D | | | E | | |
| d_I, Intersection Delay [s/veh] | 12.24 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 2: 02 - Fowler Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 45.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.610 |

**Intersection Setup**

| Name | Fowler Avenue | | Babcock Street | | Babcock Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Fowler Avenue | | Babcock Street | | Babcock Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 163 | 151 | 170 | 79 | 119 | 286 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.60 | 0.00 | 0.80 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 163 | 151 | 170 | 79 | 119 | 286 |
| Peak Hour Factor | 0.8580 | 0.8580 | 0.8580 | 0.8580 | 0.8580 | 0.8580 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 47 | 44 | 48 | 22 | 33 | 80 |
| Total Analysis Volume [veh/h] | 190 | 176 | 190 | 88 | 133 | 320 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Stop | Free | Free |
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.61 | 0.22 | 0.00 | 0.00 | 0.10 | 0.00 |
| d_M, Delay for Movement [s/veh] | 45.03 | 37.92 | 0.00 | 0.00 | 8.11 | 0.00 |
| Movement LOS | E | E | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 7.87 | 7.87 | 0.00 | 0.00 | 0.34 | 0.00 |
| 95th-Percentile Queue Length [ft] | 196.74 | 196.74 | 0.00 | 0.00 | 8.59 | 0.00 |
| d_A, Approach Delay [s/veh] | 41.61 | | 0.00 | | 2.38 | |
| Approach LOS | E | | A | | A | |
| d_I, Intersection Delay [s/veh] | 14.86 | | | | | |
| Intersection LOS | E | | | | | |

**Intersection Level Of Service Report**
**Intersection 3: 03 - Ferguson Avenue / Huffine Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.468 |

**Intersection Setup**

| Name | Ferguson Avenue | | Huffine Lane | | Huffine Lane | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 0 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 110.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**volumes**

| Name | Ferguson Avenue | | Huffine Lane | | Huffine Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 259 | 222 | 157 | 952 | 1065 | 328 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.40 | 2.80 | 1.90 | 1.00 | 1.80 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 259 | 222 | 157 | 952 | 1065 | 328 |
| Peak Hour Factor | 0.9360 | 0.9360 | 0.9360 | 0.9360 | 0.9360 | 0.9360 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 66 | 57 | 41 | 247 | 276 | 85 |
| Total Analysis Volume [veh/h] | 266 | 228 | 163 | 987 | 1104 | 340 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 2 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 0 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - |
| Minimum Green [s] | 15 | 0 | 0 | 60 | 60 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 4.0 | 0.0 | 0.0 | 4.0 | 4.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 34 | 0 | 0 | 66 | 66 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 4.0 | 0.0 | 0.0 | 4.0 | 4.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | R |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| g_i, Effective Green Time [s] | 17 | 17 | 71 | 71 | 71 | 71 |
| g / C, Green / Cycle | 0.17 | 0.17 | 0.71 | 0.71 | 0.71 | 0.71 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.15 | 0.32 | 0.28 | 0.31 | 0.21 |
| s, saturation flow rate [veh/h] | 1802 | 1571 | 509 | 3582 | 3554 | 1613 |
| c, Capacity [veh/h] | 315 | 275 | 346 | 2525 | 2505 | 1137 |
| d1, Uniform Delay [s] | 39.93 | 39.81 | 15.63 | 6.00 | 6.31 | 5.51 |
| k, delay calibration | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 6.12 | 6.36 | 4.53 | 0.46 | 0.56 | 0.67 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.84 | 0.83 | 0.47 | 0.39 | 0.44 | 0.30 |
| d, Delay for Lane Group [s/veh] | 46.05 | 46.17 | 20.16 | 6.46 | 6.88 | 6.19 |
| Lane Group LOS | D | D | C | A | A | A |
| Critical Lane Group | Yes | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 6.79 | 5.83 | 2.81 | 3.76 | 4.43 | 2.49 |
| 50th-Percentile Queue Length [ft] | 169.86 | 145.86 | 70.23 | 94.05 | 110.77 | 62.27 |
| 95th-Percentile Queue Length [veh] | 11.07 | 9.80 | 5.06 | 6.77 | 7.88 | 4.48 |
| 95th-Percentile Queue Length [ft] | 276.73 | 244.89 | 126.42 | 169.29 | 197.07 | 112.09 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 46.05 | 46.17 | 20.16 | 6.46 | 6.88 | 6.19 |
| Movement LOS | D | D | C | A | A | A |
| d_A, Approach Delay [s/veh] | 46.10 | | 8.40 | | 6.71 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 13.64 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.468 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: 04 - Fowler Avenue / Huffine Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 26.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.508 |

**Intersection Setup**

| Name | Fowler Avenue | | | Fowler Avenue | | | Huffine Lane | | | Huffine Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Pocket Length [ft] | 253.00 | 100.00 | 100.00 | 76.00 | 100.00 | 100.00 | 100.00 | 100.00 | 280.00 | 365.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Fowler Avenue | | | Fowler Avenue | | | Huffine Lane | | | Huffine Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 293 | 292 | 33 | 92 | 148 | 28 | 114 | 844 | 294 | 24 | 768 | 156 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.30 | 0.30 | 3.00 | 1.10 | 0.00 | 0.00 | 0.60 | 1.60 | 0.00 | 4.50 | 1.80 | 0.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 293 | 292 | 33 | 92 | 148 | 28 | 114 | 844 | 294 | 24 | 768 | 156 |
| Peak Hour Factor | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 76 | 76 | 9 | 24 | 39 | 7 | 29 | 213 | 74 | 6 | 194 | 39 |
| Total Analysis Volume [veh/h] | 305 | 304 | 34 | 96 | 154 | 29 | 115 | 852 | 297 | 24 | 775 | 157 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 130 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 60 | 0 | 0 | 60 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 90 | 0 | 0 | 90 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 62 | 0 | 0 | 62 | 0 | 0 | 68 | 0 | 0 | 68 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| g / C, Green / Cycle | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| (v / s)_i Volume / Saturation Flow Rate | 0.25 | 0.16 | 0.02 | 0.09 | 0.05 | 0.05 | 0.19 | 0.24 | 0.18 | 0.04 | 0.26 | 0.26 |
| s, saturation flow rate [veh/h] | 1216 | 1894 | 1568 | 1080 | 1900 | 1798 | 606 | 3561 | 1615 | 629 | 1866 | 1759 |
| c, Capacity [veh/h] | 558 | 872 | 721 | 420 | 874 | 827 | 218 | 1649 | 748 | 234 | 864 | 814 |
| d1, Uniform Delay [s] | 29.88 | 22.57 | 19.37 | 31.31 | 19.92 | 19.95 | 43.00 | 24.64 | 22.97 | 34.69 | 25.23 | 25.23 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.82 | 1.10 | 0.12 | 1.27 | 0.24 | 0.27 | 1.98 | 0.25 | 0.34 | 0.19 | 0.59 | 0.62 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

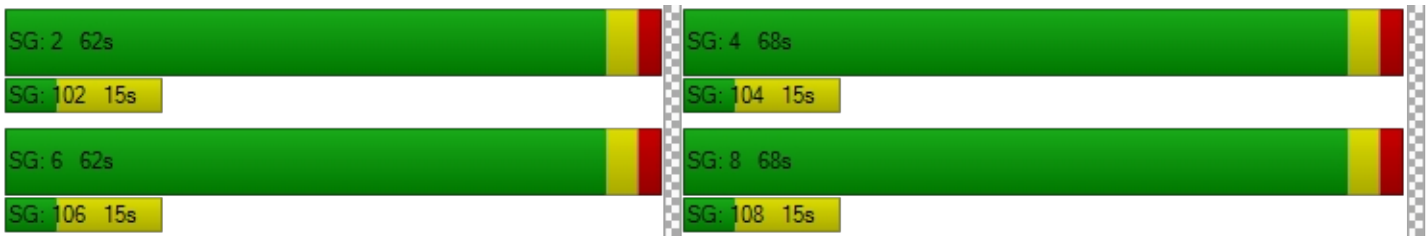
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.55 | 0.35 | 0.05 | 0.23 | 0.11 | 0.11 | 0.53 | 0.52 | 0.40 | 0.10 | 0.56 | 0.56 |
| d, Delay for Lane Group [s/veh] | 33.70 | 23.67 | 19.49 | 32.58 | 20.16 | 20.21 | 44.98 | 24.89 | 23.31 | 34.88 | 25.82 | 25.86 |
| Lane Group LOS | C | C | B | C | C | C | D | C | C | C | C | C |
| Critical Lane Group | Yes | No | No | No | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 8.03 | 6.27 | 0.60 | 2.36 | 1.68 | 1.64 | 3.47 | 9.32 | 6.09 | 0.59 | 10.82 | 10.20 |
| 50th-Percentile Queue Length [ft] | 200.85 | 156.82 | 15.03 | 59.04 | 41.92 | 40.93 | 86.65 | 232.92 | 152.21 | 14.67 | 270.51 | 255.10 |
| 95th-Percentile Queue Length [veh] | 12.68 | 10.38 | 1.08 | 4.25 | 3.02 | 2.95 | 6.24 | 14.32 | 10.13 | 1.06 | 16.22 | 15.44 |
| 95th-Percentile Queue Length [ft] | 317.06 | 259.51 | 27.05 | 106.27 | 75.45 | 73.67 | 155.98 | 358.07 | 253.37 | 26.40 | 405.38 | 386.07 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 33.70 | 23.67 | 19.49 | 32.58 | 20.18 | 20.21 | 44.98 | 24.89 | 23.31 | 34.88 | 25.83 | 25.86 |
| Movement LOS | C | C | B | C | C | C | D | C | C | C | C | C |
| d_A, Approach Delay [s/veh] | 28.21 | | | 24.45 | | | 26.35 | | | 26.06 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 26.47 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.508 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 5: 05 - 19th Avenue / Garfield Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.500 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Garfield Street | | | Garfield Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 280.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Garfield Street | | | Garfield Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 488 | 863 | 16 | 57 | 710 | 52 | 34 | 23 | 364 | 11 | 21 | 66 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 488 | 863 | 16 | 57 | 710 | 52 | 34 | 23 | 364 | 11 | 21 | 66 |
| Peak Hour Factor | 0.9480 | 0.9480 | 0.9480 | 0.9480 | 0.9480 | 0.9480 | 0.9480 | 0.9480 | 0.9480 | 0.9480 | 0.9480 | 0.9480 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 124 | 218 | 4 | 14 | 180 | 13 | 9 | 6 | 96 | 3 | 6 | 17 |
| Total Analysis Volume [veh/h] | 494 | 874 | 16 | 58 | 719 | 53 | 36 | 24 | 384 | 12 | 22 | 70 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 1 | | | 4 | | |
| Bicycle Volume [bicycles/h] | 3 | | | 3 | | | 2 | | | 1 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Overlap | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 6 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | 6,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 60 | 0 | 10 | 60 | 0 | 0 | 20 | 60 | 0 | 20 | 0 |
| Maximum Green [s] | 30 | 90 | 0 | 30 | 90 | 0 | 0 | 45 | 90 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 27 | 82 | 0 | 13 | 68 | 0 | 0 | 25 | 68 | 0 | 25 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | No | | No | |
| Maximum Recall | No | No | | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 90 | 78 | 78 | 90 | 73 | 73 | 20 | 20 | 98 | 20 | 20 |
| g / C, Green / Cycle | 0.75 | 0.65 | 0.65 | 0.75 | 0.61 | 0.61 | 0.17 | 0.17 | 0.81 | 0.17 | 0.17 |
| (v / s)_i Volume / Saturation Flow Rate | 0.55 | 0.23 | 0.24 | 0.08 | 0.21 | 0.21 | 0.03 | 0.01 | 0.24 | 0.01 | 0.06 |
| s, saturation flow rate [veh/h] | 898 | 1900 | 1886 | 760 | 1900 | 1848 | 1324 | 1900 | 1595 | 1409 | 1655 |
| c, Capacity [veh/h] | 686 | 1242 | 1233 | 592 | 1149 | 1117 | 194 | 317 | 1297 | 256 | 276 |
| d1, Uniform Delay [s] | 7.49 | 9.41 | 9.42 | 4.64 | 11.80 | 11.82 | 49.84 | 42.20 | 2.76 | 44.83 | 44.12 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.37 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 6.41 | 0.81 | 0.82 | 0.24 | 0.80 | 0.83 | 0.46 | 0.10 | 0.58 | 0.07 | 0.70 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.72 | 0.36 | 0.36 | 0.10 | 0.34 | 0.34 | 0.19 | 0.08 | 0.30 | 0.05 | 0.33 |
| d, Delay for Lane Group [s/veh] | 13.90 | 10.22 | 10.24 | 4.88 | 12.61 | 12.65 | 50.29 | 42.30 | 3.35 | 44.90 | 44.82 |
| Lane Group LOS | B | B | B | A | B | B | D | D | A | D | D |
| Critical Lane Group | Yes | No | No | Yes | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 4.92 | 5.33 | 5.31 | 0.37 | 5.31 | 5.20 | 1.03 | 0.61 | 1.89 | 0.32 | 2.48 |
| 50th-Percentile Queue Length [ft] | 123.11 | 133.25 | 132.70 | 9.16 | 132.67 | 129.89 | 25.67 | 15.35 | 47.32 | 7.94 | 61.97 |
| 95th-Percentile Queue Length [veh] | 8.56 | 9.12 | 9.09 | 0.66 | 9.08 | 8.93 | 1.85 | 1.11 | 3.41 | 0.57 | 4.46 |
| 95th-Percentile Queue Length [ft] | 214.09 | 227.91 | 227.16 | 16.50 | 227.12 | 223.34 | 46.20 | 27.63 | 85.18 | 14.29 | 111.55 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 13.90 | 10.23 | 10.24 | 4.88 | 12.63 | 12.65 | 50.29 | 42.30 | 3.35 | 44.90 | 44.82 | 44.82 |
| Movement LOS | B | B | B | A | B | B | D | D | A | D | D | D |
| d_A, Approach Delay [s/veh] | 11.54 | | | 12.09 | | | 9.26 | | | 44.83 | | |
| Approach LOS | B | | | B | | | A | | | D | | |
| d_I, Intersection Delay [s/veh] | 12.59 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.500 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: 06 - 19th Avenue / Stucky Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.418 |

**Intersection Setup**

| Name | 19th Avenue | | 19th Avenue | | Stucky Road | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 1 |
| Pocket Length [ft] | 400.00 | 100.00 | 100.00 | 100.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | 19th Avenue | | 19th Avenue | | Stucky Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 26 | 240 | 433 | 309 | 334 | 35 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.20 | 0.70 | 0.60 | 0.90 | 5.70 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 26 | 240 | 433 | 309 | 334 | 35 |
| Peak Hour Factor | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 7 | 60 | 109 | 78 | 84 | 9 |
| Total Analysis Volume [veh/h] | 26 | 242 | 436 | 311 | 336 | 35 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 6 | 0 | 3 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 4.0 | 4.0 | 0.0 | 4.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 21 | 21 | 0 | 39 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 4.0 | 4.0 | 0.0 | 4.0 | 0.0 |
| Minimum Recall | | No | No | | No | |
| Maximum Recall | | No | No | | No | |
| Pedestrian Recall | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | R | L | R |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| g_i, Effective Green Time [s] | 34 | 34 | 34 | 34 | 14 | 14 |
| g / C, Green / Cycle | 0.57 | 0.57 | 0.57 | 0.57 | 0.23 | 0.23 |
| (v / s)_i Volume / Saturation Flow Rate | 0.03 | 0.13 | 0.23 | 0.19 | 0.19 | 0.02 |
| s, saturation flow rate [veh/h] | 968 | 1877 | 1887 | 1605 | 1793 | 1528 |
| c, Capacity [veh/h] | 502 | 1076 | 1082 | 920 | 407 | 346 |
| d1, Uniform Delay [s] | 11.30 | 6.27 | 7.11 | 6.78 | 22.07 | 18.36 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.20 | 0.48 | 1.12 | 1.00 | 4.31 | 0.13 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

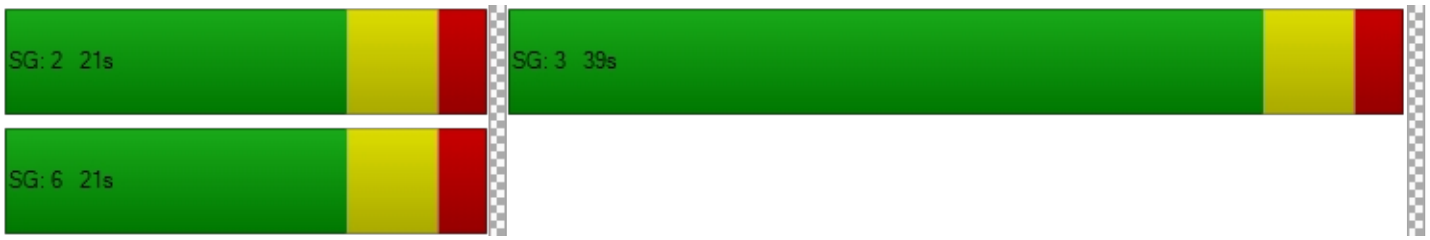
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.05 | 0.22 | 0.40 | 0.34 | 0.83 | 0.10 |
| d, Delay for Lane Group [s/veh] | 11.50 | 6.76 | 8.23 | 7.77 | 26.38 | 18.48 |
| Lane Group LOS | B | A | A | A | C | B |
| Critical Lane Group | No | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 0.22 | 1.32 | 2.73 | 1.88 | 4.63 | 0.37 |
| 50th-Percentile Queue Length [ft] | 5.49 | 32.91 | 68.19 | 47.03 | 115.68 | 9.27 |
| 95th-Percentile Queue Length [veh] | 0.40 | 2.37 | 4.91 | 3.39 | 8.15 | 0.67 |
| 95th-Percentile Queue Length [ft] | 9.88 | 59.24 | 122.75 | 84.65 | 203.87 | 16.69 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 11.50 | 6.76 | 8.23 | 7.77 | 26.38 | 18.48 |
| Movement LOS | B | A | A | A | C | B |
| d_A, Approach Delay [s/veh] | 7.22 | | 8.04 | | 25.64 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 12.59 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.418 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: 07 - 19th Avenue / Goldenstein Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 18.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.088 |

**Intersection Setup**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 135 | 31 | 158 | 290 | 25 | 95 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.50 | 0.00 | 1.30 | 1.70 | 4.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 135 | 31 | 158 | 290 | 25 | 95 |
| Peak Hour Factor | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 | 0.9270 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 35 | 8 | 41 | 75 | 7 | 26 |
| Total Analysis Volume [veh/h] | 140 | 32 | 164 | 300 | 27 | 102 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.12 | 0.00 | 0.09 | 0.11 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 7.89 | 0.00 | 18.09 | 10.44 |
| Movement LOS | A | A | A | A | C | B |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 1.45 | 1.45 | 0.75 | 0.75 |
| 95th-Percentile Queue Length [ft] | 0.00 | 0.00 | 36.37 | 36.37 | 18.71 | 18.71 |
| d_A, Approach Delay [s/veh] | 0.00 | | 2.79 | | 12.04 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 3.72 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: 08 - 7th Avenue / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.706 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Mandeville Lane | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Mandeville Lane | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 22 | 373 | 214 | 74 | 292 | 6 | 4 | 7 | 29 | 467 | 5 | 144 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.60 | 6.10 | 9.60 | 1.70 | 0.00 | 0.00 | 0.00 | 3.40 | 2.10 | 0.00 | 2.10 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 22 | 373 | 214 | 74 | 292 | 6 | 4 | 7 | 29 | 467 | 5 | 144 |
| Peak Hour Factor | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 | 0.8760 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 6 | 102 | 59 | 20 | 80 | 2 | 1 | 2 | 8 | 128 | 1 | 39 |
| Total Analysis Volume [veh/h] | 24 | 409 | 235 | 81 | 320 | 7 | 5 | 8 | 33 | 512 | 5 | 158 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 1 | | |
| Bicycle Volume [bicycles/h] | 3 | | | 3 | | | 0 | | | 2 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 20 | 0 | 0 | 20 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 0 | 60 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 35 | 0 | 0 | 35 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | C | C |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 31 | 31 | 31 | 31 | 39 | 39 |
| g / C, Green / Cycle | 0.39 | 0.39 | 0.39 | 0.39 | 0.49 | 0.49 |
| (v / s)_i Volume / Saturation Flow Rate | 0.24 | 0.16 | 0.09 | 0.18 | 0.03 | 0.47 |
| s, saturation flow rate [veh/h] | 1831 | 1485 | 905 | 1860 | 1756 | 1437 |
| c, Capacity [veh/h] | 761 | 579 | 245 | 725 | 902 | 777 |
| d1, Uniform Delay [s] | 19.38 | 17.69 | 30.16 | 18.07 | 10.90 | 19.90 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.40 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.07 | 2.11 | 3.58 | 2.02 | 0.02 | 10.48 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

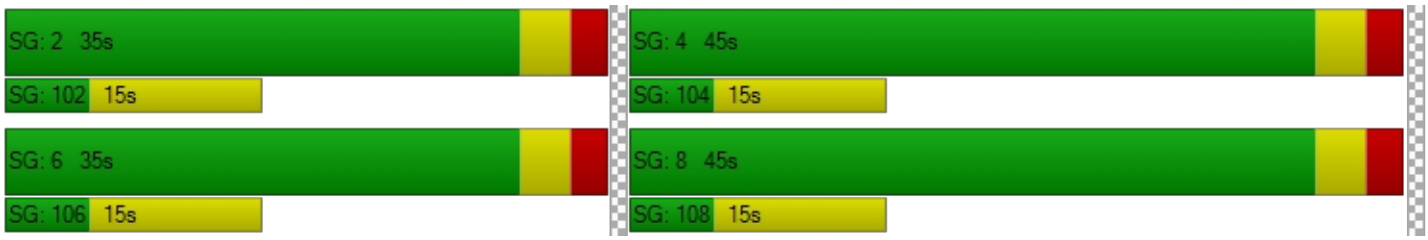
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.57 | 0.41 | 0.33 | 0.45 | 0.05 | 0.87 |
| d, Delay for Lane Group [s/veh] | 22.45 | 19.80 | 33.74 | 20.09 | 10.92 | 30.38 |
| Lane Group LOS | C | B | C | C | B | C |
| Critical Lane Group | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 6.67 | 3.32 | 1.63 | 4.64 | 0.41 | 13.13 |
| 50th-Percentile Queue Length [ft] | 166.67 | 83.01 | 40.64 | 116.11 | 10.26 | 328.15 |
| 95th-Percentile Queue Length [veh] | 10.90 | 5.98 | 2.93 | 8.18 | 0.74 | 19.07 |
| 95th-Percentile Queue Length [ft] | 272.53 | 149.41 | 73.15 | 204.47 | 18.46 | 476.69 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 22.45 | 22.45 | 19.80 | 33.74 | 20.09 | 20.09 | 10.92 | 10.92 | 10.92 | 30.38 | 30.38 | 30.38 |
| Movement LOS | C | C | B | C | C | C | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 21.52 | | | 22.80 | | | 10.92 | | | 30.38 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.87 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.706 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 9: 09 - Manley Road / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 20.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.217 |

**Intersection Setup**

| Name | Manley Road | | Griffin Drive | | Griffin Drive | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Manley Road | | Griffin Drive | | Griffin Drive | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 55 | 110 | 52 | 241 | 366 | 54 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.80 | 0.90 | 7.70 | 3.80 | 1.10 | 1.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 55 | 110 | 52 | 241 | 366 | 54 |
| Peak Hour Factor | 0.8160 | 0.8160 | 0.8160 | 0.8160 | 0.8160 | 0.8160 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 16 | 32 | 15 | 71 | 108 | 16 |
| Total Analysis Volume [veh/h] | 65 | 129 | 61 | 284 | 431 | 64 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.22 | 0.21 | 0.06 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 20.29 | 12.62 | 8.68 | 0.00 | 0.00 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.81 | 0.81 | 1.46 | 1.46 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 20.19 | 20.21 | 36.62 | 36.62 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 15.19 | | 1.53 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 3.36 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: 10 - Rouse Avenue / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.294 |

**Intersection Setup**

| Name | Griffin Drive | | | Rouse Avenue | | | Bridger Drive | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Eastbound | | | Northeastbound | | | Southwestbound | | | Northwestbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 275.00 | 130.00 | 100.00 | 100.00 | 70.00 | 100.00 | 70.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Griffin Drive | | | Rouse Avenue | | | Bridger Drive | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 108 | 9 | 192 | 163 | 223 | 9 | 1 | 212 | 157 | 8 | 9 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.90 | 11.10 | 6.30 | 1.80 | 1.30 | 11.10 | 0.00 | 1.90 | 2.50 | 12.50 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 108 | 9 | 192 | 163 | 223 | 9 | 1 | 212 | 157 | 8 | 9 | 1 |
| Peak Hour Factor | 0.8890 | 0.8890 | 0.8890 | 0.8890 | 0.8890 | 0.8890 | 0.8890 | 0.8890 | 0.8890 | 0.8890 | 0.8890 | 0.8890 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 29 | 2 | 52 | 44 | 60 | 2 | 0 | 57 | 42 | 2 | 3 | 0 |
| Total Analysis Volume [veh/h] | 117 | 10 | 207 | 176 | 241 | 10 | 1 | 229 | 170 | 9 | 10 | 1 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 2 | | | 0 | | | 1 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Overlap | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 6 | 8 | 3 | 8 | 0 | 0 | 4 | 0 | 0 | 2 | 0 |
| Auxiliary Signal Groups | | | 6,8 | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 30 | 10 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 60 | 60 | 25 | 60 | 0 | 0 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 35 | 55 | 19 | 55 | 0 | 0 | 36 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | No | No | No | | | No | | | No | |
| Maximum Recall | | No | No | No | No | | | No | | | No | |
| Pedestrian Recall | | No | No | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | L | C | R | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 30 | 85 | 50 | 50 | 35 | 35 | 35 | 30 |
| g / C, Green / Cycle | 0.33 | 0.94 | 0.56 | 0.56 | 0.39 | 0.39 | 0.39 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.14 | 0.13 | 0.13 | 0.00 | 0.12 | 0.11 | 0.02 |
| s, saturation flow rate [veh/h] | 1124 | 1519 | 1313 | 1863 | 1147 | 1865 | 1572 | 1154 |
| c, Capacity [veh/h] | 451 | 1435 | 745 | 1035 | 417 | 725 | 611 | 443 |
| d1, Uniform Delay [s] | 23.49 | 0.16 | 10.29 | 10.27 | 22.45 | 19.16 | 18.84 | 20.70 |
| k, delay calibration | 0.11 | 0.11 | 0.27 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.34 | 0.05 | 0.41 | 0.56 | 0.01 | 1.14 | 1.13 | 0.04 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

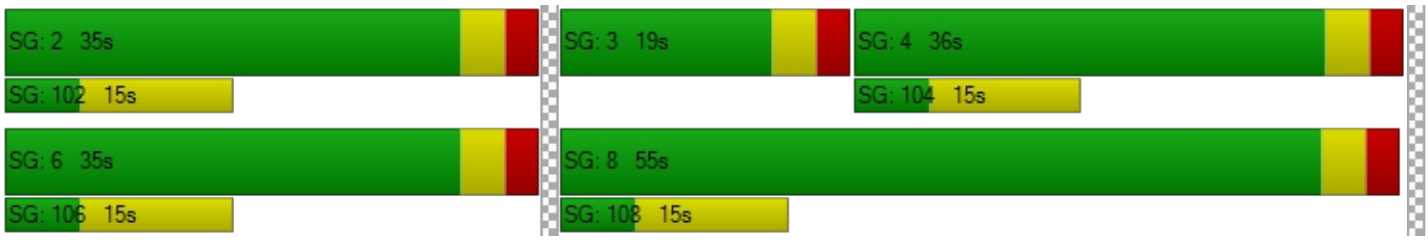
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.28 | 0.14 | 0.24 | 0.24 | 0.00 | 0.32 | 0.28 | 0.05 |
| d, Delay for Lane Group [s/veh] | 23.82 | 0.21 | 10.70 | 10.83 | 22.46 | 20.30 | 19.97 | 20.74 |
| Lane Group LOS | C | A | B | B | C | C | B | C |
| Critical Lane Group | Yes | No | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 2.10 | 0.02 | 1.69 | 2.55 | 0.02 | 3.46 | 2.55 | 0.28 |
| 50th-Percentile Queue Length [ft] | 52.56 | 0.46 | 42.27 | 63.65 | 0.40 | 86.52 | 63.78 | 7.09 |
| 95th-Percentile Queue Length [veh] | 3.78 | 0.03 | 3.04 | 4.58 | 0.03 | 6.23 | 4.59 | 0.51 |
| 95th-Percentile Queue Length [ft] | 94.60 | 0.82 | 76.09 | 114.56 | 0.72 | 155.73 | 114.80 | 12.77 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 23.82 | 23.82 | 0.21 | 10.70 | 10.83 | 10.83 | 22.46 | 20.30 | 19.97 | 20.74 | 20.74 | 20.74 |
| Movement LOS | C | C | A | B | B | B | C | C | B | C | C | C |
| d_A, Approach Delay [s/veh] | 9.19 | | | 10.77 | | | 20.17 | | | 20.74 | | |
| Approach LOS | A | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 13.68 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.294 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 11: 11 - Story Mill Road / Bridger Drive**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 18.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.029 |

**Intersection Setup**

| Name | Story Mill Road | | | Story Mill Road | | | Bridger Drive | | | Bridger Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**volumes**

| Name | Story Mill Road | | | Story Mill Road | | | Bridger Drive | | | Bridger Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 33 | 44 | 5 | 21 | 69 | 91 | 166 | 10 | 18 | 161 | 4 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 2.50 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 8 | 33 | 44 | 5 | 21 | 69 | 91 | 166 | 10 | 18 | 161 | 4 |
| Peak Hour Factor | 0.8950 | 0.8950 | 0.8950 | 0.8950 | 0.8950 | 0.8950 | 0.8950 | 0.8950 | 0.8950 | 0.8950 | 0.8950 | 0.8950 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 2 | 9 | 12 | 1 | 6 | 19 | 24 | 45 | 3 | 5 | 43 | 1 |
| Total Analysis Volume [veh/h] | 9 | 35 | 47 | 5 | 23 | 74 | 98 | 178 | 11 | 19 | 173 | 4 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 6 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.03 | 0.09 | 0.05 | 0.02 | 0.06 | 0.09 | 0.07 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 18.00 | 15.89 | 10.63 | 17.24 | 15.58 | 10.28 | 7.74 | 0.00 | 0.00 | 7.61 | 0.00 | 0.00 |
| Movement LOS | C | C | B | C | C | B | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.63 | 0.63 | 0.63 | 0.57 | 0.57 | 0.57 | 0.76 | 0.76 | 0.76 | 0.49 | 0.49 | 0.49 |
| 95th-Percentile Queue Length [ft] | 15.72 | 15.72 | 15.72 | 14.36 | 14.36 | 14.36 | 19.04 | 19.04 | 19.04 | 12.20 | 12.20 | 12.20 |
| d_A, Approach Delay [s/veh] | 13.38 | | | 11.81 | | | 2.64 | | | 0.74 | | |
| Approach LOS | B | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4.92 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 12: 12 - Wilson Avenue / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 18.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.279 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 106 | 29 | 27 | 0 | 5 | 4 | 2 | 223 | 67 | 15 | 238 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.90 | 6.00 | 0.00 | 1.70 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 106 | 29 | 27 | 0 | 5 | 4 | 2 | 223 | 67 | 15 | 238 | 2 |
| Peak Hour Factor | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 28 | 8 | 7 | 0 | 1 | 1 | 1 | 60 | 18 | 4 | 64 | 1 |
| Total Analysis Volume [veh/h] | 114 | 31 | 29 | 0 | 6 | 4 | 2 | 240 | 72 | 16 | 256 | 2 |
| Pedestrian Volume [ped/h] | 4 | | | 3 | | | 4 | | | 3 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.28 | 0.07 | 0.04 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 18.90 | 18.67 | 14.86 | 14.95 | 14.12 | 9.80 | 7.75 | 0.00 | 0.00 | 7.92 | 0.00 | 0.00 |
| Movement LOS | C | C | B | B | B | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.83 | 1.83 | 1.83 | 0.06 | 0.06 | 0.06 | 0.94 | 0.94 | 0.94 | 0.84 | 0.84 | 0.84 |
| 95th-Percentile Queue Length [ft] | 45.67 | 45.67 | 45.67 | 1.54 | 1.54 | 1.54 | 23.44 | 23.44 | 23.44 | 20.90 | 20.90 | 20.90 |
| d_A, Approach Delay [s/veh] | 18.18 | | | 12.39 | | | 0.05 | | | 0.46 | | |
| Approach LOS | C | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 4.44 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 13: 13 - Rouse Avenue / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 74.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.346 |

**Intersection Setup**

| Name | Rouse Avenue | | | Rouse Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Rouse Avenue | | | Rouse Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 55 | 336 | 9 | 57 | 416 | 70 | 35 | 51 | 74 | 3 | 54 | 121 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.60 | 0.00 | 0.00 | 0.50 | 1.40 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 55 | 336 | 9 | 57 | 416 | 70 | 35 | 51 | 74 | 3 | 54 | 121 |
| Peak Hour Factor | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 | 0.9340 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 14 | 86 | 2 | 15 | 107 | 18 | 9 | 13 | 19 | 1 | 14 | 31 |
| Total Analysis Volume [veh/h] | 57 | 345 | 9 | 59 | 428 | 72 | 36 | 52 | 76 | 3 | 56 | 124 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.05 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.35 | 0.26 | 0.13 | 0.03 | 0.29 | 0.18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.54 | 0.00 | 0.00 | 8.11 | 0.00 | 0.00 | 74.43 | 58.05 | 45.79 | 44.63 | 33.16 | 19.45 |
| Movement LOS | A | A | A | A | A | A | F | F | E | E | D | C |
| 95th-Percentile Queue Length [veh] | 1.82 | 1.82 | 1.82 | 2.48 | 2.48 | 2.48 | 4.98 | 4.98 | 4.98 | 2.66 | 2.66 | 2.66 |
| 95th-Percentile Queue Length [ft] | 45.46 | 45.46 | 45.46 | 61.95 | 61.95 | 61.95 | 124.58 | 124.58 | 124.58 | 66.48 | 66.48 | 66.48 |
| d_A, Approach Delay [s/veh] | 1.18 | | | 0.86 | | | 55.96 | | | 24.06 | | |
| Approach LOS | A | | | A | | | F | | | C | | |
| d_I, Intersection Delay [s/veh] | 11.04 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 14: 14 - Willson Avenue / Mendenhall Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 18.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.443 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Mendenhall Street | | | Mendenhall Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Mendenhall Street | | | Mendenhall Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 78 | 136 | 0 | 0 | 140 | 45 | 0 | 0 | 0 | 137 | 434 | 71 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.20 | 2.00 | 2.00 | 0.70 | 2.20 | 2.00 | 2.00 | 2.00 | 0.00 | 1.20 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 78 | 136 | 0 | 0 | 140 | 45 | 0 | 0 | 0 | 137 | 434 | 71 |
| Peak Hour Factor | 0.8240 | 0.8240 | 1.0000 | 1.0000 | 0.8240 | 0.8240 | 1.0000 | 1.0000 | 1.0000 | 0.8240 | 0.8240 | 0.8240 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 23 | 40 | 0 | 0 | 41 | 13 | 0 | 0 | 0 | 40 | 126 | 21 |
| Total Analysis Volume [veh/h] | 91 | 158 | 0 | 0 | 163 | 52 | 0 | 0 | 0 | 160 | 506 | 83 |
| Presence of On-Street Parking | No | | No | No | | No | | | | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 20 | | | 6 | | | 32 | | | 20 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 40 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | | | | No | |
| Maximum Recall | | No | | | No | | | | | | No | |
| Pedestrian Recall | | No | | | No | | | | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | | C | C |
|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 33 | 33 | | 17 | 17 |
| g / C, Green / Cycle | 0.54 | 0.54 | | 0.29 | 0.29 |
| (v / s)_i Volume / Saturation Flow Rate | 0.20 | 0.13 | | 0.24 | 0.24 |
| s, saturation flow rate [veh/h] | 1227 | 1621 | | 1656 | 1472 |
| c, Capacity [veh/h] | 749 | 881 | | 480 | 426 |
| d1, Uniform Delay [s] | 8.17 | 7.20 | | 19.90 | 19.92 |
| k, delay calibration | 0.50 | 0.50 | | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.19 | 0.66 | | 3.66 | 4.18 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 |

**Lane Group Results**

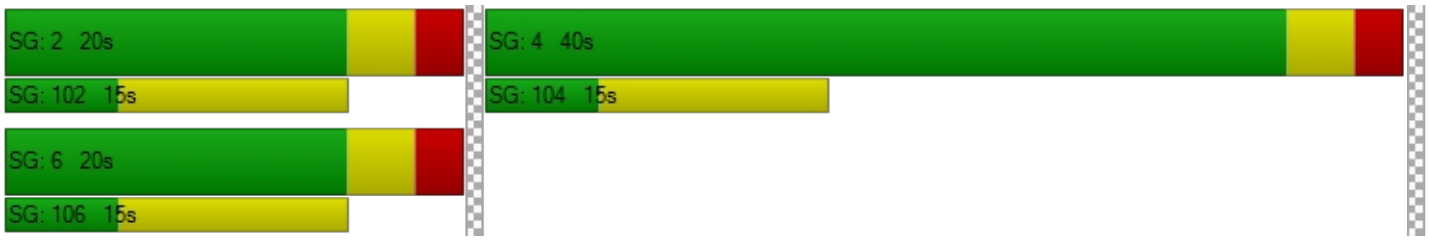
| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.33 | 0.24 | | 0.83 | 0.83 |
| d, Delay for Lane Group [s/veh] | 9.36 | 7.86 | | 23.56 | 24.10 |
| Lane Group LOS | A | A | | C | C |
| Critical Lane Group | Yes | No | | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.62 | 1.33 | | 5.16 | 4.67 |
| 50th-Percentile Queue Length [ft] | 40.57 | 33.15 | | 128.90 | 116.65 |
| 95th-Percentile Queue Length [veh] | 2.92 | 2.39 | | 8.88 | 8.21 |
| 95th-Percentile Queue Length [ft] | 73.03 | 59.67 | | 222.00 | 205.21 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.36 | 9.36 | 0.00 | 0.00 | 7.86 | 7.86 | 0.00 | 0.00 | 0.00 | 23.56 | 23.85 | 24.10 |
| Movement LOS | A | A | | | A | A | | | | C | C | C |
| d_A, Approach Delay [s/veh] | 9.36 | | | 7.86 | | | 0.00 | | | 23.81 | | |
| Approach LOS | A | | | A | | | A | | | C | | |
| d_I, Intersection Delay [s/veh] | 18.02 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.443 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: 15 - Willson Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.370 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Babcock Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 125.00 | 110.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Babcock Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 284 | 189 | 49 | 344 | 0 | 33 | 348 | 99 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.20 | 1.10 | 2.00 | 0.30 | 2.00 | 0.00 | 0.30 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 284 | 189 | 49 | 344 | 0 | 33 | 348 | 99 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 0.9240 | 0.9240 | 0.9240 | 0.9240 | 1.0000 | 0.9240 | 0.9240 | 0.9240 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 74 | 49 | 13 | 89 | 0 | 9 | 90 | 26 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 295 | 196 | 51 | 357 | 0 | 34 | 362 | 103 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 1 | | | 19 | | | 16 | | | 11 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 60 | 0 | 0 | 0 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | | |
| Maximum Recall | | No | | | No | | | No | | | | |
| Pedestrian Recall | | No | | | No | | | No | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | C | C | |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| g_i, Effective Green Time [s] | 35 | 35 | 35 | 35 | 15 | 15 | |
| g / C, Green / Cycle | 0.58 | 0.58 | 0.58 | 0.58 | 0.25 | 0.25 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.14 | 0.05 | 0.21 | 0.16 | 0.16 | |
| s, saturation flow rate [veh/h] | 1673 | 1430 | 970 | 1705 | 1694 | 1437 | |
| c, Capacity [veh/h] | 971 | 829 | 551 | 989 | 429 | 364 | |
| d1, Uniform Delay [s] | 6.42 | 6.13 | 9.80 | 6.69 | 19.88 | 19.95 | |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 0.81 | 0.67 | 0.33 | 1.02 | 1.50 | 1.84 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

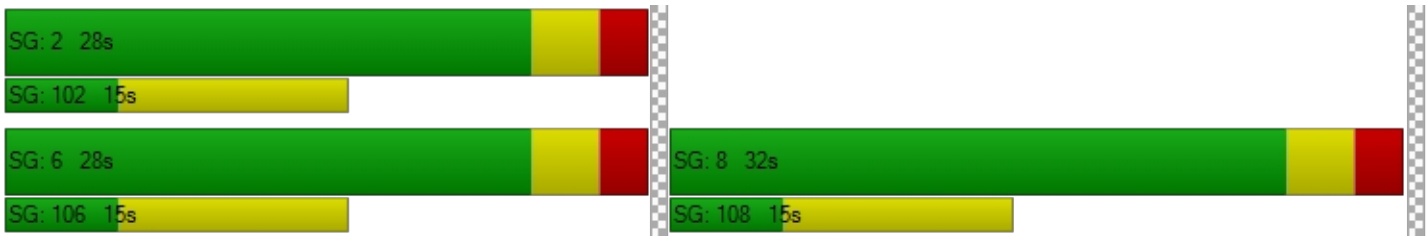
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.30 | 0.24 | 0.09 | 0.36 | 0.62 | 0.64 | |
| d, Delay for Lane Group [s/veh] | 7.22 | 6.80 | 10.13 | 7.71 | 21.38 | 21.79 | |
| Lane Group LOS | A | A | B | A | C | C | |
| Critical Lane Group | No | No | No | Yes | No | Yes | |
| 50th-Percentile Queue Length [veh] | 1.68 | 1.08 | 0.39 | 2.13 | 3.23 | 2.83 | |
| 50th-Percentile Queue Length [ft] | 42.02 | 27.06 | 9.84 | 53.15 | 80.76 | 70.69 | |
| 95th-Percentile Queue Length [veh] | 3.03 | 1.95 | 0.71 | 3.83 | 5.81 | 5.09 | |
| 95th-Percentile Queue Length [ft] | 75.64 | 48.71 | 17.70 | 95.67 | 145.36 | 127.24 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 7.22 | 6.80 | 10.13 | 7.71 | 0.00 | 21.38 | 21.52 | 21.79 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | A | A | B | A | | C | C | C | | | |
| d_A, Approach Delay [s/veh] | 7.05 | | | 8.01 | | | 21.57 | | | 0.00 | | |
| Approach LOS | A | | | A | | | C | | | A | | |
| d_I, Intersection Delay [s/veh] | 12.51 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.370 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: 16 - Broadway Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 9.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.439 |

**Intersection Setup**

| Name | Broadway Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | No | |

**volumes**

| Name | Broadway Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 140 | 31 | 73 | 685 | 675 | 138 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.90 | 0.00 | 1.40 | 1.30 | 1.90 | 1.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 140 | 31 | 73 | 685 | 675 | 138 |
| Peak Hour Factor | 0.8790 | 0.8790 | 0.8790 | 0.8790 | 0.8790 | 0.8790 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 38 | 8 | 20 | 189 | 186 | 38 |
| Total Analysis Volume [veh/h] | 153 | 34 | 81 | 756 | 745 | 152 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 12 | | 5 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 0 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - |
| Minimum Green [s] | 15 | 0 | 0 | 15 | 15 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 90 | 90 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 44 | 44 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | C | C |
|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 15 | 40 | 40 | 40 | 40 |
| g / C, Green / Cycle | 0.22 | 0.62 | 0.62 | 0.62 | 0.62 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.32 | 0.32 | 0.27 | 0.28 |
| s, saturation flow rate [veh/h] | 1594 | 1075 | 1536 | 1678 | 1578 |
| c, Capacity [veh/h] | 360 | 735 | 953 | 1041 | 979 |
| d1, Uniform Delay [s] | 22.07 | 6.23 | 6.89 | 6.39 | 6.54 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.16 | 2.15 | 1.99 | 1.30 | 1.55 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

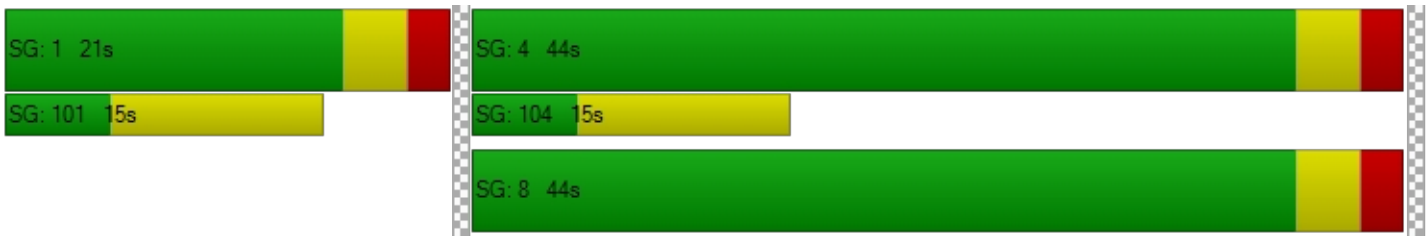
| X, volume / capacity | 0.52 | 0.47 | 0.52 | 0.43 | 0.46 |
|---|---|---|---|---|---|
| d, Delay for Lane Group [s/veh] | 23.23 | 8.39 | 8.88 | 7.69 | 8.09 |
| Lane Group LOS | C | A | A | A | A |
| Critical Lane Group | Yes | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 2.47 | 2.15 | 3.38 | 2.79 | 2.89 |
| 50th-Percentile Queue Length [ft] | 61.81 | 53.82 | 84.45 | 69.77 | 72.30 |
| 95th-Percentile Queue Length [veh] | 4.45 | 3.88 | 6.08 | 5.02 | 5.21 |
| 95th-Percentile Queue Length [ft] | 111.25 | 96.88 | 152.01 | 125.58 | 130.13 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 23.23 | 23.23 | 8.39 | 8.71 | 7.85 | 8.09 |
| Movement LOS | C | C | A | A | A | A |
| d_A, Approach Delay [s/veh] | 23.23 | | 8.68 | | 7.89 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 9.73 | | | | | |
| Intersection LOS | A | | | | | |
| Intersection V/C | 0.439 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 17: 17 - Highland Boulevard / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 36.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.640 |

**Intersection Setup**

| Name | Highland Boulevard | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northeastbound | | | Southwestbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 341 | 0 | 363 | 3 | 6 | 8 | 155 | 428 | 0 | 1 | 612 | 180 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.60 | 2.00 | 0.80 | 0.00 | 0.00 | 0.00 | 1.90 | 2.80 | 0.00 | 0.00 | 2.00 | 1.70 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 341 | 0 | 363 | 3 | 6 | 8 | 155 | 428 | 0 | 1 | 612 | 180 |
| Peak Hour Factor | 0.8720 | 1.0000 | 0.8720 | 1.0000 | 1.0000 | 1.0000 | 0.8720 | 0.8720 | 1.0000 | 1.0000 | 0.8720 | 0.8720 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 94 | 0 | 100 | 1 | 2 | 2 | 43 | 119 | 0 | 0 | 170 | 50 |
| Total Analysis Volume [veh/h] | 375 | 0 | 400 | 3 | 6 | 8 | 172 | 476 | 0 | 1 | 681 | 200 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 3 | 8 | 0 | 0 | 4 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 10 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 25 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 47 | 0 | 0 | 47 | 0 | 13 | 48 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | | No | |
| Maximum Recall | | No | | | No | | No | No | | | No | |
| Pedestrian Recall | | No | | | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 42 | 42 | 42 | 43 | 43 | 43 | 30 | 30 | 30 |
| g / C, Green / Cycle | 0.44 | 0.44 | 0.44 | 0.45 | 0.45 | 0.45 | 0.32 | 0.32 | 0.32 |
| (v / s)_i Volume / Saturation Flow Rate | 0.29 | 0.28 | 0.02 | 0.21 | 0.14 | 0.14 | 0.00 | 0.27 | 0.27 |
| s, saturation flow rate [veh/h] | 1272 | 1425 | 1005 | 828 | 1663 | 1663 | 839 | 1676 | 1547 |
| c, Capacity [veh/h] | 403 | 631 | 490 | 343 | 752 | 752 | 247 | 529 | 489 |
| d1, Uniform Delay [s] | 36.83 | 20.49 | 15.76 | 20.17 | 16.66 | 16.66 | 30.16 | 30.60 | 30.60 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.33 | 0.33 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 30.28 | 4.79 | 0.13 | 1.14 | 0.24 | 0.24 | 0.01 | 12.06 | 12.98 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.93 | 0.63 | 0.03 | 0.50 | 0.32 | 0.32 | 0.00 | 0.87 | 0.87 |
| d, Delay for Lane Group [s/veh] | 67.11 | 25.29 | 15.89 | 21.31 | 16.90 | 16.90 | 30.16 | 42.66 | 43.58 |
| Lane Group LOS | E | C | B | C | B | B | C | D | D |
| Critical Lane Group | Yes | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 12.21 | 7.41 | 0.22 | 2.34 | 3.27 | 3.27 | 0.02 | 11.33 | 10.59 |
| 50th-Percentile Queue Length [ft] | 305.14 | 185.23 | 5.52 | 58.53 | 81.70 | 81.70 | 0.46 | 283.35 | 264.84 |
| 95th-Percentile Queue Length [veh] | 17.94 | 11.87 | 0.40 | 4.21 | 5.88 | 5.88 | 0.03 | 16.86 | 15.93 |
| 95th-Percentile Queue Length [ft] | 448.38 | 296.83 | 9.94 | 105.36 | 147.06 | 147.06 | 0.84 | 421.38 | 398.29 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 67.11 | 25.29 | 25.29 | 15.89 | 15.89 | 15.89 | 21.31 | 16.90 | 16.90 | 30.16 | 42.96 | 43.58 |
| Movement LOS | E | C | C | B | B | B | C | B | B | C | D | D |
| d_A, Approach Delay [s/veh] | 45.52 | | | 15.89 | | | 18.07 | | | 43.09 | | |
| Approach LOS | D | | | B | | | B | | | D | | |
| d_I, Intersection Delay [s/veh] | 36.72 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.640 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 18: 18 - Haggerty Lane / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 519.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | Haggerty Lane | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northeastbound | | | Southwestbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**volumes**

| Name | Haggerty Lane | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 97 | 0 | 95 | 1 | 0 | 1 | 69 | 496 | 1 | 2 | 811 | 150 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 2.10 | 0.00 | 0.00 | 0.00 | 0.00 | 2.60 | 0.00 | 0.00 | 2.10 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 97 | 0 | 95 | 1 | 0 | 1 | 69 | 496 | 1 | 2 | 811 | 150 |
| Peak Hour Factor | 0.8010 | 1.0000 | 0.8010 | 1.0000 | 1.0000 | 1.0000 | 0.8010 | 0.8010 | 1.0000 | 1.0000 | 0.8010 | 0.8010 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 29 | 0 | 28 | 0 | 0 | 0 | 21 | 150 | 0 | 0 | 246 | 45 |
| Total Analysis Volume [veh/h] | 116 | 0 | 114 | 1 | 0 | 1 | 84 | 601 | 1 | 2 | 982 | 182 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 1 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 1.64 | 0.00 | 0.25 | 0.01 | 0.00 | 0.00 | 0.14 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 513.41 | 519.35 | 470.29 | 47.38 | 68.73 | 10.45 | 11.88 | 0.00 | 0.00 | 8.66 | 0.00 | 0.00 |
| Movement LOS | F | F | F | E | F | B | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 18.29 | 18.29 | 18.29 | 0.04 | 0.04 | 0.04 | 0.48 | 0.00 | 0.00 | 4.03 | 2.01 | 0.00 |
| 95th-Percentile Queue Length [ft] | 457.13 | 457.13 | 457.13 | 0.99 | 0.99 | 0.99 | 11.95 | 0.00 | 0.00 | 100.64 | 50.32 | 0.00 |
| d_A, Approach Delay [s/veh] | 492.04 | | | 28.92 | | | 1.45 | | | 0.01 | | |
| Approach LOS | F | | | D | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 54.82 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 19: 19 - Willson Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 56.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 124 | 458 | 20 | 19 | 522 | 70 | 4 | 3 | 139 | 0 | 5 | 25 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.80 | 0.90 | 0.00 | 0.00 | 0.40 | 1.40 | 0.00 | 0.00 | 1.40 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 124 | 458 | 20 | 19 | 522 | 70 | 4 | 3 | 139 | 0 | 5 | 25 |
| Peak Hour Factor | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 31 | 115 | 5 | 5 | 131 | 18 | 1 | 1 | 35 | 0 | 1 | 7 |
| Total Analysis Volume [veh/h] | 125 | 461 | 20 | 19 | 525 | 70 | 4 | 3 | 140 | 0 | 5 | 26 |
| Pedestrian Volume [ped/h] | 4 | | | 13 | | | 0 | | | 6 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.13 | 0.00 | 0.00 | 0.02 | 0.01 | 0.00 | 0.04 | 0.02 | 0.27 | 0.00 | 0.04 | 0.05 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.17 | 0.00 | 0.00 | 8.39 | 0.00 | 0.00 | 44.92 | 38.12 | 15.84 | 56.09 | 36.15 | 12.27 |
| Movement LOS | A | A | A | A | A | A | E | E | C | F | E | B |
| 95th-Percentile Queue Length [veh] | 4.37 | 4.37 | 4.37 | 3.71 | 3.71 | 3.71 | 1.43 | 1.43 | 1.43 | 0.29 | 0.29 | 0.29 |
| 95th-Percentile Queue Length [ft] | 109.22 | 109.22 | 109.22 | 92.84 | 92.84 | 92.84 | 35.78 | 35.78 | 35.78 | 7.13 | 7.13 | 7.13 |
| d_A, Approach Delay [s/veh] | 1.89 | | | 0.26 | | | 17.08 | | | 16.12 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 3.09 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 20: 20 - Highland Boulevard / Ellis Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 93.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.860 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Ellis Street | | | Ellis Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 75.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Ellis Street | | | Ellis Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 455 | 53 | 51 | 289 | 23 | 140 | 3 | 10 | 51 | 3 | 112 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 1.90 | 0.00 | 1.00 | 4.30 | 0.00 | 33.30 | 0.00 | 0.00 | 0.00 | 0.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 455 | 53 | 51 | 289 | 23 | 140 | 3 | 10 | 51 | 3 | 112 |
| Peak Hour Factor | 0.9370 | 0.9370 | 0.9370 | 0.9370 | 0.9370 | 0.9370 | 0.9370 | 0.9370 | 0.9370 | 0.9370 | 0.9370 | 0.9370 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 117 | 14 | 13 | 74 | 6 | 37 | 1 | 3 | 14 | 1 | 30 |
| Total Analysis Volume [veh/h] | 2 | 466 | 54 | 52 | 296 | 24 | 149 | 3 | 11 | 54 | 3 | 120 |
| Pedestrian Volume [ped/h] | 20 | | | 1 | | | 7 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.86 | 0.01 | 0.02 | 0.24 | 0.01 | 0.21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.92 | 0.00 | 0.00 | 8.58 | 0.00 | 0.00 | 92.96 | 88.57 | 77.38 | 28.46 | 26.75 | 18.85 |
| Movement LOS | A | A | A | A | A | A | F | F | F | D | D | C |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.00 | 0.16 | 0.00 | 0.00 | 6.65 | 6.65 | 6.65 | 2.32 | 2.32 | 2.32 |
| 95th-Percentile Queue Length [ft] | 0.12 | 0.00 | 0.00 | 3.88 | 0.00 | 0.00 | 166.32 | 166.32 | 166.32 | 58.11 | 58.11 | 58.11 |
| d_A, Approach Delay [s/veh] | 0.03 | | | 1.20 | | | 91.83 | | | 21.92 | | |
| Approach LOS | A | | | A | | | F | | | C | | |
| d_I, Intersection Delay [s/veh] | 15.65 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 21: 21 - Sourdough Road / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 103.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.503 |

**Intersection Setup**

| Name | Sourdough Road | | | Kagy Boulevard | | | Kagy Boulevard | | | Sourdough Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Eastbound | | | Westbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | Yes | | |

**volumes**

| Name | Sourdough Road | | | Kagy Boulevard | | | Kagy Boulevard | | | Sourdough Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 45 | 38 | 57 | 37 | 487 | 54 | 56 | 435 | 15 | 22 | 56 | 84 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.40 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 1.20 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 45 | 38 | 57 | 37 | 487 | 54 | 56 | 435 | 15 | 22 | 56 | 84 |
| Peak Hour Factor | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 | 0.9470 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 11 | 10 | 14 | 9 | 123 | 14 | 14 | 110 | 4 | 6 | 14 | 21 |
| Total Analysis Volume [veh/h] | 46 | 39 | 58 | 38 | 494 | 55 | 57 | 441 | 15 | 22 | 57 | 85 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 1 | | | 17 | | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free | Stop |
|---|---|---|---|---|
| Flared Lane | No | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.50 | 0.23 | 0.10 | 0.04 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.21 | 0.34 | 0.14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 103.42 | 85.15 | 70.55 | 8.45 | 0.00 | 0.00 | 8.70 | 0.00 | 0.00 | 67.42 | 55.22 | 39.69 |
| Movement LOS | F | F | F | A | A | A | A | A | A | F | F | E |
| 95th-Percentile Queue Length [veh] | 5.76 | 5.76 | 5.76 | 0.11 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 4.53 | 4.53 | 4.53 |
| 95th-Percentile Queue Length [ft] | 144.07 | 144.07 | 144.07 | 2.73 | 0.00 | 0.00 | 4.38 | 0.00 | 0.00 | 113.24 | 113.24 | 113.24 |
| d_A, Approach Delay [s/veh] | 85.11 | | | 0.55 | | | 0.97 | | | 48.81 | | |
| Approach LOS | F | | | A | | | A | | | E | | |
| d_I, Intersection Delay [s/veh] | 14.92 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 22: 22 - Highland Boulevard / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 59.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.030 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 3 | 1 | 18 | 3 | 346 | 361 | 195 | 4 | 0 | 148 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.30 | 0.60 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 3 | 1 | 18 | 3 | 346 | 361 | 195 | 4 | 0 | 148 | 14 |
| Peak Hour Factor | 0.9410 | 0.9410 | 0.9410 | 0.9410 | 0.9410 | 0.9410 | 0.9410 | 0.9410 | 0.9410 | 0.9410 | 0.9410 | 0.9410 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 0 | 5 | 1 | 88 | 92 | 50 | 1 | 0 | 38 | 4 |
| Total Analysis Volume [veh/h] | 2 | 3 | 1 | 18 | 3 | 353 | 368 | 199 | 4 | 0 | 151 | 14 |
| Pedestrian Volume [ped/h] | 0 | | | 3 | | | 5 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.03 | 0.02 | 0.00 | 0.12 | 0.02 | 0.40 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 59.77 | 29.53 | 10.83 | 34.97 | 33.80 | 15.10 | 8.44 | 0.00 | 0.00 | 7.61 | 0.00 | 0.00 |
| Movement LOS | F | D | B | D | D | C | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.16 | 0.16 | 0.16 | 3.28 | 3.28 | 3.28 | 1.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 3.89 | 3.89 | 3.89 | 81.90 | 81.90 | 81.90 | 26.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 36.49 | | | 16.21 | | | 5.44 | | | 0.00 | | |
| Approach LOS | E | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 8.41 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 23: 23 - Wagon Wheel Road / 3rd Avenue**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 9.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Wagon Wheel Road | | 3rd Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 115.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | Yes | |

**volumes**

| Name | Wagon Wheel Road | | 3rd Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 64 | 135 | 200 | 161 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 64 | 135 | 200 | 161 | 2 |
| Peak Hour Factor | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 | 0.8600 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 19 | 38 | 56 | 45 | 1 |
| Total Analysis Volume [veh/h] | 2 | 74 | 151 | 223 | 180 | 2 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.34 | 0.80 | 1.10 | 1.02 |
| 95th-Percentile Queue Length [ft] | 8.62 | 20.05 | 27.45 | 25.39 |
| Approach Delay [s/veh] | 8.47 | 8.87 | | 9.79 |
| Approach LOS | A | A | | A |
| Intersection Delay [s/veh] | 9.09 | | | |
| Intersection LOS | A | | | |

**Intersection Level Of Service Report**
**Intersection 27: 25 - 11th Avenue / Grant Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 15.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Grant Street | | | Grant Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Grant Street | | | Grant Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 17 | 234 | 120 | 73 | 210 | 42 | 30 | 39 | 24 | 92 | 60 | 106 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.70 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 17 | 234 | 120 | 73 | 210 | 42 | 30 | 39 | 24 | 92 | 60 | 106 |
| Peak Hour Factor | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 5 | 63 | 32 | 20 | 56 | 11 | 8 | 11 | 7 | 25 | 16 | 28 |
| Total Analysis Volume [veh/h] | 18 | 252 | 129 | 78 | 226 | 45 | 34 | 44 | 27 | 99 | 65 | 114 |
| Pedestrian Volume [ped/h] | 116 | | | 204 | | | 111 | | | 86 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 4.35 | 3.54 | 0.71 | 2.52 |
| 95th-Percentile Queue Length [ft] | 108.68 | 88.59 | 17.87 | 63.08 |
| Approach Delay [s/veh] | 17.50 | 16.20 | 11.27 | 14.48 |
| Approach LOS | C | C | B | B |
| Intersection Delay [s/veh] | 15.78 | | | |
| Intersection LOS | C | | | |

**Intersection Level Of Service Report**
**Intersection 28: 26 - 11th Avenue / Lincoln Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 14.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Lincoln Street | | | Bobcat Circle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Lincoln Street | | | Bobcat Circle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 159 | 276 | 26 | 8 | 225 | 84 | 88 | 59 | 97 | 37 | 64 | 13 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 159 | 276 | 26 | 8 | 225 | 84 | 88 | 59 | 97 | 37 | 64 | 13 |
| Peak Hour Factor | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 | 0.8930 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 43 | 74 | 7 | 2 | 60 | 23 | 24 | 16 | 26 | 10 | 18 | 4 |
| Total Analysis Volume [veh/h] | 171 | 297 | 28 | 9 | 242 | 90 | 95 | 63 | 104 | 41 | 72 | 15 |
| Pedestrian Volume [ped/h] | 42 | | | 48 | | | 69 | | | 73 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.42 | 3.60 | 2.44 | 0.52 | 2.34 | 0.93 |
| 95th-Percentile Queue Length [ft] | 35.44 | 90.01 | 60.91 | 12.94 | 58.48 | 23.20 |
| Approach Delay [s/veh] | 15.75 | | 13.59 | | 14.24 | 11.85 |
| Approach LOS | C | | B | | B | B |
| Intersection Delay [s/veh] | 14.42 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 29: 27 - 11th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 28.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.744 |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 200.00 | 100.00 | 100.00 | 115.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 90 | 99 | 49 | 165 | 82 | 168 | 126 | 477 | 520 | 20 | 499 | 116 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 0.00 | 0.60 | 0.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 90 | 99 | 49 | 165 | 82 | 168 | 126 | 477 | 520 | 20 | 499 | 116 |
| Peak Hour Factor | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 | 0.9530 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 24 | 26 | 13 | 42 | 21 | 42 | 32 | 120 | 131 | 5 | 126 | 29 |
| Total Analysis Volume [veh/h] | 94 | 104 | 51 | 166 | 83 | 169 | 127 | 481 | 524 | 20 | 503 | 117 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 2 | | | 19 | | | 18 | | | 43 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 85 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 10 | 15 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 25 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 21 | 0 | 0 | 21 | 0 | 26 | 64 | 0 | 0 | 38 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | | No | |
| Maximum Recall | | No | | | No | | No | No | | | No | |
| Pedestrian Recall | | No | | | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 1.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 16 | 16 | 16 | 16 | 10 | 59 | 46 | 46 |
| g / C, Green / Cycle | 0.19 | 0.19 | 0.19 | 0.19 | 0.11 | 0.69 | 0.54 | 0.54 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.09 | 0.14 | 0.15 | 0.07 | 0.59 | 0.04 | 0.34 |
| s, saturation flow rate [veh/h] | 1134 | 1699 | 1177 | 1642 | 1810 | 1703 | 570 | 1821 |
| c, Capacity [veh/h] | 118 | 325 | 195 | 314 | 202 | 1177 | 117 | 991 |
| d1, Uniform Delay [s] | 42.07 | 30.59 | 39.87 | 32.84 | 36.05 | 9.89 | 39.21 | 13.40 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.35 | 0.11 | 0.17 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 41.67 | 4.95 | 34.96 | 19.18 | 3.18 | 5.76 | 0.69 | 1.06 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

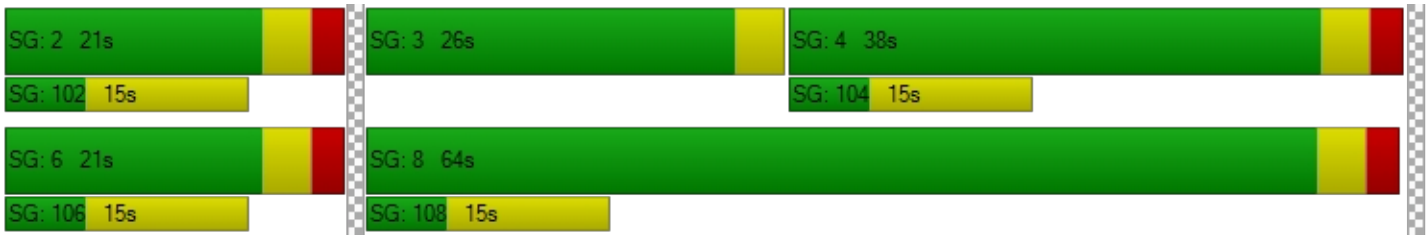
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.80 | 0.48 | 0.85 | 0.80 | 0.63 | 0.85 | 0.17 | 0.63 |
| d, Delay for Lane Group [s/veh] | 83.74 | 35.54 | 74.82 | 52.03 | 39.23 | 15.66 | 39.89 | 14.46 |
| Lane Group LOS | F | D | E | D | D | B | D | B |
| Critical Lane Group | No | No | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 3.31 | 3.22 | 5.33 | 6.51 | 2.65 | 12.65 | 0.42 | 7.68 |
| 50th-Percentile Queue Length [ft] | 82.75 | 80.38 | 133.29 | 162.63 | 66.22 | 316.19 | 10.59 | 192.04 |
| 95th-Percentile Queue Length [veh] | 5.96 | 5.79 | 9.12 | 10.69 | 4.77 | 18.48 | 0.76 | 12.23 |
| 95th-Percentile Queue Length [ft] | 148.95 | 144.68 | 227.97 | 267.20 | 119.20 | 462.00 | 19.07 | 305.67 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 83.74 | 35.54 | 35.54 | 74.82 | 52.03 | 52.03 | 39.23 | 15.66 | 15.66 | 39.89 | 14.46 | 14.46 |
| Movement LOS | F | D | D | E | D | D | D | B | B | D | B | B |
| d_A, Approach Delay [s/veh] | 53.74 | | | 61.08 | | | 18.30 | | | 15.25 | | |
| Approach LOS | D | | | E | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 28.45 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.744 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 30: 28 - 8th Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 17.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 8th Avenue | | | 8th Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 8th Avenue | | | 8th Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 69 | 126 | 7 | 39 | 65 | 55 | 127 | 250 | 77 | 6 | 236 | 38 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 0.40 | 0.00 | 0.00 | 0.40 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 69 | 126 | 7 | 39 | 65 | 55 | 127 | 250 | 77 | 6 | 236 | 38 |
| Peak Hour Factor | 0.9220 | 0.9220 | 0.9220 | 0.9220 | 0.9220 | 0.9220 | 0.9220 | 0.9220 | 0.9220 | 0.9220 | 0.9220 | 0.9220 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 18 | 33 | 2 | 10 | 17 | 14 | 33 | 65 | 20 | 2 | 61 | 10 |
| Total Analysis Volume [veh/h] | 72 | 131 | 7 | 41 | 68 | 57 | 132 | 260 | 80 | 6 | 246 | 40 |
| Pedestrian Volume [ped/h] | 18 | | | 12 | | | 29 | | | 33 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.81 | 1.26 | 6.68 | 2.66 |
| 95th-Percentile Queue Length [ft] | 45.18 | 31.57 | 166.98 | 66.49 |
| Approach Delay [s/veh] | 13.71 | 12.34 | 23.71 | 14.55 |
| Approach LOS | B | B | C | B |
| Intersection Delay [s/veh] | 17.87 | | | |
| Intersection LOS | C | | | |

**Intersection Level Of Service Report**
**Intersection 31: 29 - 7th Avenue / Grant Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 7th Avenue | | Grant Street | | Grant Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**volumes**

| Name | 7th Avenue | | Grant Street | | Grant Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 100 | 125 | 192 | 49 | 39 | 127 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 100 | 125 | 192 | 49 | 39 | 127 |
| Peak Hour Factor | 0.8190 | 0.8190 | 0.8190 | 0.8190 | 0.8190 | 0.8190 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 29 | 37 | 56 | 14 | 11 | 37 |
| Total Analysis Volume [veh/h] | 117 | 147 | 225 | 57 | 46 | 149 |
| Pedestrian Volume [ped/h] | 28 | | 129 | | 74 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | |
|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.59 | 1.72 | 1.10 |
| 95th-Percentile Queue Length [ft] | 39.79 | 42.92 | 27.41 |
| Approach Delay [s/veh] | 10.40 | 10.49 | 9.85 |
| Approach LOS | B | B | A |
| Intersection Delay [s/veh] | 10.29 | | |
| Intersection LOS | B | | |

**Intersection Level Of Service Report**
**Intersection 32: 30 - 7th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 71.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.344 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 7 | 38 | 30 | 13 | 86 | 37 | 663 | 4 | 8 | 568 | 50 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 2.60 | 6.70 | 0.00 | 0.00 | 2.70 | 0.60 | 0.00 | 0.00 | 0.90 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 7 | 38 | 30 | 13 | 86 | 37 | 663 | 4 | 8 | 568 | 50 |
| Peak Hour Factor | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 | 0.9310 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 0 | 2 | 10 | 8 | 3 | 22 | 10 | 171 | 1 | 2 | 146 | 13 |
| Total Analysis Volume [veh/h] | 0 | 8 | 41 | 31 | 13 | 89 | 38 | 684 | 4 | 8 | 586 | 52 |
| Pedestrian Volume [ped/h] | 2 | | | 2 | | | 42 | | | 2 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.06 | 0.09 | 0.34 | 0.10 | 0.20 | 0.04 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 59.09 | 35.65 | 15.25 | 71.12 | 58.79 | 14.98 | 9.00 | 0.00 | 0.00 | 8.98 | 0.00 | 0.00 |
| Movement LOS | F | E | C | F | F | B | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.55 | 0.55 | 0.55 | 1.88 | 1.88 | 0.73 | 7.89 | 7.89 | 7.89 | 6.14 | 6.14 | 6.14 |
| 95th-Percentile Queue Length [ft] | 13.65 | 13.65 | 13.65 | 46.99 | 46.99 | 18.23 | 197.18 | 197.18 | 197.18 | 153.61 | 153.61 | 153.61 |
| d_A, Approach Delay [s/veh] | 18.58 | | | 32.35 | | | 0.47 | | | 0.11 | | |
| Approach LOS | C | | | D | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 3.62 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 33: 31 - Valley Center Spur / Frontage Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.389 |

**Intersection Setup**

| Name | Valley Center Spur | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Approach | Northeastbound | | Northwestbound | | Southeastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 825.00 | 100.00 | 100.00 | 615.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Valley Center Spur | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 108 | 76 | 142 | 298 | 158 | 112 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.90 | 1.30 | 0.70 | 2.60 | 1.30 | 1.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 108 | 76 | 142 | 298 | 158 | 112 |
| Peak Hour Factor | 0.9350 | 0.9350 | 0.9350 | 0.9350 | 0.9350 | 0.9350 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0500 | 1.0500 | 1.0500 | 1.0500 |
| Total 15-Minute Volume [veh/h] | 29 | 20 | 40 | 84 | 44 | 31 |
| Total Analysis Volume [veh/h] | 116 | 81 | 159 | 335 | 177 | 126 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | | | | |
|---|---|---|---|---|---|---|
| Priority Scheme | Stop | | Free | | Free | |
| Flared Lane | No | | | | | |
| Storage Area [veh] | 0 | | 0 | | 0 | |
| Two-Stage Gap Acceptance | No | | | | | |
| Number of Storage Spaces in Median | 0 | | 0 | | 0 | |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.39 | 0.09 | 0.13 | 0.00 | 0.00 | 0.00 |
| d_M, Delay for Movement [s/veh] | 24.98 | 17.07 | 8.25 | 0.00 | 0.00 | 0.00 |
| Movement LOS | C | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 2.55 | 2.55 | 0.43 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 63.63 | 63.63 | 10.75 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 21.72 | | 2.66 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 5.63 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 34: 32 - Valley Center Spur / Valley Center Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 19.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.322 |

**Intersection Setup**

| Name | Valley Center Spur | | Valley Center Road | | Valley Center Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 120.00 | 430.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Valley Center Spur | | Valley Center Road | | Valley Center Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 109 | 135 | 70 | 195 | 264 | 121 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.80 | 5.20 | 2.90 | 6.60 | 3.00 | 1.70 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 109 | 135 | 70 | 195 | 264 | 121 |
| Peak Hour Factor | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0500 | 1.0500 | 1.0500 | 1.0500 |
| Total 15-Minute Volume [veh/h] | 29 | 36 | 19 | 54 | 73 | 34 |
| Total Analysis Volume [veh/h] | 116 | 143 | 78 | 217 | 294 | 135 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.32 | 0.21 | 0.07 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 19.65 | 11.75 | 8.44 | 0.00 | 0.00 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.36 | 0.80 | 0.22 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 34.07 | 19.88 | 5.57 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 15.29 | | 2.23 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.70 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 35: 33 - Nelson Road / Frontage Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 19.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.057 |

**Intersection Setup**

| Name | Nelson Road | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Approach | Southwestbound | | Northwestbound | | Southeastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 575.00 | 600.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Nelson Road | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 12 | 12 | 481 | 49 | 18 | 241 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 8.30 | 2.70 | 0.00 | 5.60 | 2.50 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 12 | 481 | 49 | 18 | 241 |
| Peak Hour Factor | 0.8260 | 0.8260 | 0.8260 | 0.8260 | 0.8260 | 0.8260 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0900 | 1.0900 | 1.0900 | 1.0900 |
| Total 15-Minute Volume [veh/h] | 4 | 4 | 159 | 16 | 6 | 80 |
| Total Analysis Volume [veh/h] | 15 | 15 | 635 | 65 | 24 | 318 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.06 | 0.03 | 0.01 | 0.00 | 0.03 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 19.67 | 13.74 | 0.00 | 0.00 | 9.20 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.29 | 0.29 | 0.00 | 0.00 | 0.08 | 0.00 |
| 95th-Percentile Queue Length [ft] | 7.26 | 7.26 | 0.00 | 0.00 | 2.10 | 0.00 |
| d_A, Approach Delay [s/veh] | 16.71 | | 0.00 | | 0.65 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.67 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 36: 34 - 19th Avenue / I-90 EB Ramp**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 91.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.320 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 WB On | | | I-90 WB Off | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 350.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | | No | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 WB On | | | I-90 WB Off | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 877 | 200 | 45 | 486 | 0 | 0 | 0 | 0 | 17 | 0 | 279 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.20 | 3.50 | 0.00 | 1.80 | 2.00 | 2.00 | 2.00 | 2.00 | 5.90 | 2.00 | 4.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 877 | 200 | 45 | 486 | 0 | 0 | 0 | 0 | 17 | 0 | 279 |
| Peak Hour Factor | 1.0000 | 0.8790 | 0.8790 | 0.8790 | 0.8790 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.8790 | 1.0000 | 0.8790 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 249 | 57 | 13 | 138 | 0 | 0 | 0 | 0 | 5 | 0 | 79 |
| Total Analysis Volume [veh/h] | 0 | 998 | 228 | 51 | 553 | 0 | 0 | 0 | 0 | 19 | 0 | 317 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.01 | 0.00 | 0.09 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.32 | 0.00 | 0.60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 11.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 91.76 | 0.00 | 21.48 |
| Movement LOS | | A | A | B | A | | | | | F | | C |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.00 | 0.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.15 | 0.00 | 3.91 |
| 95th-Percentile Queue Length [ft] | 0.00 | 0.00 | 0.00 | 7.26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 28.71 | 0.00 | 97.79 |
| d_A, Approach Delay [s/veh] | 0.00 | | | 1.00 | | | 0.00 | | | 25.45 | | |
| Approach LOS | A | | | A | | | A | | | D | | |
| d_I, Intersection Delay [s/veh] | 4.23 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 37: 35 - 19th Avenue / I-90 WB Ramp**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 15.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.519 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 EB Off | | | I-90 EB On | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 275.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 260.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 EB Off | | | I-90 EB On | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 424 | 500 | 0 | 0 | 313 | 26 | 208 | 0 | 60 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.60 | 1.00 | 2.00 | 2.00 | 0.90 | 7.70 | 2.40 | 2.00 | 1.70 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 424 | 500 | 0 | 0 | 313 | 26 | 208 | 0 | 60 | 0 | 0 | 0 |
| Peak Hour Factor | 0.8920 | 0.8920 | 1.0000 | 1.0000 | 0.8920 | 0.8920 | 0.8920 | 1.0000 | 0.8920 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 119 | 140 | 0 | 0 | 88 | 7 | 58 | 0 | 17 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 475 | 561 | 0 | 0 | 351 | 29 | 233 | 0 | 67 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 70 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 0 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 0 | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 25 | 60 | 0 | 0 | 60 | 0 | 45 | 0 | 0 | 0 | 0 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 15 | 50 | 0 | 0 | 35 | 0 | 20 | 0 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | No | No | | | No | | No | | | | | |
| Maximum Recall | No | No | | | No | | No | | | | | |
| Pedestrian Recall | No | No | | | No | | No | | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | R | |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| g_i, Effective Green Time [s] | 49 | 49 | 34 | 11 | 11 | |
| g / C, Green / Cycle | 0.70 | 0.70 | 0.49 | 0.16 | 0.16 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.44 | 0.33 | 0.23 | 0.15 | 0.05 | |
| s, saturation flow rate [veh/h] | 1078 | 1693 | 1672 | 1590 | 1429 | |
| c, Capacity [veh/h] | 760 | 1184 | 811 | 251 | 226 | |
| d1, Uniform Delay [s] | 6.39 | 4.73 | 12.01 | 29.08 | 26.04 | |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.16 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 3.85 | 1.36 | 1.94 | 18.97 | 0.73 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.62 | 0.47 | 0.47 | 0.93 | 0.30 | |
| d, Delay for Lane Group [s/veh] | 10.24 | 6.10 | 13.95 | 48.05 | 26.77 | |
| Lane Group LOS | B | A | B | D | C | |
| Critical Lane Group | Yes | No | Yes | Yes | No | |
| 50th-Percentile Queue Length [veh] | 2.81 | 2.92 | 3.93 | 5.01 | 1.00 | |
| 50th-Percentile Queue Length [ft] | 70.26 | 72.98 | 98.37 | 125.26 | 24.88 | |
| 95th-Percentile Queue Length [veh] | 5.06 | 5.25 | 7.08 | 8.68 | 1.79 | |
| 95th-Percentile Queue Length [ft] | 126.46 | 131.36 | 177.06 | 217.04 | 44.78 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10.24 | 6.10 | 0.00 | 0.00 | 13.95 | 13.95 | 48.05 | 0.00 | 26.77 | 0.00 | 0.00 | 0.00 |
| Movement LOS | B | A | | | B | B | D | | C | | | |
| d_A, Approach Delay [s/veh] | 8.00 | | | 13.95 | | | 43.30 | | | 0.00 | | |
| Approach LOS | A | | | B | | | D | | | A | | |
| d_I, Intersection Delay [s/veh] | 15.49 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.519 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 38: 36 - 19th Avenue / Tschache Way**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 14.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.422 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Tschache Way | | | Tschache Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 200.00 | 100.00 | 200.00 | 275.00 | 100.00 | 175.00 | 80.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Tschache Way | | | Tschache Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 65 | 1089 | 48 | 73 | 797 | 57 | 102 | 22 | 56 | 76 | 26 | 89 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 0.00 | 0.00 | 0.70 | 0.00 | 1.00 | 0.00 | 3.60 | 0.00 | 0.00 | 3.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 65 | 1089 | 48 | 73 | 797 | 57 | 102 | 22 | 56 | 76 | 26 | 89 |
| Peak Hour Factor | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 | 0.9750 |
| Other Adjustment Factor | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 17 | 290 | 13 | 19 | 213 | 15 | 26 | 6 | 14 | 19 | 7 | 23 |
| Total Analysis Volume [veh/h] | 69 | 1162 | 51 | 78 | 850 | 61 | 105 | 23 | 57 | 78 | 27 | 91 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 10 | 30 | 0 | 0 | 15 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 13 | 55 | 0 | 13 | 55 | 0 | 0 | 27 | 0 | 0 | 27 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 70 | 58 | 58 | 70 | 59 | 59 | 15 | 15 | 15 | 15 |
| g / C, Green / Cycle | 0.74 | 0.61 | 0.61 | 0.74 | 0.62 | 0.62 | 0.16 | 0.16 | 0.16 | 0.16 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.32 | 0.03 | 0.12 | 0.24 | 0.04 | 0.08 | 0.05 | 0.06 | 0.07 |
| s, saturation flow rate [veh/h] | 814 | 3585 | 1615 | 675 | 3592 | 1615 | 1281 | 1688 | 1339 | 1672 |
| c, Capacity [veh/h] | 625 | 2203 | 993 | 511 | 2220 | 998 | 182 | 263 | 216 | 261 |
| d1, Uniform Delay [s] | 4.38 | 10.44 | 7.29 | 5.81 | 9.08 | 7.21 | 43.50 | 35.53 | 40.45 | 36.41 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.36 | 0.91 | 0.10 | 0.63 | 0.50 | 0.12 | 2.86 | 0.64 | 1.02 | 1.23 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.11 | 0.53 | 0.05 | 0.15 | 0.38 | 0.06 | 0.58 | 0.30 | 0.36 | 0.45 |
| d, Delay for Lane Group [s/veh] | 4.73 | 11.35 | 7.38 | 6.44 | 9.58 | 7.32 | 46.37 | 36.17 | 41.47 | 37.64 |
| Lane Group LOS | A | B | A | A | A | A | D | D | D | D |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 0.35 | 6.54 | 0.41 | 0.42 | 4.16 | 0.49 | 2.58 | 1.68 | 1.78 | 2.55 |
| 50th-Percentile Queue Length [ft] | 8.75 | 163.41 | 10.26 | 10.42 | 103.93 | 12.21 | 64.55 | 41.88 | 44.48 | 63.75 |
| 95th-Percentile Queue Length [veh] | 0.63 | 10.73 | 0.74 | 0.75 | 7.48 | 0.88 | 4.65 | 3.02 | 3.20 | 4.59 |
| 95th-Percentile Queue Length [ft] | 15.75 | 268.23 | 18.47 | 18.75 | 187.07 | 21.97 | 116.19 | 75.38 | 80.06 | 114.75 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 4.73 | 11.35 | 7.38 | 6.44 | 9.58 | 7.32 | 46.37 | 36.17 | 36.17 | 41.47 | 37.64 | 37.64 |
| Movement LOS | A | B | A | A | A | A | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 10.83 | | | 9.20 | | | 41.96 | | | 39.16 | | |
| Approach LOS | B | | | A | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 14.49 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.422 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 39: 37 - 19th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.556 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 400.00 | 100.00 | 400.00 | 275.00 | 100.00 | 250.00 | 200.00 | 100.00 | 100.00 | 225.00 | 100.00 | 225.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 115 | 836 | 205 | 186 | 645 | 75 | 148 | 227 | 56 | 248 | 423 | 262 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.50 | 0.90 | 2.60 | 1.30 | 1.10 | 3.20 | 0.00 | 4.40 | 1.40 | 3.50 | 0.50 | 2.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 115 | 836 | 205 | 186 | 645 | 75 | 148 | 227 | 56 | 248 | 423 | 262 |
| Peak Hour Factor | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 | 0.9430 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 30 | 222 | 54 | 49 | 171 | 20 | 39 | 60 | 15 | 64 | 109 | 67 |
| Total Analysis Volume [veh/h] | 122 | 887 | 217 | 197 | 684 | 80 | 157 | 241 | 59 | 255 | 435 | 270 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 105 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 0 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 30 | 30 | 5 | 30 | 30 | 5 | 15 | 0 | 5 | 15 | 15 |
| Maximum Green [s] | 30 | 90 | 90 | 30 | 90 | 90 | 20 | 45 | 0 | 20 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 12 | 38 | 38 | 9 | 35 | 35 | 15 | 50 | 0 | 8 | 43 | 43 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 53 | 44 | 54 | 53 | 44 | 57 | 42 | 34 | 42 | 32 | 43 |
| g / C, Green / Cycle | 0.50 | 0.42 | 0.51 | 0.50 | 0.42 | 0.54 | 0.40 | 0.32 | 0.40 | 0.30 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.25 | 0.14 | 0.25 | 0.19 | 0.05 | 0.14 | 0.17 | 0.22 | 0.12 | 0.17 |
| s, saturation flow rate [veh/h] | 889 | 3585 | 1574 | 781 | 3578 | 1565 | 1135 | 1759 | 1158 | 3600 | 1577 |
| c, Capacity [veh/h] | 443 | 1499 | 808 | 373 | 1504 | 842 | 469 | 571 | 423 | 1088 | 642 |
| d1, Uniform Delay [s] | 15.13 | 23.61 | 14.42 | 17.47 | 21.81 | 11.81 | 21.17 | 28.87 | 28.77 | 29.06 | 22.27 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.54 | 1.72 | 0.82 | 5.27 | 0.99 | 0.05 | 1.92 | 0.75 | 1.44 | 0.24 | 2.02 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.28 | 0.59 | 0.27 | 0.53 | 0.45 | 0.10 | 0.33 | 0.53 | 0.60 | 0.40 | 0.42 |
| d, Delay for Lane Group [s/veh] | 16.66 | 25.34 | 15.23 | 22.74 | 22.80 | 11.86 | 23.09 | 29.62 | 30.22 | 29.30 | 24.28 |
| Lane Group LOS | B | C | B | C | C | B | C | C | C | C | C |
| Critical Lane Group | No | Yes | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 1.70 | 8.65 | 3.02 | 3.11 | 6.12 | 0.90 | 2.76 | 6.21 | 4.53 | 4.36 | 5.06 |
| 50th-Percentile Queue Length [ft] | 42.59 | 216.18 | 75.60 | 77.67 | 153.12 | 22.54 | 69.05 | 155.19 | 113.29 | 109.08 | 126.57 |
| 95th-Percentile Queue Length [veh] | 3.07 | 13.47 | 5.44 | 5.59 | 10.18 | 1.62 | 4.97 | 10.29 | 8.02 | 7.79 | 8.75 |
| 95th-Percentile Queue Length [ft] | 76.66 | 336.75 | 136.09 | 139.81 | 254.59 | 40.57 | 124.28 | 257.34 | 200.57 | 194.72 | 218.82 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 16.66 | 25.34 | 15.23 | 22.74 | 22.80 | 11.86 | 23.09 | 29.62 | 29.62 | 30.22 | 29.30 | 24.28 |
| Movement LOS | B | C | B | C | C | B | C | C | C | C | C | C |
| d_A, Approach Delay [s/veh] | 22.69 | | | 21.88 | | | 27.37 | | | 28.13 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 24.52 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.556 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 40: 38 - 19th Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.562 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 90.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 325.00 | 100.00 | 420.00 | 140.00 | 100.00 | 50.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 178 | 918 | 62 | 96 | 763 | 139 | 145 | 251 | 103 | 80 | 368 | 117 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.50 | 1.60 | 1.00 | 0.80 | 0.00 | 0.00 | 0.80 | 1.00 | 0.00 | 0.50 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 178 | 918 | 62 | 96 | 763 | 139 | 145 | 251 | 103 | 80 | 368 | 117 |
| Peak Hour Factor | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 | 0.9510 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 47 | 241 | 16 | 25 | 201 | 37 | 37 | 64 | 26 | 20 | 94 | 30 |
| Total Analysis Volume [veh/h] | 187 | 965 | 65 | 101 | 802 | 146 | 148 | 256 | 105 | 82 | 375 | 119 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 130 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 30 | 0 | 5 | 30 | 0 | 5 | 15 | 15 | 5 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 36 | 0 | 9 | 37 | 0 | 8 | 77 | 77 | 8 | 77 | 77 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 76 | 67 | 67 | 76 | 68 | 68 | 44 | 36 | 46 | 44 | 36 | 47 |
| g / C, Green / Cycle | 0.59 | 0.52 | 0.52 | 0.59 | 0.53 | 0.53 | 0.34 | 0.27 | 0.35 | 0.34 | 0.27 | 0.36 |
| (v / s)_i Volume / Saturation Flow Rate | 0.27 | 0.28 | 0.28 | 0.15 | 0.26 | 0.26 | 0.13 | 0.14 | 0.07 | 0.07 | 0.20 | 0.07 |
| s, saturation flow rate [veh/h] | 696 | 1872 | 1831 | 665 | 1885 | 1785 | 1132 | 1885 | 1599 | 1233 | 1891 | 1615 |
| c, Capacity [veh/h] | 402 | 970 | 948 | 379 | 991 | 939 | 266 | 517 | 561 | 354 | 518 | 580 |
| d1, Uniform Delay [s] | 14.83 | 20.91 | 20.92 | 14.04 | 19.71 | 19.71 | 38.44 | 39.62 | 29.29 | 31.15 | 42.71 | 28.85 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.84 | 2.13 | 2.18 | 1.71 | 1.74 | 1.84 | 8.16 | 0.74 | 0.74 | 0.33 | 1.93 | 0.80 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

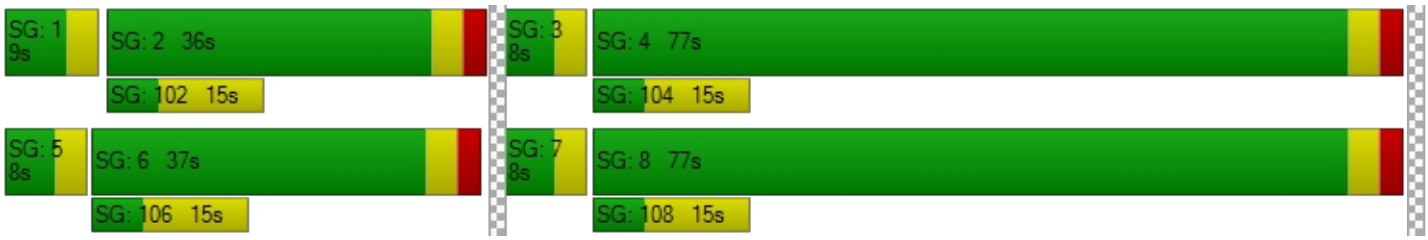
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.47 | 0.54 | 0.54 | 0.27 | 0.49 | 0.49 | 0.56 | 0.50 | 0.19 | 0.23 | 0.72 | 0.21 |
| d, Delay for Lane Group [s/veh] | 18.67 | 23.04 | 23.10 | 15.75 | 21.45 | 21.55 | 46.60 | 40.36 | 30.02 | 31.48 | 44.64 | 29.65 |
| Lane Group LOS | B | C | C | B | C | C | D | D | C | C | D | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 2.94 | 11.04 | 10.83 | 1.47 | 9.83 | 9.34 | 4.00 | 7.01 | 2.42 | 1.84 | 11.19 | 2.73 |
| 50th-Percentile Queue Length [ft] | 73.40 | 276.01 | 270.78 | 36.68 | 245.71 | 233.44 | 100.08 | 175.34 | 60.58 | 46.12 | 279.67 | 68.30 |
| 95th-Percentile Queue Length [veh] | 5.29 | 16.49 | 16.23 | 2.64 | 14.97 | 14.35 | 7.21 | 11.36 | 4.36 | 3.32 | 16.67 | 4.92 |
| 95th-Percentile Queue Length [ft] | 132.13 | 412.24 | 405.72 | 66.03 | 374.25 | 358.73 | 180.14 | 283.92 | 109.05 | 83.01 | 416.80 | 122.95 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 18.67 | 23.07 | 23.10 | 15.75 | 21.49 | 21.55 | 46.60 | 40.36 | 30.02 | 31.48 | 44.64 | 29.65 |
| Movement LOS | B | C | C | B | C | C | D | D | C | C | D | C |
| d_A, Approach Delay [s/veh] | 22.39 | | | 20.94 | | | 40.04 | | | 39.67 | | |
| Approach LOS | C | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 27.59 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.562 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 41: 39 - 7th Avenue / Durston Road / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 32.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.586 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Durston Road | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 70.00 | 100.00 | 100.00 | 50.00 | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Durston Road | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 72 | 681 | 34 | 64 | 489 | 189 | 194 | 233 | 57 | 23 | 233 | 72 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 0.00 | 1.60 | 1.00 | 0.50 | 1.00 | 0.40 | 0.00 | 0.00 | 0.40 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 72 | 681 | 34 | 64 | 489 | 189 | 194 | 233 | 57 | 23 | 233 | 72 |
| Peak Hour Factor | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 | 0.9100 |
| Other Adjustment Factor | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Total 15-Minute Volume [veh/h] | 20 | 185 | 9 | 17 | 133 | 51 | 51 | 61 | 15 | 6 | 61 | 19 |
| Total Analysis Volume [veh/h] | 78 | 741 | 37 | 70 | 532 | 206 | 203 | 243 | 60 | 24 | 243 | 75 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 30 | 0 | 5 | 30 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 8 | 35 | 0 | 8 | 35 | 0 | 0 | 24 | 0 | 0 | 33 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 45 | 38 | 38 | 45 | 38 | 38 | 19 | 19 | 21 |
| g / C, Green / Cycle | 0.45 | 0.38 | 0.38 | 0.45 | 0.38 | 0.38 | 0.19 | 0.19 | 0.21 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.21 | 0.21 | 0.09 | 0.15 | 0.13 | 0.11 | 0.17 | 0.19 |
| s, saturation flow rate [veh/h] | 998 | 1881 | 1850 | 822 | 3582 | 1607 | 1792 | 1829 | 1816 |
| c, Capacity [veh/h] | 452 | 710 | 698 | 356 | 1347 | 604 | 338 | 345 | 382 |
| d1, Uniform Delay [s] | 16.55 | 24.49 | 24.49 | 17.44 | 22.86 | 22.33 | 37.10 | 39.43 | 38.40 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.17 | 0.19 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.83 | 3.08 | 3.14 | 1.23 | 0.87 | 1.53 | 1.71 | 10.56 | 12.24 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

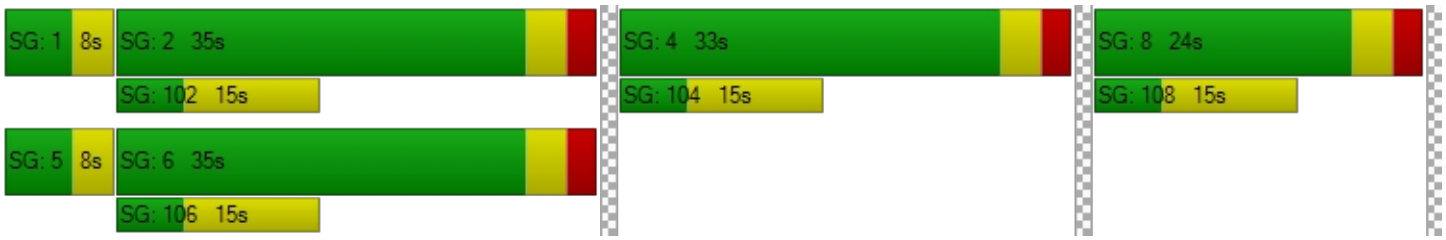
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.17 | 0.55 | 0.55 | 0.20 | 0.40 | 0.34 | 0.60 | 0.88 | 0.89 |
| d, Delay for Lane Group [s/veh] | 17.38 | 27.58 | 27.63 | 18.67 | 23.73 | 23.86 | 38.81 | 49.99 | 50.64 |
| Lane Group LOS | B | C | C | B | C | C | D | D | D |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes |
| 50th-Percentile Queue Length [veh] | 1.11 | 7.74 | 7.62 | 1.02 | 4.67 | 3.67 | 4.66 | 8.15 | 9.34 |
| 50th-Percentile Queue Length [ft] | 27.78 | 193.43 | 190.53 | 25.56 | 116.73 | 91.65 | 116.41 | 203.64 | 233.43 |
| 95th-Percentile Queue Length [veh] | 2.00 | 12.30 | 12.15 | 1.84 | 8.21 | 6.60 | 8.20 | 12.83 | 14.35 |
| 95th-Percentile Queue Length [ft] | 50.01 | 307.48 | 303.71 | 46.01 | 205.33 | 164.97 | 204.88 | 320.65 | 358.71 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 17.38 | 27.60 | 27.63 | 18.67 | 23.73 | 23.86 | 38.81 | 49.99 | 49.99 | 50.64 | 50.64 | 50.64 |
| Movement LOS | B | C | C | B | C | C | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 26.67 | | | 23.33 | | | 45.50 | | | 50.64 | | |
| Approach LOS | C | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 32.65 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.586 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 42: 40 - 19th Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 53.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.698 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 230.00 | 100.00 | 113.00 | 200.00 | 100.00 | 100.00 | 250.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 122 | 629 | 107 | 129 | 499 | 307 | 371 | 601 | 31 | 175 | 754 | 190 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.60 | 0.40 | 0.00 | 0.00 | 1.40 | 1.30 | 1.60 | 0.80 | 0.00 | 0.00 | 0.80 | 0.50 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 122 | 629 | 107 | 129 | 499 | 307 | 371 | 601 | 31 | 175 | 754 | 190 |
| Peak Hour Factor | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 | 0.9560 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 31 | 158 | 27 | 32 | 125 | 77 | 93 | 151 | 8 | 44 | 189 | 48 |
| Total Analysis Volume [veh/h] | 123 | 632 | 107 | 130 | 501 | 308 | 373 | 604 | 31 | 176 | 757 | 191 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 180 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 0 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lag | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 25 | 54 | 54 | 23 | 52 | 52 | 40 | 84 | 0 | 19 | 63 | 63 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 3.00 | 5.00 | 3.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 1.00 | 3.00 | 1.00 | 1.00 | 3.00 | 3.00 | 1.00 | 3.00 | 3.00 | 1.00 | 3.00 | 1.00 |
| g_i, Effective Green Time [s] | 22 | 49 | 70 | 20 | 47 | 112 | 37 | 79 | 79 | 16 | 58 | 123 |
| g / C, Green / Cycle | 0.12 | 0.27 | 0.39 | 0.11 | 0.26 | 0.62 | 0.21 | 0.44 | 0.44 | 0.09 | 0.32 | 0.68 |
| (v / s)_i Volume / Saturation Flow Rate | 0.09 | 0.18 | 0.07 | 0.07 | 0.14 | 0.19 | 0.14 | 0.17 | 0.17 | 0.05 | 0.21 | 0.12 |
| s, saturation flow rate [veh/h] | 1417 | 3603 | 1615 | 1810 | 3568 | 1594 | 2752 | 1885 | 1853 | 3514 | 3589 | 1607 |
| c, Capacity [veh/h] | 197 | 981 | 628 | 201 | 932 | 992 | 575 | 827 | 813 | 312 | 1156 | 1098 |
| d1, Uniform Delay [s] | 77.87 | 57.81 | 36.00 | 76.62 | 57.16 | 15.92 | 67.56 | 34.14 | 34.14 | 78.65 | 52.40 | 10.24 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 13.92 | 3.26 | 0.59 | 14.97 | 2.22 | 0.81 | 5.58 | 1.37 | 1.39 | 7.18 | 2.90 | 0.34 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

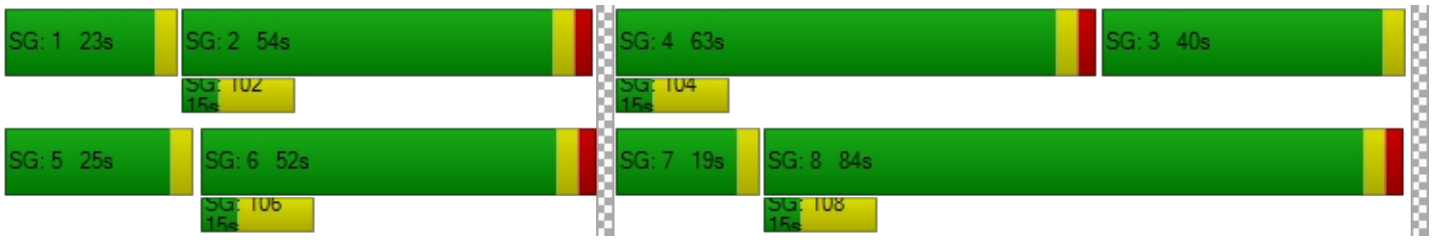
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.62 | 0.64 | 0.17 | 0.65 | 0.54 | 0.31 | 0.65 | 0.39 | 0.39 | 0.56 | 0.65 | 0.17 |
| d, Delay for Lane Group [s/veh] | 91.78 | 61.07 | 36.58 | 91.59 | 59.39 | 16.73 | 73.14 | 35.50 | 35.53 | 85.83 | 55.29 | 10.59 |
| Lane Group LOS | F | E | D | F | E | B | E | D | D | F | E | B |
| Critical Lane Group | No | Yes | No | No | No | Yes | No | No | No | No | Yes | Yes |
| 50th-Percentile Queue Length [veh] | 6.36 | 13.28 | 3.27 | 6.66 | 10.21 | 6.33 | 8.51 | 10.02 | 9.86 | 4.26 | 15.34 | 2.91 |
| 50th-Percentile Queue Length [ft] | 159.03 | 332.09 | 81.84 | 166.43 | 255.35 | 158.36 | 212.82 | 250.62 | 246.47 | 106.61 | 383.44 | 72.80 |
| 95th-Percentile Queue Length [veh] | 10.50 | 19.26 | 5.89 | 10.89 | 15.46 | 10.46 | 13.30 | 15.22 | 15.01 | 7.65 | 21.76 | 5.24 |
| 95th-Percentile Queue Length [ft] | 262.43 | 481.52 | 147.30 | 272.21 | 386.38 | 261.55 | 332.45 | 380.43 | 375.21 | 191.28 | 544.00 | 131.04 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 91.78 | 61.07 | 36.58 | 91.59 | 59.39 | 16.73 | 73.14 | 35.51 | 35.53 | 85.83 | 55.29 | 10.59 |
| Movement LOS | F | E | D | F | E | B | E | D | D | F | E | B |
| d_A, Approach Delay [s/veh] | 62.41 | | | 49.86 | | | 49.44 | | | 52.48 | | |
| Approach LOS | E | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 53.25 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.698 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 43: 41 - 7th Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.398 |

**Intersection Setup**

| Name | 7th Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | Yes | |

**volumes**

| Name | 7th Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 219 | 286 | 328 | 333 | 407 | 141 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.50 | 2.40 | 0.60 | 1.50 | 1.70 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 219 | 286 | 328 | 333 | 407 | 141 |
| Peak Hour Factor | 0.9830 | 0.9830 | 0.9830 | 0.9830 | 0.9830 | 0.9830 |
| Other Adjustment Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Total 15-Minute Volume [veh/h] | 52 | 68 | 78 | 79 | 96 | 33 |
| Total Analysis Volume [veh/h] | 207 | 271 | 310 | 315 | 385 | 133 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protected | Overlap | ProtectedPermissi | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 6 | 3 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | 3,6 | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 32 | 32 | 13 | 33 | 20 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | |
| Maximum Recall | No | No | No | No | No | |
| Pedestrian Recall | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | C | C |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 0.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 11 | 28 | 44 | 44 | 44 | 27 | 27 |
| g / C, Green / Cycle | 0.17 | 0.44 | 0.67 | 0.67 | 0.67 | 0.41 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.13 | 0.19 | 0.11 | 0.24 | 0.18 | 0.15 | 0.17 |
| s, saturation flow rate [veh/h] | 1620 | 1419 | 1081 | 989 | 1533 | 1681 | 1542 |
| c, Capacity [veh/h] | 285 | 618 | 786 | 736 | 1028 | 691 | 634 |
| d1, Uniform Delay [s] | 25.32 | 12.82 | 4.40 | 4.72 | 4.28 | 13.33 | 13.55 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.17 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.55 | 0.49 | 0.09 | 0.39 | 0.62 | 1.55 | 1.95 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.73 | 0.44 | 0.15 | 0.32 | 0.26 | 0.37 | 0.41 |
| d, Delay for Lane Group [s/veh] | 28.87 | 13.31 | 4.49 | 5.11 | 4.91 | 14.88 | 15.50 |
| Lane Group LOS | C | B | A | A | A | B | B |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 3.13 | 2.53 | 0.42 | 0.91 | 1.18 | 2.67 | 2.76 |
| 50th-Percentile Queue Length [ft] | 78.36 | 63.34 | 10.41 | 22.73 | 29.43 | 66.78 | 68.91 |
| 95th-Percentile Queue Length [veh] | 5.64 | 4.56 | 0.75 | 1.64 | 2.12 | 4.81 | 4.96 |
| 95th-Percentile Queue Length [ft] | 141.04 | 114.02 | 18.73 | 40.92 | 52.97 | 120.21 | 124.03 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 28.87 | 13.31 | 4.79 | 4.94 | 15.08 | 15.50 |
| Movement LOS | C | B | A | A | B | B |
| d_A, Approach Delay [s/veh] | 20.05 | | 4.90 | | 15.19 | |
| Approach LOS | C | | A | | B | |
| d_I, Intersection Delay [s/veh] | 12.66 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.398 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | - | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 44: 42 - 19th Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 23.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.351 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 30 | 781 | 35 | 0 | 595 | 51 | 18 | 59 | 44 | 24 | 27 | 56 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.60 | 2.90 | 2.00 | 1.00 | 0.00 | 0.00 | 1.70 | 0.00 | 0.00 | 0.00 | 1.80 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 30 | 781 | 35 | 0 | 595 | 51 | 18 | 59 | 44 | 24 | 27 | 56 |
| Peak Hour Factor | 0.9300 | 0.9300 | 0.9300 | 1.0000 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 8 | 204 | 9 | 0 | 155 | 13 | 5 | 15 | 11 | 6 | 7 | 15 |
| Total Analysis Volume [veh/h] | 31 | 815 | 37 | 0 | 621 | 53 | 19 | 62 | 46 | 25 | 28 | 58 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 180 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 161 | 0 | 0 | 161 | 0 | 0 | 19 | 0 | 0 | 19 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | C | C | C | C |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 156 | 156 | 156 | 156 | 156 | 14 | 14 |
| g / C, Green / Cycle | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.08 | 0.08 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.26 | 0.26 | 0.20 | 0.20 | 0.09 | 0.10 |
| s, saturation flow rate [veh/h] | 699 | 1683 | 1657 | 1693 | 1647 | 1359 | 1156 |
| c, Capacity [veh/h] | 614 | 1459 | 1436 | 1467 | 1428 | 129 | 114 |
| d1, Uniform Delay [s] | 3.01 | 2.15 | 2.15 | 2.00 | 2.01 | 83.90 | 83.87 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.16 | 0.51 | 0.52 | 0.37 | 0.39 | 76.00 | 76.37 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.05 | 0.29 | 0.29 | 0.23 | 0.24 | 0.99 | 0.97 |
| d, Delay for Lane Group [s/veh] | 3.16 | 2.66 | 2.67 | 2.36 | 2.40 | 159.89 | 160.24 |
| Lane Group LOS | A | A | A | A | A | F | F |
| Critical Lane Group | No | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.22 | 2.39 | 2.35 | 1.74 | 1.76 | 8.70 | 7.66 |
| 50th-Percentile Queue Length [ft] | 5.57 | 59.69 | 58.87 | 43.51 | 43.92 | 217.49 | 191.44 |
| 95th-Percentile Queue Length [veh] | 0.40 | 4.30 | 4.24 | 3.13 | 3.16 | 13.54 | 12.20 |
| 95th-Percentile Queue Length [ft] | 10.03 | 107.44 | 105.97 | 78.32 | 79.06 | 338.42 | 304.90 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 3.16 | 2.67 | 2.67 | 0.00 | 2.38 | 2.40 | 159.89 | 159.89 | 159.89 | 160.24 | 160.24 | 160.24 |
| Movement LOS | A | A | A | | A | A | F | F | F | F | F | F |
| d_A, Approach Delay [s/veh] | 2.68 | | | 2.38 | | | 159.89 | | | 160.24 | | |
| Approach LOS | A | | | A | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 23.44 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.351 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 45: 43 - 19th Avenue / Koch Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 10.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.344 |

**Intersection Setup**

| Name | | | | 19th Avenue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 160.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | | | | 19th Avenue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 55 | 805 | 52 | 57 | 563 | 22 | 29 | 53 | 79 | 34 | 76 | 50 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.80 | 0.50 | 3.80 | 0.00 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 55 | 805 | 52 | 57 | 563 | 22 | 29 | 53 | 79 | 34 | 76 | 50 |
| Peak Hour Factor | 0.9290 | 0.9290 | 0.9290 | 0.9290 | 0.9290 | 0.9290 | 0.9290 | 0.9290 | 0.9290 | 0.9290 | 0.9290 | 0.9290 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 14 | 210 | 14 | 15 | 147 | 6 | 8 | 14 | 21 | 9 | 20 | 13 |
| Total Analysis Volume [veh/h] | 57 | 841 | 54 | 60 | 588 | 23 | 31 | 57 | 85 | 36 | 79 | 52 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 90 | 0 | 0 | 90 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 61 | 0 | 0 | 61 | 0 | 0 | 29 | 0 | 0 | 29 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 69 | 69 | 69 | 69 | 69 | 69 | 11 | 11 |
| g / C, Green / Cycle | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.76 | 0.13 | 0.13 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.24 | 0.24 | 0.09 | 0.16 | 0.16 | 0.11 | 0.10 |
| s, saturation flow rate [veh/h] | 809 | 1891 | 1851 | 632 | 1883 | 1858 | 1646 | 1596 |
| c, Capacity [veh/h] | 621 | 1439 | 1409 | 482 | 1434 | 1415 | 257 | 252 |
| d1, Uniform Delay [s] | 5.31 | 3.37 | 3.37 | 6.56 | 3.06 | 3.06 | 38.16 | 38.09 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.29 | 0.57 | 0.58 | 0.53 | 0.34 | 0.35 | 3.04 | 2.96 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.09 | 0.31 | 0.31 | 0.12 | 0.21 | 0.21 | 0.67 | 0.66 |
| d, Delay for Lane Group [s/veh] | 5.60 | 3.94 | 3.95 | 7.09 | 3.41 | 3.41 | 41.20 | 41.05 |
| Lane Group LOS | A | A | A | A | A | A | D | D |
| Critical Lane Group | No | No | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 0.38 | 2.05 | 2.01 | 0.48 | 1.26 | 1.25 | 3.88 | 3.74 |
| 50th-Percentile Queue Length [ft] | 9.50 | 51.21 | 50.25 | 12.01 | 31.52 | 31.19 | 96.92 | 93.54 |
| 95th-Percentile Queue Length [veh] | 0.68 | 3.69 | 3.62 | 0.87 | 2.27 | 2.25 | 6.98 | 6.74 |
| 95th-Percentile Queue Length [ft] | 17.10 | 92.18 | 90.46 | 21.63 | 56.73 | 56.15 | 174.45 | 168.38 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 5.60 | 3.95 | 3.95 | 7.09 | 3.41 | 3.41 | 41.20 | 41.20 | 41.20 | 41.05 | 41.05 | 41.05 |
| Movement LOS | A | A | A | A | A | A | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 4.05 | | | 3.74 | | | 41.20 | | | 41.05 | | |
| Approach LOS | A | | | A | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 10.36 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.344 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 46: 44 - 19th Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.443 |

**Intersection Setup**

| Name | 19th Avenue | | | | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 450.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 300.00 | 100.00 | 300.00 | 175.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 289 | 548 | 70 | 106 | 550 | 52 | 76 | 247 | 147 | 108 | 337 | 113 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.60 | 0.00 | 0.00 | 0.40 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.90 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 289 | 548 | 70 | 106 | 550 | 52 | 76 | 247 | 147 | 108 | 337 | 113 |
| Peak Hour Factor | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 | 0.9770 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 72 | 136 | 17 | 26 | 137 | 13 | 19 | 61 | 36 | 27 | 84 | 28 |
| Total Analysis Volume [veh/h] | 287 | 544 | 69 | 105 | 546 | 52 | 75 | 245 | 146 | 107 | 335 | 112 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 30 | 0 | 5 | 30 | 0 | 5 | 15 | 15 | 5 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 35 | 0 | 10 | 37 | 0 | 8 | 34 | 34 | 11 | 37 | 37 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 54 | 45 | 45 | 54 | 46 | 46 | 26 | 17 | 27 | 26 | 19 | 30 |
| g / C, Green / Cycle | 0.60 | 0.50 | 0.50 | 0.60 | 0.51 | 0.51 | 0.29 | 0.19 | 0.30 | 0.29 | 0.21 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.30 | 0.17 | 0.17 | 0.11 | 0.16 | 0.16 | 0.06 | 0.13 | 0.09 | 0.08 | 0.18 | 0.07 |
| s, saturation flow rate [veh/h] | 942 | 1870 | 1797 | 951 | 1892 | 1835 | 1214 | 1900 | 1604 | 1321 | 1900 | 1601 |
| c, Capacity [veh/h] | 597 | 935 | 899 | 599 | 970 | 940 | 303 | 364 | 486 | 375 | 393 | 529 |
| d1, Uniform Delay [s] | 9.98 | 13.51 | 13.51 | 8.27 | 12.74 | 12.75 | 25.00 | 33.75 | 24.06 | 24.85 | 34.35 | 21.69 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.44 | 0.11 | 0.50 | 0.11 | 0.11 | 0.33 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.76 | 0.96 | 1.00 | 0.64 | 0.84 | 0.87 | 1.72 | 2.16 | 1.59 | 0.41 | 5.26 | 0.61 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.48 | 0.33 | 0.33 | 0.18 | 0.31 | 0.31 | 0.25 | 0.67 | 0.30 | 0.29 | 0.85 | 0.21 |
| d, Delay for Lane Group [s/veh] | 12.74 | 14.47 | 14.51 | 8.91 | 13.59 | 13.62 | 26.72 | 35.92 | 25.65 | 25.26 | 39.61 | 22.30 |
| Lane Group LOS | B | B | B | A | B | B | C | D | C | C | D | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 2.87 | 3.85 | 3.71 | 0.89 | 3.58 | 3.49 | 1.31 | 5.10 | 2.55 | 1.74 | 7.47 | 1.76 |
| 50th-Percentile Queue Length [ft] | 71.64 | 96.30 | 92.82 | 22.33 | 89.47 | 87.19 | 32.86 | 127.47 | 63.86 | 43.58 | 186.82 | 43.99 |
| 95th-Percentile Queue Length [veh] | 5.16 | 6.93 | 6.68 | 1.61 | 6.44 | 6.28 | 2.37 | 8.80 | 4.60 | 3.14 | 11.96 | 3.17 |
| 95th-Percentile Queue Length [ft] | 128.96 | 173.34 | 167.07 | 40.20 | 161.05 | 156.94 | 59.15 | 220.04 | 114.95 | 78.44 | 298.90 | 79.18 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 12.74 | 14.49 | 14.51 | 8.91 | 13.60 | 13.62 | 26.72 | 35.92 | 25.65 | 25.26 | 39.61 | 22.30 |
| Movement LOS | B | B | B | A | B | B | C | D | C | C | D | C |
| d_A, Approach Delay [s/veh] | 13.93 | | | 12.90 | | | 31.22 | | | 33.34 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 20.83 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.443 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 47: 45 - 19th Avenue / Graf Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 16.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.088 |

**Intersection Setup**

| Name | 19th Avenue | | 19th Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 1 | 0 |
| Pocket Length [ft] | 400.00 | 100.00 | 100.00 | 380.00 | 175.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | 19th Avenue | | 19th Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 15 | 249 | 448 | 54 | 29 | 11 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.60 | 0.60 | 0.00 | 3.40 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 15 | 249 | 448 | 54 | 29 | 11 |
| Peak Hour Factor | 0.9330 | 0.9330 | 0.9330 | 0.9330 | 0.9330 | 0.9330 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 4 | 65 | 116 | 14 | 8 | 3 |
| Total Analysis Volume [veh/h] | 16 | 259 | 466 | 56 | 31 | 12 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.02 | 0.00 | 0.00 | 0.00 | 0.09 | 0.02 |
| d_M, Delay for Movement [s/veh] | 8.47 | 0.00 | 0.00 | 0.00 | 16.14 | 11.35 |
| Movement LOS | A | A | A | A | C | B |
| 95th-Percentile Queue Length [veh] | 0.05 | 0.00 | 0.00 | 0.00 | 0.29 | 0.06 |
| 95th-Percentile Queue Length [ft] | 1.15 | 0.00 | 0.00 | 0.00 | 7.15 | 1.58 |
| d_A, Approach Delay [s/veh] | 0.49 | | 0.00 | | 14.80 | |
| Approach LOS | A | | A | | B | |
| d_I, Intersection Delay [s/veh] | 0.92 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 48: 46 - Harper Puckett Road / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 11.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.067 |

**Intersection Setup**

| Name | Harper Puckett Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Harper Puckett Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 39 | 8 | 13 | 153 | 140 | 59 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.60 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 39 | 8 | 13 | 153 | 140 | 59 |
| Peak Hour Factor | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 | 0.9280 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 11 | 2 | 3 | 40 | 36 | 15 |
| Total Analysis Volume [veh/h] | 42 | 9 | 13 | 158 | 145 | 61 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.07 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 11.15 | 9.57 | 7.64 | 0.00 | 0.00 | 0.00 |
| Movement LOS | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.25 | 0.25 | 0.42 | 0.42 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 6.22 | 6.22 | 10.60 | 10.60 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 10.87 | | 0.58 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 1.53 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 49: 47 - Flanders Mill Road / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 16.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.177 |

**Intersection Setup**

| Name | Flanders Mill Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Flanders Mill Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 69 | 100 | 161 | 53 | 105 | 161 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 69 | 100 | 161 | 53 | 105 | 161 |
| Peak Hour Factor | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 | 0.9060 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 19 | 28 | 43 | 14 | 28 | 43 |
| Total Analysis Volume [veh/h] | 76 | 110 | 171 | 56 | 111 | 171 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.18 | 0.13 | 0.00 | 0.00 | 0.08 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 16.01 | 11.88 | 0.00 | 0.00 | 7.90 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.30 | 1.30 | 0.00 | 0.00 | 0.79 | 0.79 |
| 95th-Percentile Queue Length [ft] | 32.47 | 32.47 | 0.00 | 0.00 | 19.63 | 19.63 |
| d_A, Approach Delay [s/veh] | 13.57 | | 0.00 | | 3.11 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.89 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 50: 48 - Davis Lane / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 32.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Davis Lane | | | Davis Lane | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | Yes | | | No | | |

**volumes**

| Name | Davis Lane | | | Davis Lane | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 81 | 160 | 30 | 20 | 186 | 71 | 81 | 209 | 58 | 47 | 230 | 47 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 81 | 160 | 30 | 20 | 186 | 71 | 81 | 209 | 58 | 47 | 230 | 47 |
| Peak Hour Factor | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 | 0.9130 |
| Other Adjustment Factor | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 24 | 48 | 9 | 6 | 56 | 21 | 22 | 57 | 16 | 13 | 63 | 13 |
| Total Analysis Volume [veh/h] | 97 | 191 | 36 | 24 | 222 | 85 | 89 | 229 | 64 | 51 | 252 | 51 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | | |
|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 5.18 | 0.25 | 6.08 | 8.00 | 6.81 |
| 95th-Percentile Queue Length [ft] | 129.42 | 6.32 | 152.10 | 200.08 | 170.26 |
| Approach Delay [s/veh] | 27.11 | | 31.00 | 38.53 | 33.42 |
| Approach LOS | D | | D | E | D |
| Intersection Delay [s/veh] | 32.78 | | | | |
| Intersection LOS | D | | | | |

**Intersection Level Of Service Report**
**Intersection 51: 49 - Laurel Parkway / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 11.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Laurel Parkway | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 35.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Laurel Parkway | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 111 | 14 | 12 | 229 | 251 | 144 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.90 | 0.00 | 0.00 | 0.90 | 0.00 | 1.40 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 111 | 14 | 12 | 229 | 251 | 144 |
| Peak Hour Factor | 0.9240 | 0.9240 | 0.9240 | 0.9240 | 0.9240 | 0.9240 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 30 | 4 | 3 | 59 | 65 | 37 |
| Total Analysis Volume [veh/h] | 120 | 15 | 12 | 238 | 261 | 150 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.82 | 0.07 | 1.48 | 2.92 |
| 95th-Percentile Queue Length [ft] | 20.53 | 1.69 | 37.05 | 72.90 |
| Approach Delay [s/veh] | 10.71 | | 10.26 | 11.92 |
| Approach LOS | B | | B | B |
| Intersection Delay [s/veh] | 11.19 | | | |
| Intersection LOS | B | | | |

**Intersection Level Of Service Report**
**Intersection 52: 50 - Cottonwood Road / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 18.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.504 |

**Intersection Setup**

| Name | Cottonwood Road | | | Cottonwood Road | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | Yes | | |

**volumes**

| Name | Cottonwood Road | | | Cottonwood Road | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 94 | 16 | 165 | 12 | 12 | 4 | 5 | 251 | 86 | 174 | 312 | 25 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.60 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 94 | 16 | 165 | 12 | 12 | 4 | 5 | 251 | 86 | 174 | 312 | 25 |
| Peak Hour Factor | 0.9230 | 0.9230 | 0.9230 | 0.9230 | 0.9230 | 0.9230 | 0.9230 | 0.9230 | 0.9230 | 0.9230 | 0.9230 | 0.9230 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 25 | 4 | 45 | 3 | 3 | 1 | 1 | 65 | 22 | 45 | 81 | 7 |
| Total Analysis Volume [veh/h] | 102 | 17 | 179 | 13 | 13 | 4 | 5 | 261 | 89 | 181 | 325 | 26 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 26 | 0 | 0 | 26 | 0 | 6 | 28 | 0 | 6 | 28 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | No | No | |
| Maximum Recall | | No | | | No | | No | No | | No | No | |
| Pedestrian Recall | | No | | | No | | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | L | C | L | C |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 29 | 29 | 22 | 15 | 21 | 20 |
| g / C, Green / Cycle | 0.48 | 0.48 | 0.36 | 0.25 | 0.35 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | 0.02 | 0.01 | 0.21 | 0.17 | 0.21 |
| s, saturation flow rate [veh/h] | 1419 | 1312 | 942 | 1637 | 1068 | 1678 |
| c, Capacity [veh/h] | 760 | 715 | 287 | 414 | 358 | 552 |
| d1, Uniform Delay [s] | 10.16 | 8.30 | 20.85 | 21.35 | 17.37 | 17.12 |
| k, delay calibration | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.52 | 0.11 | 0.02 | 4.79 | 1.11 | 1.22 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.39 | 0.04 | 0.02 | 0.85 | 0.51 | 0.64 |
| d, Delay for Lane Group [s/veh] | 11.68 | 8.41 | 20.88 | 26.14 | 18.48 | 18.34 |
| Lane Group LOS | B | A | C | C | B | B |
| Critical Lane Group | Yes | No | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh] | 2.48 | 0.20 | 0.04 | 4.81 | 1.72 | 3.87 |
| 50th-Percentile Queue Length [ft] | 61.97 | 4.99 | 1.04 | 120.26 | 42.93 | 96.69 |
| 95th-Percentile Queue Length [veh] | 4.46 | 0.36 | 0.07 | 8.41 | 3.09 | 6.96 |
| 95th-Percentile Queue Length [ft] | 111.55 | 8.98 | 1.87 | 210.19 | 77.28 | 174.05 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 11.68 | 11.68 | 11.68 | 8.41 | 8.41 | 8.41 | 20.88 | 26.14 | 26.14 | 18.48 | 18.34 | 18.34 |
| Movement LOS | B | B | B | A | A | A | C | C | C | B | B | B |
| d_A, Approach Delay [s/veh] | 11.68 | | | 8.41 | | | 26.06 | | | 18.39 | | |
| Approach LOS | B | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 18.74 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.504 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 53: 51 - Flanders Mill Road / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 34.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.261 |

**Intersection Setup**

| Name | Flanders Mill Road | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | No | |

**volumes**

| Name | Flanders Mill Road | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 40 | 111 | 105 | 427 | 450 | 62 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.50 | 0.60 | 1.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 40 | 111 | 105 | 427 | 450 | 62 |
| Peak Hour Factor | 0.8740 | 0.8740 | 0.8740 | 0.8740 | 0.8740 | 0.8740 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 11 | 32 | 29 | 117 | 124 | 17 |
| Total Analysis Volume [veh/h] | 46 | 127 | 115 | 469 | 494 | 68 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.26 | 0.23 | 0.11 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 34.81 | 20.90 | 8.98 | 0.00 | 0.00 | 0.00 |
| Movement LOS | D | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 2.58 | 2.58 | 0.38 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 64.61 | 64.61 | 9.50 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 24.60 | | 1.77 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.01 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 54: 52 - Ferguson Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 25.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 128 | 172 | 72 | 3 | 154 | 155 | 150 | 126 | 95 | 82 | 219 | 9 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.80 | 1.80 | 0.00 | 0.00 | 0.60 | 0.60 | 1.30 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 128 | 172 | 72 | 3 | 154 | 155 | 150 | 126 | 95 | 82 | 219 | 9 |
| Peak Hour Factor | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 | 0.9610 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 32 | 43 | 18 | 1 | 40 | 40 | 37 | 31 | 24 | 20 | 55 | 2 |
| Total Analysis Volume [veh/h] | 128 | 172 | 72 | 3 | 160 | 161 | 150 | 126 | 95 | 82 | 219 | 9 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | | |
|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 6.70 | 4.78 | 4.35 | 0.71 | 4.93 |
| 95th-Percentile Queue Length [ft] | 167.52 | 119.40 | 108.66 | 17.70 | 123.20 |
| Approach Delay [s/veh] | 30.88 | 23.62 | 21.37 | | 25.62 |
| Approach LOS | D | C | C | | D |
| Intersection Delay [s/veh] | 25.42 | | | | |
| Intersection LOS | D | | | | |

**Intersection Level Of Service Report**
**Intersection 55: 53 - Fowler Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 16.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.010 |

**Intersection Setup**

| Name | Fowler Avenue | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Fowler Avenue | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 3 | 6 | 381 | 7 | 19 | 456 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 6 | 381 | 7 | 19 | 456 |
| Peak Hour Factor | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 2 | 97 | 2 | 5 | 116 |
| Total Analysis Volume [veh/h] | 3 | 6 | 389 | 7 | 19 | 466 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 16.83 | 10.59 | 0.00 | 0.00 | 8.12 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.06 | 0.06 | 0.00 | 0.00 | 0.05 | 0.00 |
| 95th-Percentile Queue Length [ft] | 1.44 | 1.44 | 0.00 | 0.00 | 1.23 | 0.00 |
| d_A, Approach Delay [s/veh] | 12.67 | | 0.00 | | 0.32 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.30 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 56: 54 - Cottonwood Road / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 23.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.124 |

**Intersection Setup**

| Name | Cottonwood Road | | | Cottonwood Road | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 265.00 | 100.00 | 100.00 | 210.00 | 100.00 | 210.00 | 100.00 | 100.00 | 100.00 | 50.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Cottonwood Road | | | Cottonwood Road | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 353 | 76 | 23 | 282 | 11 | 22 | 14 | 7 | 26 | 11 | 24 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.60 | 0.00 | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 8 | 353 | 76 | 23 | 282 | 11 | 22 | 14 | 7 | 26 | 11 | 24 |
| Peak Hour Factor | 0.8050 | 0.8050 | 0.8050 | 0.8050 | 0.8050 | 0.8050 | 0.8050 | 0.8050 | 0.8050 | 0.8050 | 0.8050 | 0.8050 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 110 | 24 | 7 | 88 | 3 | 7 | 4 | 2 | 8 | 3 | 7 |
| Total Analysis Volume [veh/h] | 10 | 439 | 94 | 29 | 350 | 14 | 27 | 17 | 9 | 32 | 14 | 30 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.12 | 0.07 | 0.01 | 0.13 | 0.05 | 0.05 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.01 | 0.00 | 0.00 | 8.54 | 0.00 | 0.00 | 23.86 | 20.60 | 11.21 | 21.93 | 18.87 | 11.67 |
| Movement LOS | A | A | A | A | A | A | C | C | B | C | C | B |
| 95th-Percentile Queue Length [veh] | 0.03 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.42 | 0.27 | 0.27 | 0.44 | 0.33 | 0.33 |
| 95th-Percentile Queue Length [ft] | 0.63 | 0.00 | 0.00 | 2.14 | 0.00 | 0.00 | 10.43 | 6.64 | 6.64 | 11.11 | 8.16 | 8.16 |
| d_A, Approach Delay [s/veh] | 0.15 | | | 0.63 | | | 20.67 | | | 17.31 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 2.57 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 58: 55 - 19th Avenue / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.523 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 325.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 245.00 | 100.00 | 100.00 | 150.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 110 | 1053 | 126 | 137 | 850 | 128 | 79 | 175 | 101 | 88 | 226 | 172 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 2.70 | 2.20 | 1.10 | 1.60 | 1.30 | 4.60 | 1.00 | 3.40 | 1.80 | 0.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 110 | 1053 | 126 | 137 | 850 | 128 | 79 | 175 | 101 | 88 | 226 | 172 |
| Peak Hour Factor | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 | 0.9540 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 28 | 268 | 32 | 35 | 216 | 33 | 20 | 44 | 25 | 22 | 57 | 43 |
| Total Analysis Volume [veh/h] | 112 | 1071 | 128 | 139 | 864 | 130 | 79 | 176 | 102 | 89 | 227 | 173 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 1 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 10 | 30 | 0 | 0 | 15 | 0 | 0 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 13 | 64 | 0 | 13 | 64 | 0 | 0 | 43 | 0 | 0 | 43 | 43 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | No |
| Maximum Recall | No | No | | No | No | | | No | | | No | No |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 78 | 65 | 65 | 78 | 65 | 65 | 32 | 32 | 32 | 32 | 47 |
| g / C, Green / Cycle | 0.65 | 0.54 | 0.54 | 0.65 | 0.54 | 0.54 | 0.27 | 0.27 | 0.27 | 0.27 | 0.39 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.32 | 0.33 | 0.21 | 0.27 | 0.27 | 0.07 | 0.16 | 0.08 | 0.12 | 0.11 |
| s, saturation flow rate [veh/h] | 747 | 1881 | 1811 | 649 | 1879 | 1795 | 1157 | 1706 | 1082 | 1866 | 1605 |
| c, Capacity [veh/h] | 479 | 1013 | 975 | 410 | 1016 | 970 | 229 | 460 | 173 | 504 | 634 |
| d1, Uniform Delay [s] | 9.95 | 18.90 | 18.95 | 12.03 | 17.37 | 17.37 | 46.94 | 38.21 | 52.39 | 36.42 | 24.63 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.14 | 2.64 | 2.78 | 2.23 | 1.76 | 1.85 | 0.89 | 1.28 | 2.34 | 0.63 | 1.06 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.23 | 0.60 | 0.60 | 0.34 | 0.50 | 0.50 | 0.34 | 0.60 | 0.51 | 0.45 | 0.27 |
| d, Delay for Lane Group [s/veh] | 11.09 | 21.55 | 21.72 | 14.27 | 19.13 | 19.22 | 47.83 | 39.49 | 54.73 | 37.05 | 25.69 |
| Lane Group LOS | B | C | C | B | B | B | D | D | D | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 1.21 | 11.99 | 11.66 | 1.59 | 9.14 | 8.77 | 2.23 | 7.30 | 2.73 | 5.64 | 3.54 |
| 50th-Percentile Queue Length [ft] | 30.27 | 299.84 | 291.49 | 39.80 | 228.55 | 219.17 | 55.67 | 182.40 | 68.22 | 140.96 | 88.58 |
| 95th-Percentile Queue Length [veh] | 2.18 | 17.67 | 17.26 | 2.87 | 14.10 | 13.62 | 4.01 | 11.73 | 4.91 | 9.53 | 6.38 |
| 95th-Percentile Queue Length [ft] | 54.48 | 441.83 | 431.49 | 71.64 | 352.51 | 340.57 | 100.20 | 293.14 | 122.79 | 238.31 | 159.44 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 11.09 | 21.62 | 21.72 | 14.27 | 19.16 | 19.22 | 47.83 | 39.49 | 39.49 | 54.73 | 37.05 | 25.69 |
| Movement LOS | B | C | C | B | B | B | D | D | D | D | D | C |
| d_A, Approach Delay [s/veh] | 20.73 | | | 18.57 | | | 41.34 | | | 36.25 | | |
| Approach LOS | C | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 24.53 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.523 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 59: 56 - 7th Avenue / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 23.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.628 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Baxter Lane | | | Driveway | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 80.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Baxter Lane | | | Driveway | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 292 | 799 | 45 | 100 | 812 | 191 | 0 | 0 | 308 | 0 | 0 | 188 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.00 | 1.60 | 0.00 | 0.00 | 0.80 | 2.10 | 2.00 | 2.00 | 1.60 | 2.00 | 2.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 292 | 799 | 45 | 100 | 812 | 191 | 0 | 0 | 308 | 0 | 0 | 188 |
| Peak Hour Factor | 0.9380 | 0.9380 | 0.9380 | 0.9380 | 0.9380 | 0.9380 | 1.0000 | 1.0000 | 0.9380 | 1.0000 | 1.0000 | 0.9380 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 75 | 207 | 12 | 26 | 210 | 49 | 0 | 0 | 79 | 0 | 0 | 50 |
| Total Analysis Volume [veh/h] | 302 | 826 | 47 | 103 | 840 | 198 | 0 | 0 | 315 | 0 | 0 | 200 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 1 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.45 | 0.01 | 0.00 | 0.13 | 0.01 | 0.00 | 0.00 | 0.00 | 0.63 | 0.00 | 0.00 | 0.35 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 14.70 | 0.00 | 0.00 | 10.31 | 0.00 | 0.00 | 0.00 | 0.00 | 23.53 | 0.00 | 0.00 | 14.60 |
| Movement LOS | B | A | A | B | A | A | | | C | | | B |
| 95th-Percentile Queue Length [veh] | 2.34 | 0.00 | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | 4.28 | 0.00 | 0.00 | 1.56 |
| 95th-Percentile Queue Length [ft] | 58.53 | 0.00 | 0.00 | 11.33 | 0.00 | 0.00 | 0.00 | 0.00 | 107.02 | 0.00 | 0.00 | 38.88 |
| d_A, Approach Delay [s/veh] | 3.78 | | | 0.93 | | | 23.53 | | | 14.60 | | |
| Approach LOS | A | | | A | | | C | | | B | | |
| d_I, Intersection Delay [s/veh] | 5.59 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 60: 57 - 7th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 44.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.816 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 150.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 160.00 | 100.00 | 100.00 | 215.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 186 | 765 | 132 | 184 | 621 | 351 | 232 | 227 | 156 | 126 | 321 | 197 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 5.30 | 21.70 | 3.70 | 5.20 | 17.60 | 10.00 | 6.60 | 6.40 | 4.40 | 3.60 | 9.10 | 5.60 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 186 | 765 | 132 | 184 | 621 | 351 | 232 | 227 | 156 | 126 | 321 | 197 |
| Peak Hour Factor | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 | 0.9000 |
| Other Adjustment Factor | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 0.9800 | 0.9800 | 0.9800 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 53 | 219 | 38 | 53 | 178 | 100 | 63 | 62 | 42 | 35 | 89 | 55 |
| Total Analysis Volume [veh/h] | 213 | 876 | 151 | 211 | 711 | 402 | 253 | 247 | 170 | 140 | 357 | 219 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 140 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | 5,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 10 | 30 | 30 | 10 | 30 | 30 | 8 | 15 | 15 | 8 | 15 | 0 |
| Maximum Green [s] | 25 | 90 | 90 | 25 | 90 | 90 | 25 | 45 | 45 | 25 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 13 | 48 | 48 | 13 | 48 | 48 | 15 | 65 | 65 | 14 | 64 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No | No | |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No | No | |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 63 | 50 | 65 | 63 | 50 | 67 | 67 | 54 | 69 | 67 | 52 |
| g / C, Green / Cycle | 0.45 | 0.35 | 0.46 | 0.45 | 0.35 | 0.48 | 0.48 | 0.39 | 0.49 | 0.48 | 0.37 |
| (v / s)_i Volume / Saturation Flow Rate | 0.24 | 0.29 | 0.10 | 0.26 | 0.23 | 0.27 | 0.26 | 0.14 | 0.11 | 0.12 | 0.35 |
| s, saturation flow rate [veh/h] | 896 | 2973 | 1557 | 814 | 3076 | 1468 | 965 | 1786 | 1547 | 1213 | 1632 |
| c, Capacity [veh/h] | 327 | 1002 | 694 | 264 | 1037 | 673 | 281 | 722 | 792 | 565 | 639 |
| d1, Uniform Delay [s] | 30.08 | 43.62 | 23.84 | 33.45 | 40.02 | 28.27 | 32.57 | 28.80 | 18.75 | 20.00 | 40.05 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.11 | 0.34 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.68 | 10.54 | 0.72 | 21.80 | 3.69 | 3.88 | 33.23 | 0.28 | 0.62 | 0.23 | 13.47 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

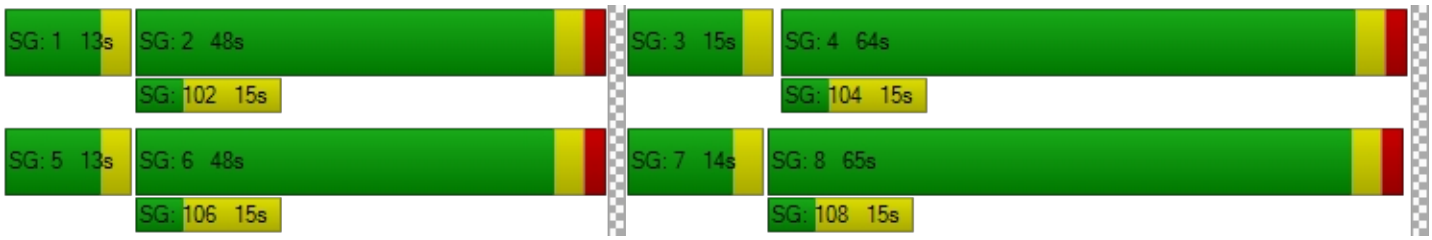
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.65 | 0.87 | 0.22 | 0.80 | 0.69 | 0.60 | 0.90 | 0.34 | 0.21 | 0.25 | 0.90 |
| d, Delay for Lane Group [s/veh] | 39.76 | 54.16 | 24.56 | 55.25 | 43.71 | 32.15 | 65.80 | 29.08 | 19.37 | 20.23 | 53.52 |
| Lane Group LOS | D | D | C | E | D | C | E | C | B | C | D |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 5.41 | 15.28 | 3.15 | 6.08 | 10.81 | 10.42 | 7.73 | 6.06 | 3.34 | 2.66 | 21.48 |
| 50th-Percentile Queue Length [ft] | 135.21 | 381.90 | 78.69 | 151.98 | 270.33 | 260.54 | 193.23 | 151.60 | 83.59 | 66.61 | 536.88 |
| 95th-Percentile Queue Length [veh] | 9.22 | 21.69 | 5.67 | 10.12 | 16.21 | 15.72 | 12.29 | 10.10 | 6.02 | 4.80 | 29.08 |
| 95th-Percentile Queue Length [ft] | 230.56 | 542.15 | 141.65 | 253.07 | 405.16 | 392.89 | 307.22 | 252.56 | 150.47 | 119.90 | 726.88 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 39.76 | 54.16 | 24.56 | 55.25 | 43.71 | 32.15 | 65.80 | 29.08 | 19.37 | 20.23 | 53.52 | 53.52 |
| Movement LOS | D | D | C | E | D | C | E | C | B | C | D | D |
| d_A, Approach Delay [s/veh] | 48.08 | | | 42.04 | | | 40.48 | | | 47.01 | | |
| Approach LOS | D | | | D | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 44.57 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.816 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 61: 58 - 15th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.385 |

**Intersection Setup**

| Name | 15th Avenue | | | 15th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 105.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 15th Avenue | | | 15th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 197 | 11 | 85 | 9 | 8 | 11 | 8 | 527 | 76 | 51 | 768 | 5 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.00 | 0.00 | 2.40 | 11.10 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 0.00 | 1.30 | 20.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 197 | 11 | 85 | 9 | 8 | 11 | 8 | 527 | 76 | 51 | 768 | 5 |
| Peak Hour Factor | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 | 0.8900 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 |
| Total 15-Minute Volume [veh/h] | 55 | 3 | 24 | 3 | 2 | 3 | 2 | 145 | 21 | 14 | 211 | 1 |
| Total Analysis Volume [veh/h] | 221 | 12 | 96 | 10 | 9 | 12 | 9 | 580 | 84 | 56 | 846 | 6 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 24 | 0 | 0 | 24 | 0 | 0 | 36 | 0 | 0 | 36 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 30 | 30 | 30 | 30 | 20 | 20 | 20 | 20 | 20 | 20 |
| g / C, Green / Cycle | 0.51 | 0.51 | 0.51 | 0.51 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.16 | 0.07 | 0.01 | 0.01 | 0.01 | 0.18 | 0.18 | 0.07 | 0.23 | 0.23 |
| s, saturation flow rate [veh/h] | 1399 | 1642 | 1175 | 1726 | 658 | 1861 | 1780 | 784 | 1876 | 1871 |
| c, Capacity [veh/h] | 781 | 831 | 643 | 873 | 177 | 610 | 583 | 226 | 614 | 613 |
| d1, Uniform Delay [s] | 9.90 | 7.84 | 9.33 | 7.42 | 25.39 | 16.58 | 16.60 | 24.18 | 17.56 | 17.56 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.91 | 0.32 | 0.04 | 0.05 | 0.12 | 0.79 | 0.84 | 0.57 | 1.42 | 1.43 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

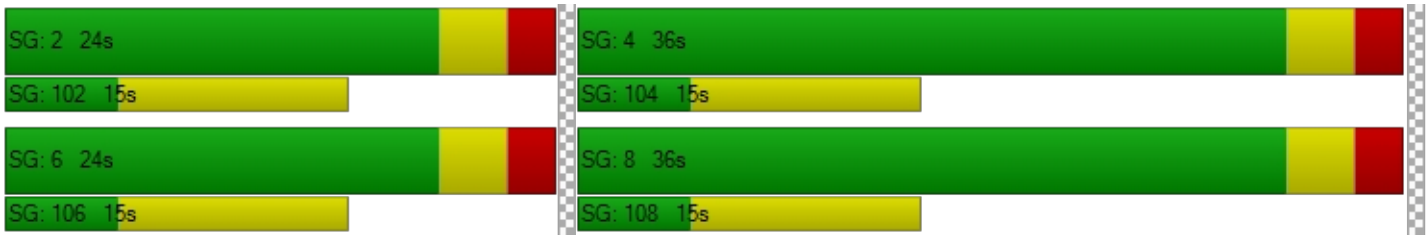
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.28 | 0.13 | 0.02 | 0.02 | 0.05 | 0.56 | 0.56 | 0.25 | 0.69 | 0.69 |
| d, Delay for Lane Group [s/veh] | 10.81 | 8.17 | 9.37 | 7.47 | 25.50 | 17.38 | 17.44 | 24.75 | 18.98 | 18.98 |
| Lane Group LOS | B | A | A | A | C | B | B | C | B | B |
| Critical Lane Group | Yes | No | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.75 | 0.69 | 0.07 | 0.13 | 0.12 | 3.58 | 3.45 | 0.73 | 4.84 | 4.82 |
| 50th-Percentile Queue Length [ft] | 43.68 | 17.35 | 1.80 | 3.16 | 2.96 | 89.48 | 86.17 | 18.27 | 120.88 | 120.60 |
| 95th-Percentile Queue Length [veh] | 3.15 | 1.25 | 0.13 | 0.23 | 0.21 | 6.44 | 6.20 | 1.32 | 8.44 | 8.43 |
| 95th-Percentile Queue Length [ft] | 78.63 | 31.23 | 3.25 | 5.68 | 5.33 | 161.06 | 155.11 | 32.89 | 211.03 | 210.65 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10.81 | 8.17 | 8.17 | 9.37 | 7.47 | 7.47 | 25.50 | 17.40 | 17.44 | 24.75 | 18.98 | 18.98 |
| Movement LOS | B | A | A | A | A | A | C | B | B | C | B | B |
| d_A, Approach Delay [s/veh] | 9.94 | | | 8.08 | | | 17.52 | | | 19.34 | | |
| Approach LOS | A | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 16.93 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.385 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 62: 59 - 27th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 34.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.092 |

**Intersection Setup**

| Name | 27th Avenue | | | 27th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | Yes | | | No | | |

**volumes**

| Name | 27th Avenue | | | 27th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 3 | 34 | 38 | 15 | 51 | 52 | 24 | 237 | 16 | 79 | 412 | 55 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 1.30 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 34 | 38 | 15 | 51 | 52 | 24 | 237 | 16 | 79 | 412 | 55 |
| Peak Hour Factor | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 9 | 10 | 4 | 14 | 14 | 6 | 63 | 4 | 21 | 110 | 15 |
| Total Analysis Volume [veh/h] | 3 | 36 | 40 | 16 | 54 | 55 | 26 | 252 | 17 | 84 | 438 | 59 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 1 | 1 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.02 | 0.16 | 0.05 | 0.09 | 0.23 | 0.09 | 0.02 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.86 | 24.44 | 12.78 | 34.08 | 29.01 | 19.39 | 8.42 | 0.00 | 0.00 | 7.96 | 0.00 | 0.00 |
| Movement LOS | D | C | B | D | D | C | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.89 | 0.89 | 0.89 | 1.98 | 1.98 | 1.98 | 0.07 | 0.00 | 0.00 | 0.86 | 0.43 | 0.00 |
| 95th-Percentile Queue Length [ft] | 22.13 | 22.13 | 22.13 | 49.40 | 49.40 | 49.40 | 1.85 | 0.00 | 0.00 | 21.46 | 10.73 | 0.00 |
| d_A, Approach Delay [s/veh] | 18.78 | | | 25.42 | | | 0.74 | | | 1.15 | | |
| Approach LOS | C | | | D | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 5.14 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 63: 60 - Davis Lane / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 26.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.322 |

**Intersection Setup**

| Name | Davis Lane | | Oak Street | | Oak Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | Yes | | No | |

**volumes**

| Name | Davis Lane | | Oak Street | | Oak Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 74 | 178 | 162 | 193 | 312 | 97 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.10 | 4.90 | 1.00 | 0.00 | 0.30 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 74 | 178 | 162 | 193 | 312 | 97 |
| Peak Hour Factor | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 | 0.9400 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 20 | 47 | 43 | 51 | 83 | 26 |
| Total Analysis Volume [veh/h] | 79 | 189 | 172 | 205 | 332 | 103 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.32 | 0.28 | 0.16 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 26.46 | 12.53 | 8.84 | 0.00 | 0.00 | 0.00 |
| Movement LOS | D | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.34 | 1.17 | 1.52 | 1.52 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 33.43 | 29.15 | 37.98 | 37.98 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 16.64 | | 4.03 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 5.54 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 64: 61 - Rouse Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.460 |

**Intersection Setup**

| Name | Rouse Avenue | | | Rouse Avenue | | | Oak Street | | | Birch Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 190.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Rouse Avenue | | | Rouse Avenue | | | Oak Street | | | Birch Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 218 | 341 | 0 | 1 | 418 | 171 | 117 | 0 | 159 | 0 | 0 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.50 | 1.20 | 0.00 | 0.00 | 1.20 | 0.00 | 1.70 | 0.00 | 6.30 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 218 | 341 | 0 | 1 | 418 | 171 | 117 | 0 | 159 | 0 | 0 | 1 |
| Peak Hour Factor | 0.8500 | 0.8500 | 0.8500 | 0.8500 | 0.8500 | 0.8500 | 0.8500 | 0.8500 | 0.8500 | 0.8500 | 0.8500 | 0.8500 |
| Other Adjustment Factor | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 63 | 98 | 0 | 0 | 120 | 49 | 34 | 0 | 47 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 251 | 393 | 0 | 1 | 482 | 197 | 138 | 0 | 187 | 0 | 0 | 1 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 25 | 74 | 0 | 0 | 49 | 0 | 0 | 21 | 21 | 0 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | | No | | | No | No | | No | |
| Maximum Recall | No | No | | | No | | | No | No | | No | |
| Pedestrian Recall | No | No | | | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | R | C | R | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 73 | 73 | 56 | 56 | 56 | 12 | 31 | 12 |
| g / C, Green / Cycle | 0.76 | 0.76 | 0.59 | 0.59 | 0.59 | 0.13 | 0.32 | 0.13 |
| (v / s)_i Volume / Saturation Flow Rate | 0.26 | 0.23 | 0.00 | 0.29 | 0.14 | 0.09 | 0.14 | 0.00 |
| s, saturation flow rate [veh/h] | 984 | 1690 | 906 | 1690 | 1454 | 1618 | 1367 | 1429 |
| c, Capacity [veh/h] | 715 | 1290 | 522 | 1004 | 863 | 288 | 440 | 226 |
| d1, Uniform Delay [s] | 5.25 | 3.47 | 12.24 | 10.96 | 9.06 | 38.98 | 25.31 | 35.86 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.16 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.36 | 0.61 | 0.01 | 1.65 | 0.62 | 1.23 | 0.96 | 0.01 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.35 | 0.30 | 0.00 | 0.48 | 0.23 | 0.48 | 0.42 | 0.00 |
| d, Delay for Lane Group [s/veh] | 6.61 | 4.08 | 12.25 | 12.60 | 9.67 | 40.21 | 26.27 | 35.86 |
| Lane Group LOS | A | A | B | B | A | D | C | D |
| Critical Lane Group | Yes | No | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 1.27 | 1.94 | 0.01 | 5.73 | 1.93 | 3.11 | 3.37 | 0.02 |
| 50th-Percentile Queue Length [ft] | 31.71 | 48.54 | 0.29 | 143.22 | 48.21 | 77.65 | 84.31 | 0.51 |
| 95th-Percentile Queue Length [veh] | 2.28 | 3.50 | 0.02 | 9.65 | 3.47 | 5.59 | 6.07 | 0.04 |
| 95th-Percentile Queue Length [ft] | 57.08 | 87.38 | 0.52 | 241.36 | 86.78 | 139.77 | 151.76 | 0.92 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.61 | 4.08 | 4.08 | 12.25 | 12.60 | 9.67 | 40.21 | 40.21 | 26.27 | 35.86 | 35.86 | 35.86 |
| Movement LOS | A | A | A | B | B | A | D | D | C | D | D | D |
| d_A, Approach Delay [s/veh] | 5.06 | | | 11.75 | | | 32.19 | | | 35.86 | | |
| Approach LOS | A | | | B | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 13.18 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.460 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 65: 62 - 19th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 18.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.497 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 350.00 | 100.00 | 300.00 | 350.00 | 100.00 | 100.00 | 150.00 | 100.00 | 150.00 | 135.00 | 100.00 | 135.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 6 | 270 | 231 | 309 | 313 | 8 | 53 | 23 | 24 | 279 | 16 | 461 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.70 | 1.30 | 6.50 | 1.00 | 0.00 | 0.00 | 4.30 | 0.00 | 1.10 | 0.00 | 0.70 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 6 | 270 | 231 | 309 | 313 | 8 | 53 | 23 | 24 | 279 | 16 | 461 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 2 | 70 | 60 | 81 | 82 | 2 | 14 | 6 | 7 | 73 | 4 | 120 |
| Total Analysis Volume [veh/h] | 6 | 282 | 241 | 322 | 327 | 8 | 58 | 25 | 26 | 291 | 17 | 481 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 21 | 0 | 23 | 36 | 0 | 0 | 46 | 0 | 0 | 46 | 46 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | No |
| Maximum Recall | No | No | | No | No | | | No | | | No | No |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 55 | 32 | 32 | 55 | 51 | 51 | 25 | 25 | 25 | 25 | 25 | 50 |
| g / C, Green / Cycle | 0.61 | 0.36 | 0.36 | 0.61 | 0.57 | 0.57 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.55 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.08 | 0.15 | 0.25 | 0.09 | 0.09 | 0.04 | 0.01 | 0.02 | 0.21 | 0.01 | 0.30 |
| s, saturation flow rate [veh/h] | 1085 | 3592 | 1594 | 1292 | 1881 | 1865 | 1418 | 1822 | 1615 | 1393 | 1900 | 1604 |
| c, Capacity [veh/h] | 738 | 1284 | 570 | 849 | 1067 | 1058 | 433 | 511 | 453 | 421 | 533 | 888 |
| d1, Uniform Delay [s] | 7.00 | 20.17 | 21.89 | 8.69 | 9.26 | 9.26 | 26.48 | 23.62 | 23.67 | 32.41 | 23.50 | 12.80 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.02 | 0.39 | 2.30 | 1.29 | 0.32 | 0.32 | 0.14 | 0.04 | 0.05 | 2.03 | 0.02 | 2.37 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

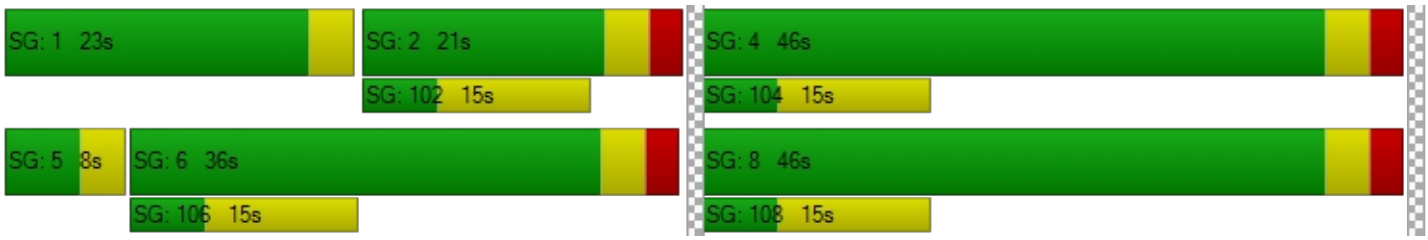
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.01 | 0.22 | 0.42 | 0.38 | 0.16 | 0.16 | 0.13 | 0.05 | 0.06 | 0.69 | 0.03 | 0.54 |
| d, Delay for Lane Group [s/veh] | 7.02 | 20.56 | 24.19 | 9.98 | 9.57 | 9.58 | 26.62 | 23.66 | 23.73 | 34.44 | 23.53 | 15.17 |
| Lane Group LOS | A | C | C | A | A | A | C | C | C | C | C | B |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.05 | 2.08 | 4.10 | 3.05 | 1.56 | 1.55 | 0.98 | 0.39 | 0.41 | 6.12 | 0.26 | 6.28 |
| 50th-Percentile Queue Length [ft] | 1.14 | 52.11 | 102.52 | 76.20 | 38.96 | 38.69 | 24.45 | 9.71 | 10.14 | 152.96 | 6.57 | 156.99 |
| 95th-Percentile Queue Length [veh] | 0.08 | 3.75 | 7.38 | 5.49 | 2.81 | 2.79 | 1.76 | 0.70 | 0.73 | 10.18 | 0.47 | 10.39 |
| 95th-Percentile Queue Length [ft] | 2.06 | 93.81 | 184.54 | 137.15 | 70.13 | 69.64 | 44.02 | 17.48 | 18.26 | 254.38 | 11.82 | 259.73 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 7.02 | 20.56 | 24.19 | 9.98 | 9.57 | 9.58 | 26.62 | 23.66 | 23.73 | 34.44 | 23.53 | 15.17 |
| Movement LOS | A | C | C | A | A | A | C | C | C | C | C | B |
| d_A, Approach Delay [s/veh] | 22.06 | | | 9.77 | | | 25.25 | | | 22.45 | | |
| Approach LOS | C | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 18.50 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.497 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 66: 63 - Willson Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 24.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.506 |

**Intersection Setup**

| Name | Kagy Boulevard | | | Kagy Boulevard | | | 3rd Avenue | | | Willson Avenue | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Eastbound | | | Westbound | | | Northeastbound | | | Southwestbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Pocket Length [ft] | 170.00 | 100.00 | 100.00 | 325.00 | 100.00 | 100.00 | 350.00 | 100.00 | 110.00 | 160.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Kagy Boulevard | | | Kagy Boulevard | | | 3rd Avenue | | | Willson Avenue | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 155 | 162 | 69 | 141 | 228 | 77 | 136 | 418 | 259 | 122 | 364 | 115 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.30 | 0.60 | 0.00 | 3.50 | 0.40 | 0.00 | 0.00 | 0.20 | 0.40 | 0.00 | 0.30 | 0.00 |
| Growth Rate | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 155 | 162 | 69 | 141 | 228 | 77 | 136 | 418 | 259 | 122 | 364 | 115 |
| Peak Hour Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Other Adjustment Factor | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 |
| Total 15-Minute Volume [veh/h] | 41 | 43 | 18 | 37 | 60 | 20 | 36 | 110 | 68 | 32 | 96 | 30 |
| Total Analysis Volume [veh/h] | 163 | 171 | 73 | 149 | 240 | 81 | 143 | 440 | 273 | 129 | 384 | 121 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 3 | 8 | 8 | 7 | 4 | 1 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | 5,8 | | | 1,4 | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 8 | 79 | 79 | 12 | 83 | 8 | 8 | 21 | 0 | 8 | 21 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 1.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 36 | 24 | 34 | 36 | 28 | 38 | 74 | 66 | 66 | 74 | 66 |
| g / C, Green / Cycle | 0.30 | 0.20 | 0.29 | 0.30 | 0.24 | 0.32 | 0.61 | 0.55 | 0.55 | 0.61 | 0.55 |
| (v / s)_i Volume / Saturation Flow Rate | 0.13 | 0.09 | 0.05 | 0.11 | 0.13 | 0.05 | 0.15 | 0.23 | 0.17 | 0.12 | 0.28 |
| s, saturation flow rate [veh/h] | 1250 | 1889 | 1615 | 1345 | 1892 | 1615 | 982 | 1896 | 1609 | 1033 | 1817 |
| c, Capacity [veh/h] | 326 | 383 | 462 | 387 | 446 | 516 | 551 | 1038 | 881 | 608 | 995 |
| d1, Uniform Delay [s] | 36.81 | 41.94 | 32.04 | 32.48 | 40.12 | 29.27 | 11.44 | 16.00 | 14.80 | 10.63 | 17.02 |
| k, delay calibration | 0.50 | 0.11 | 0.42 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 5.39 | 0.82 | 0.62 | 0.63 | 1.01 | 0.65 | 1.14 | 1.27 | 0.92 | 0.79 | 1.85 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

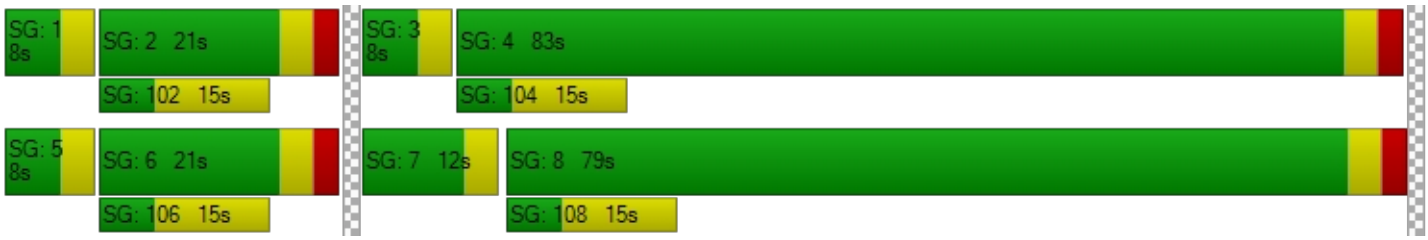
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.50 | 0.45 | 0.16 | 0.38 | 0.54 | 0.16 | 0.26 | 0.42 | 0.31 | 0.21 | 0.51 |
| d, Delay for Lane Group [s/veh] | 42.21 | 42.76 | 32.66 | 33.10 | 41.12 | 29.92 | 12.58 | 17.27 | 15.72 | 11.42 | 18.87 |
| Lane Group LOS | D | D | C | C | D | C | B | B | B | B | B |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 4.14 | 4.54 | 1.68 | 3.38 | 6.33 | 1.78 | 1.72 | 7.36 | 4.24 | 1.52 | 9.04 |
| 50th-Percentile Queue Length [ft] | 103.54 | 113.57 | 41.98 | 84.62 | 158.34 | 44.56 | 43.09 | 183.89 | 105.88 | 38.00 | 226.05 |
| 95th-Percentile Queue Length [veh] | 7.45 | 8.04 | 3.02 | 6.09 | 10.46 | 3.21 | 3.10 | 11.80 | 7.61 | 2.74 | 13.97 |
| 95th-Percentile Queue Length [ft] | 186.36 | 200.95 | 75.56 | 152.31 | 261.52 | 80.21 | 77.56 | 295.08 | 190.25 | 68.40 | 349.34 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 42.21 | 42.76 | 32.66 | 33.10 | 41.12 | 29.92 | 12.58 | 17.27 | 15.72 | 11.42 | 18.87 | 18.87 |
| Movement LOS | D | D | C | C | D | C | B | B | B | B | B | B |
| d_A, Approach Delay [s/veh] | 40.73 | | | 36.65 | | | 15.99 | | | 17.35 | | |
| Approach LOS | D | | | D | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 24.71 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.506 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



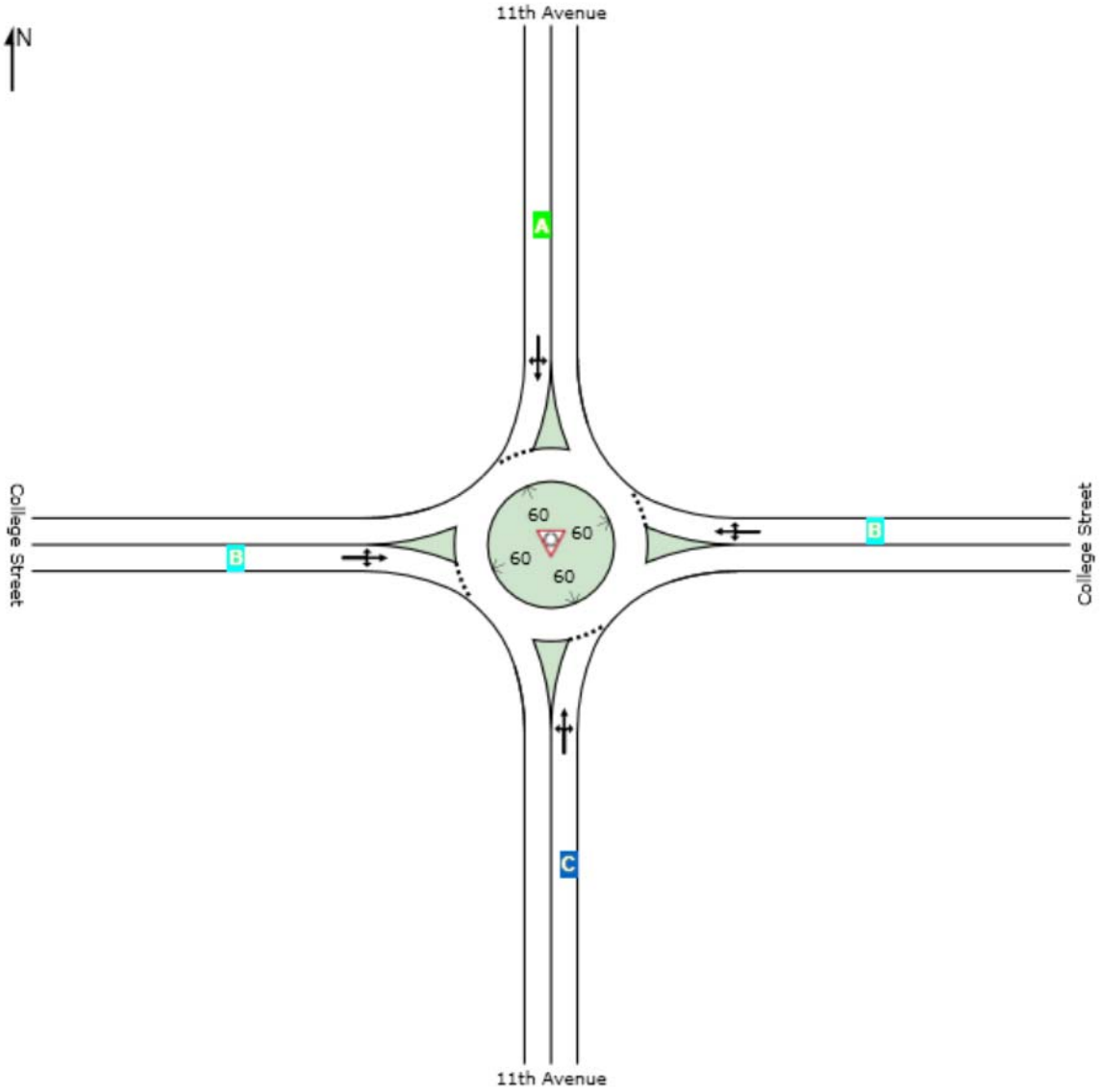
# LEVEL OF SERVICE

## Site: PM-2015-11th Avenue / College Street

New Site
Roundabout

**All Movement Classes**

| | South | East | North | West | Intersection |
|---|---|---|---|---|---|
| LOS | C | B | A | B | B |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

# MOVEMENT SUMMARY

## Site: PM-2015-11th Avenue / College Street

New Site
Roundabout

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: 11th Avenue | | | | | | | | | | | |
| 3 | L2 | 170 | 1.2 | 0.811 | 23.5 | LOS C | 7.8 | 197.0 | 0.86 | 1.08 | 20.0 |
| 8 | T1 | 282 | 0.7 | 0.811 | 23.5 | LOS C | 7.8 | 197.0 | 0.86 | 1.08 | 19.8 |
| 18 | R2 | 248 | 1.2 | 0.811 | 23.5 | LOS C | 7.8 | 197.0 | 0.86 | 1.08 | 19.5 |
| Approach | | 699 | 1.0 | 0.811 | 23.5 | LOS C | 7.8 | 197.0 | 0.86 | 1.08 | 19.8 |
| East: College Street | | | | | | | | | | | |
| 1 | L2 | 90 | 0.0 | 0.465 | 10.3 | LOS B | 2.2 | 54.1 | 0.59 | 0.63 | 26.0 |
| 6 | T1 | 215 | 0.0 | 0.465 | 10.3 | LOS B | 2.2 | 54.1 | 0.59 | 0.63 | 26.1 |
| 16 | R2 | 84 | 0.0 | 0.465 | 10.3 | LOS B | 2.2 | 54.1 | 0.59 | 0.63 | 25.6 |
| Approach | | 390 | 0.0 | 0.465 | 10.3 | LOS B | 2.2 | 54.1 | 0.59 | 0.63 | 26.0 |
| North: 11th Avenue | | | | | | | | | | | |
| 7 | L2 | 79 | 0.0 | 0.350 | 8.0 | LOS A | 1.4 | 34.0 | 0.51 | 0.49 | 26.7 |
| 4 | T1 | 157 | 0.0 | 0.350 | 8.0 | LOS A | 1.4 | 34.0 | 0.51 | 0.49 | 26.8 |
| 14 | R2 | 73 | 1.4 | 0.350 | 8.0 | LOS A | 1.4 | 34.0 | 0.51 | 0.49 | 26.3 |
| Approach | | 309 | 0.3 | 0.350 | 8.0 | LOS A | 1.4 | 34.0 | 0.51 | 0.49 | 26.6 |
| West: College Street | | | | | | | | | | | |
| 5 | L2 | 87 | 0.0 | 0.555 | 10.9 | LOS B | 3.1 | 79.2 | 0.55 | 0.53 | 25.9 |
| 2 | T1 | 324 | 1.3 | 0.555 | 10.9 | LOS B | 3.1 | 79.2 | 0.55 | 0.53 | 26.0 |
| 12 | R2 | 136 | 0.0 | 0.555 | 10.9 | LOS B | 3.1 | 79.2 | 0.55 | 0.53 | 25.5 |
| Approach | | 547 | 0.8 | 0.555 | 10.9 | LOS B | 3.1 | 79.2 | 0.55 | 0.53 | 25.9 |
| All Vehicles | | 1945 | 0.6 | 0.811 | 14.8 | LOS B | 7.8 | 197.0 | 0.66 | 0.74 | 23.4 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

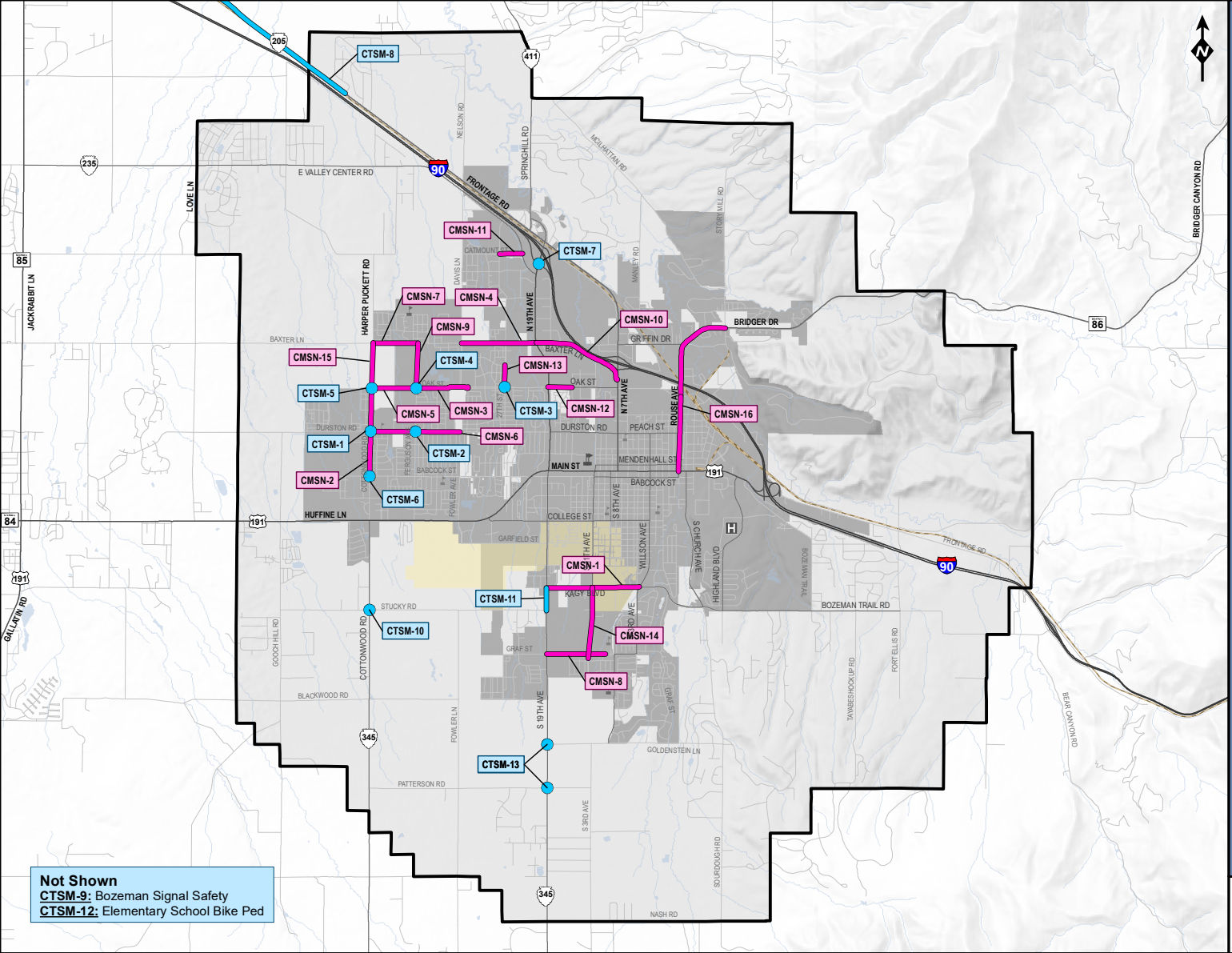
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# Appendix B

## BOZEMAN COMMITTED PROJECTS

# FINAL COMMITTED PROJECTS (FY 16 thru FY 20)

| TMP ID | Title | Description | Cost | YOE | Project ID | Source |
|---|---|---|---|---|---|---|
| **CMSN-1** | Kagy Boulevard (Willson Avenue to S. 19th Avenue) | This project consists of widening Kagy Boulevard, from the intersection of S. 19th Avenue to Willson Avenue, to a **five-lane urban principal arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. | $8,000,000 | FY20 | SIF009 | City |
| **CMSN-2** | Cottonwood (Babcock to Durston) | This project consists of widening Cottonwood Road, from West Babcock Street to Durston, to a **five-lane urban principal arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. Cottonwood Road serves as an important element in Bozeman's west side street system and serves as a primary north-south corridor on the west side of the city. | $2,555,883 | FY20 | SIF036 | City |
| **CMSN-3** | Oak (New Holland to Ferguson) | This project is the completion of the street segment of Oak Street, from New Holland to Ferguson, to a **five-lane urban principal arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. Currently, the south half of the street is missing, creating a bottleneck in the street network. | $2,000,000 | FY18 | SIF046 | City |
| **CMSN-4** | Baxter (19th to Davis) | Complete Baxter Road, from 19th to Davis, to a **three-lane urban minor arterial standard** including sidewalks, parking, medians, boulevards and bike lanes. | $1,500,000 | FY17 | SIF055 | City |
| **CMSN-5** | Oak (Ferguson to Cottonwood) | This Project is the completion of the street segment of Oak Street, from Cottonwood to Ferguson, to a **five-lane urban principal arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. | $1,000,000 | FY18 | SIF057 | City |
| **CMSN-6** | Durston (Cottonwood to Fowler) | Complete Durston Road, from Fowler Lane to Cottonwood, to a **three-lane urban minor arterial standard** including sidewalks, parking, medians, boulevards and bike lanes. | $1,613,000 | FY18 | SIF062 | City |
| **CMSN-7** | Baxter (Ferguson to Cottonwood) | Complete Baxter, from Ferguson to Cottonwood, to a **three-lane urban minor arterial standard** including sidewalks, parking, medians, boulevards and bike lanes. | $1,500,000 | FY17 | SIF072 | City |
| **CMSN-8** | Graf St Extension (Ritter to 19th) | Complete Graf, from Ritter to 19th, to a **two-lane urban collector standard** with bike lanes. | $1,035,000 | FY17 | SIF077 | City |
| **CMSN-9** | Ferguson (Baxter to Oak) | Complete Ferguson, from Baxter to Oak, to a **two-lane urban collector standard** with bike lanes, curb and gutter, boulevards, parking and sidewalks. | $1,000,000 | FY18 | SIF080 | City |
| **CMSN-10** | Baxter (7th to 19th) | Complete Baxter, from 7th to 19th, to a **three-lane urban collector standard** including sidewalks on both sides and bike lanes. | ??? | FY17 | SIF085 | City |
| **CMSN-11** | Catamount St (27th to Valley Center) | Complete Catamount, from 27th to Valley Center, to a **two-lane urban minor arterial standard** including bike lanes. | $600,000 | FY17 | SIF087 | City |
| **CMSN-12** | Oak Street (15th to 19th) | Complete Oak, from 15th to 19th, to a **five-lane urban principal arterial standard** including addition of 1 lane (5 lanes total), bike lanes and sidewalks on the south side. | ??? | FY17 | SIF093 | City |
| **CMSN-13** | N 27th (Oak to Tschache) | Complete N 27th, from Oak to Tschache, to a **five-lane urban collector standard** including medians for power poles. | $350,000 | FY18 | SIF099 | City |
| **CMSN-14** | S 11th Ave (Kagy Blvd to Graf St Extension) | Complete S 11th, from Kagy to Graf, to a **two-lane urban collector standard** including sidewalks, curb and gutter and bike lanes. | $2,640,000 | FY19 | SIF102 | City |
| **CMSN-15** | Cottonwood (Durston to Oak) | Complete the construction of Cottonwood Road, from Durston Road to Oak Street, to a **five lane urban arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. Cottonwood Road serves as an important element in Bozeman's west side street system and serves as a primary north-south corridor on the west side of the city. | $2,476,666 | FY20 | SIF105 | City |
| **CMSN-16** | Rouse-Oak/Story Mill - Bozeman | Reconstruction - with added capacity; to a **three-lane rural principal arterial standard.** | $10,665,195 | FY16 | UPN4805 | MDT |
| | Rouse Ave - Bozeman | Reconstruction - with added capacity; to a **three-lane urban principal arterial standard.** | $9,185,756 | FY16 | UPN4805 | MDT |
| **CTSM-1** | Cottonwood and Durston (Intersection) | Further improvements to the intersection in conjunction with the improvements to Cottonwood from Babcock to Baxter. | $200,000 | FY17 | SIF027 | City |
| **CTSM-2** | Ferguson and Durston (Intersection) | Control of the intersection of Ferguson & Durston. Includes the installation of a traffic signal or roundabout. Future development and the resulting increased traffic indicate that intersection improvements will be needed. | $2,256,220 | FY18 | SIF039 | City |
| **CTSM-3** | N. 27th and Oak (Intersection) | Includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. | $1,000,000 | FY18 | SIF058 | City |
| **CTSM-4** | Oak and Ferguson (Intersection) | Includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. | $1,000,000 | FY18 | SIF061 | City |
| **CTSM-5** | Oak and Cottonwood (Intersection) | Identified in the 2007 Transportation Plan Update. Includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. | $3,428,401 | FY19 | SIF098 | City |
| **CTSM-6** | Cottonwood and Babcock (Intersection) | Installation of a traffic signal when warrants are met. | $1,435,336 | FY20 | SIF104 | City |
| **CTSM-7** | 19th Street Interchange. Signal - Boz (2) | Signal on I-90 EB off-ramp | $1,494,900 | FY19 | UPN8999 | MDT |
| **CTSM-8** | SF 129 - Slope Flatting Belgrade (1) | Slope flattening from RP 22.5-24.3 on P-205 | $3,716,816 | FY20 | UPN8031 | MDT |
| **CTSM-9** | Bozeman Signal Safety | Upgrade signals in 4 systems (Main Street, West Main St., Bozeman Radio System, Isolated Intersections) and signals along Huffine Lane, and Jackrabbit (Baxter & Durston) - Flashing yellow areas. Adding a protective left turn phase signal at signal of Ferguson and Huffine | $1,635,776 | FY17 | UPN8642 | MDT |
| **CTSM-10** | Cottonwood & Stucky (Intersection) | Roundabout installation | $3,158,260 | FY18 | UPN8190 | MDT |
| **CTSM-11** | S 19th Ave (Kagy to Stucky) | Mill/fill, seal and cover, pavement markings | $957,951 | FY16 | UPN8786 | MDT |
| **CTSM-12** | Elementary School Bike Ped - Bozeman | Sidewalks, shared use path, bike racks and bike rack pads. Chief Joseph Middle School, Hyalite Elementary, Morning Star Elementary, Whitter Elementary, and Hawthorn Elementary | $282,500 | FY16 | UPN8688 | MDT |
| **CTSM-13** | S. 19th intersections w/ Patterson and Goldstein | Install a southbound right turn lane at Patterson; install southbound left turn lane at Goldenstein | $2,144,443 | FY16 | UPN8033 | MDT |
| | | | | | | |




# Committed Projects

## Map Legend

- Study Area
- Bozeman City Limits
- Montana State University
- Railroad

## Improvement Type

- Committed Major Street Network Project
- Committed Transportation System Management Project

0 ½ 1 2 Miles

**Not Shown**
**CTSM-9:** Bozeman Signal Safety
**CTSM-12:** Elementary School Bike Ped

*Source: City of Bozeman, MDT, RPA*

BOZEMANTMP
TRANSPORTATION MASTER PLAN

# Appendix C

## PROJECTED INTERSECTION LEVEL OF SERVICE (LOS)

Bozeman TMP

Vistro File: F:\...\BozemanTMP_LOS_+Future.vistro
Report File: F:\...\Projected AM.pdf

Scenario 3: Projected - AM
4/1/2016

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | 01 - Ferguson Avenue / Babcock Street | Two-way stop | HCM 2010 | WB Left | 0.652 | 144.1 | F |
| 2 | 02 - Fowler Avenue / Babcock Street | Two-way stop | HCM 2010 | NB Left | 0.257 | 25.8 | D |
| 3 | 03 - Ferguson Avenue / Huffine Lane | Signalized | HCM 2010 | SB Left | 0.654 | 20.6 | C |
| 4 | 04 - Fowler Avenue / Huffine Lane | Signalized | HCM 2010 | WB Left | 0.540 | 23.3 | C |
| 5 | 05 - 19th Avenue / Garfield Street | Signalized | HCM 2010 | EB Left | 0.730 | 20.7 | C |
| 6 | 06 - 19th Avenue / Stucky Road | Signalized | HCM 2010 | NB Thru | 0.845 | 31.4 | C |
| 7 | 07 - 19th Avenue / Goldenstein Lane | Two-way stop | HCM 2010 | WB Left | 0.146 | 33.8 | D |
| 8 | 08 - 7th Avenue / Griffin Drive | Signalized | HCM 2010 | WB Left | 0.661 | 17.4 | B |
| 9 | 09 - Manley Road / Griffin Drive | Two-way stop | HCM 2010 | SB Left | 1.477 | 336.6 | F |
| 10 | 10 - Rouse Avenue / Griffin Drive | Signalized | HCM 2010 | EB Left | 0.531 | 19.2 | B |
| 11 | 11 - Story Mill Road / Bridger Drive | Two-way stop | HCM 2010 | NB Left | 0.075 | 32.3 | D |
| 12 | 12 - Wilson Avenue / Peach Street | Two-way stop | HCM 2010 | NB Left | 0.178 | 17.8 | C |
| 13 | 13 - Rouse Avenue / Peach Street | Signalized | HCM 2010 | EB Left | 0.671 | 22.0 | C |
| 14 | 14 - Willson Avenue / Mendenhall Street | Signalized | HCM 2010 | WB Right | 0.285 | 14.2 | B |
| 15 | 15 - Willson Avenue / Babcock Street | Signalized | HCM 2010 | EB Right | 0.344 | 12.5 | B |
| 16 | 16 - Broadway Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.457 | 10.5 | B |
| 17 | 17 - Highland Boulevard / Main Street | Signalized | HCM 2010 | NEB Left | 0.628 | 19.4 | B |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18 | 18 - Haggerty Lane / Main Street | Two-way stop | HCM 2010 | NEB Thru | 0.000 | 473.6 | F |
| 19 | 19 - Willson Avenue / College Street | Two-way stop | HCM 2010 | WB Left | 0.014 | 56.6 | F |
| 20 | 20 - Highland Boulevard / Ellis Street | Two-way stop | HCM 2010 | WB Thru | 0.170 | 83.8 | F |
| 21 | 21 - Sourdough Road / Kagy Boulevard | Two-way stop | HCM 2010 | NB Left | 2.788 | 1,427.8 | F |
| 22 | 22 - Highland Boulevard / Kagy Boulevard | Two-way stop | HCM 2010 | NB Thru | 0.074 | 10,000.0 | F |
| 23 | 23 - Wagon Wheel Road / 3rd Avenue | All-way stop | HCM 2010 | EB Left | | 10.8 | B |
| 27 | 25 - 11th Avenue / Grant Street | All-way stop | HCM 2010 | SB Thru | | 22.3 | C |
| 28 | 26 - 11th Avenue / Lincoln Street | All-way stop | HCM 2010 | EB Right | | 30.1 | D |
| 29 | 27 - 11th Avenue / Kagy Boulevard | Signalized | HCM 2010 | EB Left | 0.767 | 34.6 | C |
| 30 | 28 - 8th Avenue / College Street | All-way stop | HCM 2010 | WB Thru | | 20.3 | C |
| 31 | 29 - 7th Avenue / Grant Street | All-way stop | HCM 2010 | WB Left | | 26.2 | D |
| 32 | 30 - 7th Avenue / Kagy Boulevard | Signalized | HCM 2010 | NB Left | 0.580 | 7.9 | A |
| 33 | 31 - Valley Center Spur / Frontage Road | Two-way stop | HCM 2010 | NEB Left | 0.110 | 13.1 | B |
| 34 | 32 - Valley Center Spur / Valley Center Road | Two-way stop | HCM 2010 | SB Left | 1.206 | 185.0 | F |
| 35 | 33 - Nelson Road / Frontage Road | Two-way stop | HCM 2010 | SWB Left | 0.221 | 19.3 | C |
| 36 | 34 - 19th Avenue / I-90 EB Ramp | Signalized | HCM 2010 | SEB Right | 0.884 | 44.4 | D |
| 37 | 35 - 19th Avenue / I-90 WB Ramp | Signalized | HCM 2010 | NWB Left | 0.662 | 21.2 | C |
| 38 | 36 - 19th Avenue / Tschache Way | Signalized | HCM 2010 | EB Right | 0.544 | 16.9 | B |
| 39 | 37 - 19th Avenue / Oak Street | Signalized | HCM 2010 | EB Thru | 0.703 | 31.9 | C |
| 40 | 38 - 19th Avenue / Durston Road | Signalized | HCM 2010 | EB Thru | 0.656 | 27.4 | C |
| 41 | 39 - 7th Avenue / Durston Road / Peach Street | Signalized | HCM 2010 | EB Thru | 0.609 | 38.3 | D |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 42 | 40 - 19th Avenue / Main Street | Signalized | HCM 2010 | NB Left | 0.760 | 54.0 | D |
| 43 | 41 - 7th Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.390 | 14.2 | B |
| 44 | 42 - 19th Avenue / Babcock Street | Signalized | HCM 2010 | | 0.000 | 0.0 | A |
| 45 | 43 - 19th Avenue / Koch Street | Signalized | HCM 2010 | EB Right | 0.495 | 12.7 | B |
| 46 | 44 - 19th Avenue / College Street | Signalized | HCM 2010 | EB Thru | 0.639 | 30.1 | C |
| 47 | 45 - 19th Avenue / Graf Street | Signalized | HCM 2010 | EB Left | 0.875 | 66.1 | E |
| 49 | 47 - Flanders Mill Road / Baxter Lane | Two-way stop | HCM 2010 | NB Left | 0.143 | 18.8 | C |
| 50 | 48 - Davis Lane / Baxter Lane | Signalized | HCM 2010 | WB Left | 0.512 | 18.2 | B |
| 51 | 49 - Laurel Parkway / Durston Road | Signalized | HCM 2010 | SB Left | 0.449 | 19.0 | B |
| 52 | 50 - Cottonwood Road / Durston Road | Signalized | HCM 2010 | NB Right | 0.857 | 89.5 | F |
| 55 | 53 - Fowler Avenue / Durston Road | Two-way stop | HCM 2010 | NB Left | 0.097 | 30.0 | D |
| 56 | 54 - Cottonwood Road / Babcock Street | Signalized | HCM 2010 | WB Left | 0.778 | 32.2 | C |
| 58 | 55 - 19th Avenue / Baxter Lane | Signalized | HCM 2010 | EB Thru | 0.964 | 71.7 | E |
| 59 | 56 - 7th Avenue / Baxter Lane | Two-way stop | HCM 2010 | EB Right | 1.186 | 143.5 | F |
| 60 | 57 - 7th Avenue / Oak Street | Signalized | HCM 2010 | WB Thru | 0.589 | 27.5 | C |
| 61 | 58 - 15th Avenue / Oak Street | Signalized | HCM 2010 | WB Left | 0.468 | 16.6 | B |
| 62 | 59 - 27th Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 3.769 | 427.4 | F |
| 64 | 61 - Rouse Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 0.574 | 18.9 | B |
| 65 | 62 - 19th Avenue / Kagy Boulevard | Signalized | HCM 2010 | WB Left | 0.796 | 31.3 | C |
| 66 | 63 - Willson Avenue / Kagy Boulevard | Signalized | HCM 2010 | WB Thru | 0.698 | 28.8 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 1: 01 - Ferguson Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 144.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.652 |

**Intersection Setup**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | Yes | | |

**volumes**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 14 | 182 | 41 | 63 | 428 | 10 | 16 | 73 | 77 | 26 | 34 | 43 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7.00 |
| Growth Rate | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 19 | 246 | 55 | 85 | 578 | 14 | 22 | 99 | 104 | 35 | 46 | 58 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 5 | 64 | 14 | 22 | 151 | 4 | 6 | 26 | 27 | 10 | 13 | 16 |
| Total Analysis Volume [veh/h] | 20 | 257 | 57 | 89 | 603 | 15 | 23 | 103 | 109 | 38 | 50 | 63 |
| Pedestrian Volume [ped/h] | 0 | | | 5 | | | 0 | | | 5 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.02 | 0.00 | 0.00 | 0.07 | 0.01 | 0.00 | 0.21 | 0.60 | 0.22 | 0.65 | 0.28 | 0.09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.78 | 0.00 | 0.00 | 8.11 | 0.00 | 0.00 | 129.37 | 117.17 | 103.56 | 144.07 | 31.93 | 16.64 |
| Movement LOS | A | A | A | A | A | A | F | F | F | F | D | C |
| 95th-Percentile Queue Length [veh] | 1.54 | 1.54 | 1.54 | 3.73 | 3.73 | 3.73 | 9.77 | 9.77 | 9.77 | 2.71 | 1.64 | 1.64 |
| 95th-Percentile Queue Length [ft] | 38.52 | 38.52 | 38.52 | 93.15 | 93.15 | 93.15 | 244.28 | 244.28 | 244.28 | 67.83 | 40.93 | 40.93 |
| d_A, Approach Delay [s/veh] | 0.53 | | | 1.02 | | | 112.05 | | | 53.77 | | |
| Approach LOS | A | | | A | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 24.77 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 2: 02 - Fowler Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 25.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.257 |

**Intersection Setup**

| Name | Fowler Avenue | | Babcock Street | | Babcock Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Fowler Avenue | | Babcock Street | | Babcock Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 50 | 75 | 256 | 179 | 126 | 158 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.40 | 0.00 | 0.80 | 0.60 |
| Growth Rate | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 59 | 89 | 302 | 211 | 149 | 186 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 16 | 24 | 79 | 55 | 39 | 49 |
| Total Analysis Volume [veh/h] | 64 | 97 | 315 | 220 | 155 | 194 |
| Pedestrian Volume [ped/h] | 9 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.26 | 0.16 | 0.00 | 0.00 | 0.15 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 25.83 | 17.16 | 0.00 | 0.00 | 9.15 | 0.00 |
| Movement LOS | D | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.98 | 1.98 | 0.00 | 0.00 | 0.53 | 0.00 |
| 95th-Percentile Queue Length [ft] | 49.44 | 49.44 | 0.00 | 0.00 | 13.34 | 0.00 |
| d_A, Approach Delay [s/veh] | 20.61 | | 0.00 | | 4.06 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.53 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 3: 03 - Ferguson Avenue / Huffine Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.654 |

**Intersection Setup**

| Name | Ferguson Avenue | | Huffine Lane | | Huffine Lane | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 0 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 110.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**volumes**

| Name | Ferguson Avenue | | Huffine Lane | | Huffine Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 311 | 202 | 201 | 862 | 522 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.30 | 4.50 | 1.50 | 1.90 | 2.50 | 0.80 |
| Growth Rate | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 467 | 303 | 302 | 1293 | 783 | 183 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 122 | 79 | 80 | 341 | 206 | 48 |
| Total Analysis Volume [veh/h] | 487 | 316 | 318 | 1363 | 826 | 193 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | ProtectedPermissi | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 3 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 15 | 0 | 8 | 30 | 30 | 0 |
| Maximum Green [s] | 60 | 0 | 30 | 90 | 90 | 0 |
| Amber [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 44 | 0 | 11 | 46 | 35 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | No | No | No | |
| Maximum Recall | No | | No | No | No | |
| Pedestrian Recall | No | | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | R |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 27 | 27 | 53 | 53 | 39 | 39 |
| g / C, Green / Cycle | 0.30 | 0.30 | 0.59 | 0.59 | 0.44 | 0.44 |
| (v / s)_i Volume / Saturation Flow Rate | 0.27 | 0.20 | 0.35 | 0.38 | 0.23 | 0.12 |
| s, saturation flow rate [veh/h] | 1804 | 1545 | 907 | 3550 | 3529 | 1602 |
| c, Capacity [veh/h] | 548 | 469 | 528 | 2078 | 1538 | 698 |
| d1, Uniform Delay [s] | 29.89 | 27.43 | 12.35 | 12.56 | 18.71 | 16.29 |
| k, delay calibration | 0.17 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.74 | 1.69 | 5.01 | 1.63 | 1.35 | 0.98 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

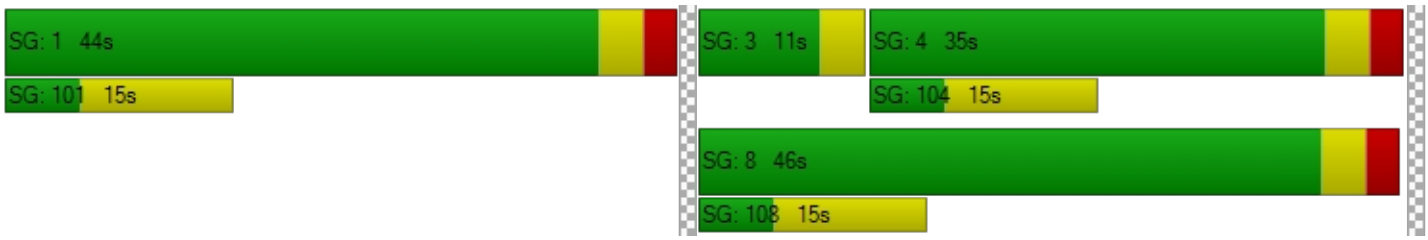
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.89 | 0.67 | 0.60 | 0.66 | 0.54 | 0.28 |
| d, Delay for Lane Group [s/veh] | 37.63 | 29.12 | 17.36 | 14.20 | 20.06 | 17.28 |
| Lane Group LOS | D | C | B | B | C | B |
| Critical Lane Group | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 10.88 | 6.00 | 3.62 | 8.72 | 6.34 | 2.65 |
| 50th-Percentile Queue Length [ft] | 272.08 | 150.00 | 90.56 | 218.08 | 158.53 | 66.35 |
| 95th-Percentile Queue Length [veh] | 16.29 | 10.02 | 6.52 | 13.57 | 10.47 | 4.78 |
| 95th-Percentile Queue Length [ft] | 407.33 | 250.42 | 163.00 | 339.18 | 261.77 | 119.42 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 37.63 | 29.12 | 17.36 | 14.20 | 20.06 | 17.28 |
| Movement LOS | D | C | B | B | C | B |
| d_A, Approach Delay [s/veh] | 34.28 | | 14.80 | | 19.53 | |
| Approach LOS | C | | B | | B | |
| d_I, Intersection Delay [s/veh] | 20.64 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.654 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: 04 - Fowler Avenue / Huffine Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 23.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.540 |

**Intersection Setup**

| Name | Fowler Avenue | | | Fowler Avenue | | | Huffine Lane | | | Huffine Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Pocket Length [ft] | 253.00 | 100.00 | 100.00 | 76.00 | 100.00 | 100.00 | 100.00 | 100.00 | 280.00 | 365.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Fowler Avenue | | | Fowler Avenue | | | Huffine Lane | | | Huffine Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 145 | 42 | 7 | 84 | 198 | 34 | 19 | 654 | 307 | 6 | 420 | 24 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.40 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 2.70 | 1.30 | 0.00 | 3.10 | 4.20 |
| Growth Rate | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 218 | 63 | 11 | 126 | 297 | 51 | 29 | 981 | 461 | 9 | 630 | 36 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 59 | 17 | 3 | 34 | 81 | 14 | 8 | 259 | 122 | 2 | 166 | 9 |
| Total Analysis Volume [veh/h] | 237 | 68 | 12 | 137 | 323 | 55 | 31 | 1034 | 486 | 9 | 664 | 38 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 90 | 0 | 0 | 90 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 69 | 0 | 0 | 69 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 47 | 47 | 47 | 47 | 47 | 47 | 33 | 33 | 33 | 33 | 33 | 33 |
| g / C, Green / Cycle | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 |
| (v / s)_i Volume / Saturation Flow Rate | 0.24 | 0.04 | 0.01 | 0.10 | 0.10 | 0.10 | 0.04 | 0.29 | 0.30 | 0.02 | 0.19 | 0.19 |
| s, saturation flow rate [veh/h] | 1007 | 1900 | 1615 | 1354 | 1891 | 1796 | 757 | 3522 | 1594 | 554 | 1843 | 1808 |
| c, Capacity [veh/h] | 509 | 995 | 846 | 711 | 990 | 941 | 242 | 1286 | 582 | 141 | 673 | 660 |
| d1, Uniform Delay [s] | 19.37 | 10.59 | 10.28 | 14.29 | 11.37 | 11.38 | 28.96 | 25.67 | 26.09 | 36.22 | 22.45 | 22.46 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.04 | 0.13 | 0.03 | 0.60 | 0.44 | 0.47 | 0.24 | 1.22 | 3.24 | 0.19 | 0.64 | 0.65 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.47 | 0.07 | 0.01 | 0.19 | 0.19 | 0.20 | 0.13 | 0.80 | 0.83 | 0.06 | 0.53 | 0.53 |
| d, Delay for Lane Group [s/veh] | 22.41 | 10.72 | 10.31 | 14.89 | 11.80 | 11.85 | 29.19 | 26.90 | 29.33 | 36.41 | 23.09 | 23.11 |
| Lane Group LOS | C | B | B | B | B | B | C | C | C | D | C | C |
| Critical Lane Group | Yes | No | No | No | No | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 3.98 | 0.67 | 0.12 | 1.71 | 2.06 | 1.98 | 0.56 | 9.73 | 9.61 | 0.18 | 5.82 | 5.72 |
| 50th-Percentile Queue Length [ft] | 99.46 | 16.80 | 2.90 | 42.84 | 51.38 | 49.58 | 13.95 | 243.27 | 240.27 | 4.62 | 145.43 | 142.98 |
| 95th-Percentile Queue Length [veh] | 7.16 | 1.21 | 0.21 | 3.08 | 3.70 | 3.57 | 1.00 | 14.85 | 14.69 | 0.33 | 9.77 | 9.64 |
| 95th-Percentile Queue Length [ft] | 179.02 | 30.25 | 5.23 | 77.11 | 92.48 | 89.25 | 25.10 | 371.17 | 367.37 | 8.31 | 244.32 | 241.04 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 22.41 | 10.72 | 10.31 | 14.89 | 11.82 | 11.85 | 29.19 | 26.90 | 29.33 | 36.41 | 23.10 | 23.11 |
| Movement LOS | C | B | B | B | B | B | C | C | C | D | C | C |
| d_A, Approach Delay [s/veh] | 19.45 | | | 12.64 | | | 27.70 | | | 23.27 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 23.33 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.540 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 5: 05 - 19th Avenue / Garfield Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.730 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Garfield Street | | | Garfield Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 280.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Garfield Street | | | Garfield Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 245 | 607 | 9 | 45 | 720 | 53 | 32 | 25 | 542 | 8 | 12 | 31 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.10 | 0.00 | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 397 | 983 | 15 | 73 | 1166 | 86 | 52 | 41 | 878 | 13 | 19 | 50 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 104 | 256 | 4 | 19 | 304 | 22 | 14 | 11 | 239 | 4 | 5 | 14 |
| Total Analysis Volume [veh/h] | 414 | 1026 | 16 | 76 | 1217 | 90 | 57 | 45 | 954 | 14 | 21 | 54 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 1 | | | 4 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 1 | | | 1 | | | 5 | | | 1 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 155 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Overlap | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 6 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | 6,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 45 | 0 | 10 | 45 | 0 | 0 | 30 | 45 | 0 | 30 | 0 |
| Maximum Green [s] | 30 | 90 | 0 | 30 | 90 | 0 | 0 | 45 | 90 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 33 | 107 | 0 | 13 | 87 | 0 | 0 | 35 | 87 | 0 | 35 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | No | | No | |
| Maximum Recall | No | No | | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 115 | 102 | 102 | 115 | 93 | 93 | 30 | 30 | 128 | 30 | 30 |
| g / C, Green / Cycle | 0.74 | 0.66 | 0.66 | 0.74 | 0.60 | 0.60 | 0.19 | 0.19 | 0.82 | 0.19 | 0.19 |
| (v / s)_i Volume / Saturation Flow Rate | 0.62 | 0.28 | 0.28 | 0.11 | 0.35 | 0.35 | 0.04 | 0.02 | 0.60 | 0.01 | 0.05 |
| s, saturation flow rate [veh/h] | 672 | 1879 | 1868 | 666 | 1885 | 1834 | 1342 | 1900 | 1583 | 1381 | 1661 |
| c, Capacity [veh/h] | 474 | 1241 | 1234 | 492 | 1127 | 1096 | 238 | 368 | 1304 | 269 | 322 |
| d1, Uniform Delay [s] | 28.75 | 12.37 | 12.38 | 6.93 | 19.31 | 19.39 | 59.51 | 51.63 | 6.08 | 55.10 | 52.79 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 19.59 | 1.05 | 1.06 | 0.67 | 2.23 | 2.34 | 0.52 | 0.15 | 3.65 | 0.08 | 0.37 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.87 | 0.42 | 0.42 | 0.15 | 0.59 | 0.59 | 0.24 | 0.12 | 0.73 | 0.05 | 0.23 |
| d, Delay for Lane Group [s/veh] | 48.34 | 13.42 | 13.44 | 7.60 | 21.54 | 21.72 | 60.03 | 51.77 | 9.73 | 55.18 | 53.15 |
| Lane Group LOS | D | B | B | A | C | C | E | D | A | E | D |
| Critical Lane Group | Yes | No | No | Yes | No | No | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 6.99 | 8.84 | 8.82 | 0.74 | 15.34 | 15.12 | 2.06 | 1.48 | 12.58 | 0.48 | 2.53 |
| 50th-Percentile Queue Length [ft] | 174.85 | 221.07 | 220.41 | 18.60 | 383.42 | 377.98 | 51.50 | 37.06 | 314.47 | 11.90 | 63.34 |
| 95th-Percentile Queue Length [veh] | 11.33 | 13.72 | 13.69 | 1.34 | 21.76 | 21.50 | 3.71 | 2.67 | 18.40 | 0.86 | 4.56 |
| 95th-Percentile Queue Length [ft] | 283.28 | 342.99 | 342.14 | 33.47 | 543.99 | 537.40 | 92.70 | 66.71 | 459.89 | 21.42 | 114.01 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 48.34 | 13.43 | 13.44 | 7.60 | 21.62 | 21.72 | 60.03 | 51.77 | 9.73 | 55.18 | 53.15 | 53.15 |
| Movement LOS | D | B | B | A | C | C | E | D | A | E | D | D |
| d_A, Approach Delay [s/veh] | 23.35 | | | 20.86 | | | 14.24 | | | 53.47 | | |
| Approach LOS | C | | | C | | | B | | | D | | |
| d_I, Intersection Delay [s/veh] | 20.74 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.730 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: 06 - 19th Avenue / Stucky Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.845 |

**Intersection Setup**

| Name | 19th Avenue | | 19th Avenue | | Stucky Road | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 1 |
| Pocket Length [ft] | 400.00 | 100.00 | 100.00 | 100.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | 19th Avenue | | 19th Avenue | | Stucky Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 62 | 479 | 182 | 232 | 361 | 41 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.60 | 0.40 | 3.80 | 0.00 | 0.00 | 2.40 |
| Growth Rate | 1.79 | 1.79 | 1.79 | 1.79 | 1.79 | 1.79 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 111 | 857 | 326 | 415 | 646 | 73 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 29 | 224 | 85 | 108 | 169 | 19 |
| Total Analysis Volume [veh/h] | 116 | 894 | 340 | 433 | 674 | 76 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 6 | 0 | 3 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 22 | 22 | 0 | 73 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | No | | No | |
| Maximum Recall | | No | No | | No | |
| Pedestrian Recall | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | R | L | R |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 47 | 47 | 47 | 47 | 38 | 38 |
| g / C, Green / Cycle | 0.49 | 0.49 | 0.49 | 0.49 | 0.40 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.11 | 0.47 | 0.19 | 0.27 | 0.37 | 0.05 |
| s, saturation flow rate [veh/h] | 1040 | 1892 | 1830 | 1615 | 1810 | 1577 |
| c, Capacity [veh/h] | 412 | 936 | 905 | 799 | 724 | 631 |
| d1, Uniform Delay [s] | 24.51 | 23.01 | 14.91 | 16.59 | 27.23 | 17.95 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.71 | 20.42 | 1.19 | 2.64 | 6.03 | 0.08 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

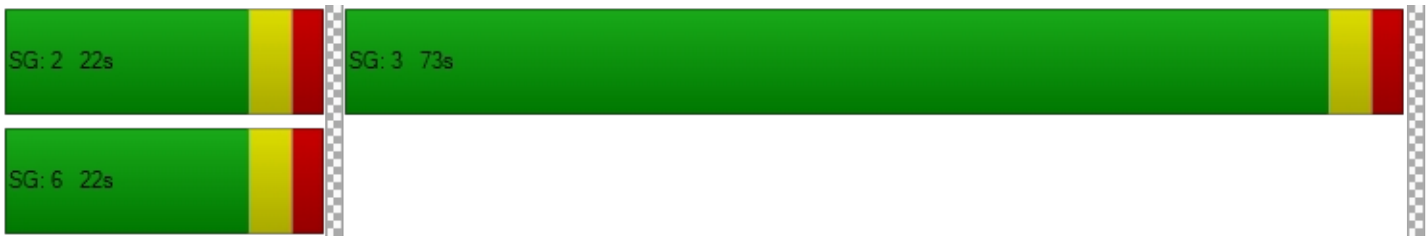
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.28 | 0.96 | 0.38 | 0.54 | 0.93 | 0.12 |
| d, Delay for Lane Group [s/veh] | 26.22 | 43.43 | 16.10 | 19.22 | 33.26 | 18.03 |
| Lane Group LOS | C | D | B | B | C | B |
| Critical Lane Group | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 2.15 | 23.01 | 4.66 | 6.76 | 15.13 | 1.05 |
| 50th-Percentile Queue Length [ft] | 53.75 | 575.15 | 116.52 | 169.10 | 378.16 | 26.23 |
| 95th-Percentile Queue Length [veh] | 3.87 | 30.87 | 8.20 | 11.03 | 21.50 | 1.89 |
| 95th-Percentile Queue Length [ft] | 96.75 | 771.81 | 205.04 | 275.73 | 537.62 | 47.21 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 26.22 | 43.43 | 16.10 | 19.22 | 33.26 | 18.03 |
| Movement LOS | C | D | B | B | C | B |
| d_A, Approach Delay [s/veh] | 41.45 | | 17.85 | | 31.72 | |
| Approach LOS | D | | B | | C | |
| d_I, Intersection Delay [s/veh] | 31.37 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.845 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: 07 - 19th Avenue / Goldenstein Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 33.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.146 |

**Intersection Setup**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 335 | 73 | 105 | 91 | 22 | 179 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.30 | 0.00 | 2.90 | 0.00 | 0.00 | 0.60 |
| Growth Rate | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 472 | 103 | 148 | 128 | 31 | 252 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 123 | 27 | 39 | 33 | 8 | 68 |
| Total Analysis Volume [veh/h] | 493 | 107 | 154 | 134 | 34 | 274 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | |
|---|---|---|---|
| Priority Scheme | Free | Free | Stop |
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.16 | 0.00 | 0.15 | 0.51 |
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 9.40 | 0.00 | 33.78 | 24.96 |
| Movement LOS | A | A | A | A | D | C |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.56 | 0.00 | 4.62 | 4.62 |
| 95th-Percentile Queue Length [ft] | 0.00 | 0.00 | 14.03 | 0.00 | 115.46 | 115.46 |
| d_A, Approach Delay [s/veh] | 0.00 | | 5.02 | | 25.93 | |
| Approach LOS | A | | A | | D | |
| d_I, Intersection Delay [s/veh] | 7.89 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: 08 - 7th Avenue / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.661 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Mandeville Lane | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Mandeville Lane | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 9 | 210 | 351 | 122 | 266 | 6 | 7 | 12 | 24 | 228 | 4 | 60 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 6.20 | 2.80 | 9.00 | 4.90 | 16.70 | 14.30 | 8.30 | 12.00 | 16.70 | 0.00 | 6.70 |
| Growth Rate | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 13 | 309 | 516 | 179 | 391 | 9 | 10 | 18 | 35 | 335 | 6 | 88 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 3 | 81 | 135 | 47 | 102 | 2 | 3 | 5 | 10 | 87 | 2 | 23 |
| Total Analysis Volume [veh/h] | 14 | 322 | 538 | 187 | 408 | 9 | 11 | 20 | 38 | 350 | 6 | 92 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 65 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 20 | 0 | 0 | 20 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 0 | 60 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 36 | 0 | 0 | 36 | 0 | 0 | 29 | 0 | 0 | 29 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | C | C |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 33 | 33 | 33 | 33 | 22 | 22 |
| g / C, Green / Cycle | 0.50 | 0.50 | 0.50 | 0.50 | 0.34 | 0.34 |
| (v / s)_i Volume / Saturation Flow Rate | 0.19 | 0.34 | 0.19 | 0.23 | 0.04 | 0.32 |
| s, saturation flow rate [veh/h] | 1765 | 1571 | 986 | 1804 | 1625 | 1405 |
| c, Capacity [veh/h] | 943 | 788 | 449 | 905 | 624 | 583 |
| d1, Uniform Delay [s] | 9.94 | 12.27 | 17.29 | 10.50 | 14.60 | 20.59 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.32 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.05 | 4.75 | 2.83 | 1.69 | 0.08 | 6.17 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.68 | 0.42 | 0.46 | 0.11 | 0.77 |
| d, Delay for Lane Group [s/veh] | 10.99 | 17.03 | 20.12 | 12.18 | 14.67 | 26.76 |
| Lane Group LOS | B | B | C | B | B | C |
| Critical Lane Group | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 2.80 | 6.03 | 2.42 | 3.73 | 0.66 | 6.91 |
| 50th-Percentile Queue Length [ft] | 69.94 | 150.71 | 60.47 | 93.25 | 16.51 | 172.72 |
| 95th-Percentile Queue Length [veh] | 5.04 | 10.05 | 4.35 | 6.71 | 1.19 | 11.22 |
| 95th-Percentile Queue Length [ft] | 125.89 | 251.37 | 108.84 | 167.85 | 29.71 | 280.48 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10.99 | 10.99 | 17.03 | 20.12 | 12.18 | 12.18 | 14.67 | 14.67 | 14.67 | 26.76 | 26.76 | 26.76 |
| Movement LOS | B | B | B | C | B | B | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 14.71 | | | 14.64 | | | 14.67 | | | 26.76 | | |
| Approach LOS | B | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 17.39 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.661 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 9: 09 - Manley Road / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 336.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.477 |

**Intersection Setup**

| Name | Manley Road | | Griffin Drive | | Griffin Drive | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Manley Road | | Griffin Drive | | Griffin Drive | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 83 | 45 | 123 | 316 | 222 | 46 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 6.00 | 11.10 | 1.60 | 4.10 | 8.60 | 2.20 |
| Growth Rate | 1.71 | 1.71 | 1.71 | 1.71 | 1.71 | 1.71 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 142 | 77 | 210 | 540 | 380 | 79 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 37 | 20 | 55 | 141 | 99 | 21 |
| Total Analysis Volume [veh/h] | 148 | 80 | 219 | 563 | 397 | 82 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 1.48 | 0.13 | 0.20 | 0.01 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 336.57 | 11.92 | 9.15 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 11.02 | 0.46 | 6.59 | 6.59 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 275.40 | 11.46 | 164.68 | 164.68 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 222.66 | | 2.56 | | 0.00 | |
| Approach LOS | F | | A | | A | |
| d_I, Intersection Delay [s/veh] | 35.44 | | | | | |
| Intersection LOS | F | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: 10 - Rouse Avenue / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.531 |

**Intersection Setup**

| Name | Griffin Drive | | | Rouse Avenue | | | Bridger Drive | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Eastbound | | | Northeastbound | | | Southwestbound | | | Northwestbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 275.00 | 130.00 | 100.00 | 100.00 | 70.00 | 100.00 | 70.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Griffin Drive | | | Rouse Avenue | | | Bridger Drive | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 122 | 5 | 175 | 139 | 159 | 5 | 1 | 206 | 111 | 5 | 7 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 9.80 | 0.00 | 9.70 | 7.90 | 4.40 | 0.00 | 100.00 | 2.90 | 5.40 | 0.00 | 28.60 | 0.00 |
| Growth Rate | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 194 | 8 | 278 | 221 | 253 | 8 | 2 | 328 | 176 | 8 | 11 | 2 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 51 | 2 | 73 | 58 | 66 | 2 | 1 | 86 | 46 | 2 | 3 | 1 |
| Total Analysis Volume [veh/h] | 202 | 8 | 290 | 231 | 264 | 8 | 2 | 342 | 184 | 9 | 12 | 2 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Overlap | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 6 | 6 | 3 | 8 | 0 | 0 | 4 | 0 | 0 | 2 | 0 |
| Auxiliary Signal Groups | | | 6 | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 5 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 30 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 58 | 58 | 12 | 32 | 0 | 0 | 20 | 0 | 0 | 58 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | No | No | No | | | No | | | No | |
| Maximum Recall | | No | No | No | No | | | No | | | No | |
| Pedestrian Recall | | No | No | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | L | C | R | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 28 | 28 | 52 | 52 | 41 | 41 | 41 | 28 |
| g / C, Green / Cycle | 0.31 | 0.31 | 0.58 | 0.58 | 0.45 | 0.45 | 0.45 | 0.31 |
| (v / s)_i Volume / Saturation Flow Rate | 0.27 | 0.20 | 0.21 | 0.15 | 0.00 | 0.19 | 0.12 | 0.09 |
| s, saturation flow rate [veh/h] | 767 | 1472 | 1104 | 1811 | 562 | 1846 | 1532 | 252 |
| c, Capacity [veh/h] | 314 | 453 | 643 | 1053 | 284 | 839 | 696 | 133 |
| d1, Uniform Delay [s] | 29.68 | 26.87 | 9.97 | 9.28 | 18.34 | 16.45 | 15.23 | 24.83 |
| k, delay calibration | 0.11 | 0.11 | 0.13 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.45 | 1.52 | 0.42 | 0.59 | 0.04 | 1.47 | 0.93 | 0.61 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

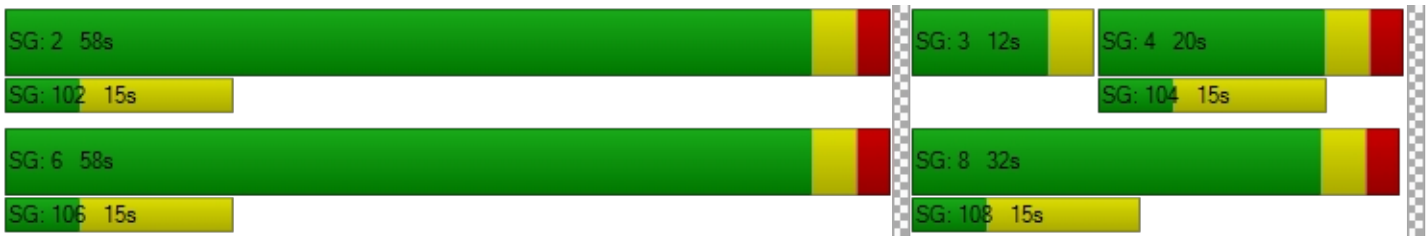
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.67 | 0.64 | 0.36 | 0.26 | 0.01 | 0.41 | 0.26 | 0.17 |
| d, Delay for Lane Group [s/veh] | 32.13 | 28.39 | 10.39 | 9.88 | 18.38 | 17.92 | 16.16 | 25.44 |
| Lane Group LOS | C | C | B | A | B | B | B | C |
| Critical Lane Group | Yes | No | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 4.39 | 5.40 | 2.11 | 2.60 | 0.03 | 4.87 | 2.43 | 0.36 |
| 50th-Percentile Queue Length [ft] | 109.65 | 134.99 | 52.68 | 65.05 | 0.74 | 121.63 | 60.81 | 8.99 |
| 95th-Percentile Queue Length [veh] | 7.82 | 9.21 | 3.79 | 4.68 | 0.05 | 8.48 | 4.38 | 0.65 |
| 95th-Percentile Queue Length [ft] | 195.51 | 230.26 | 94.82 | 117.10 | 1.34 | 212.07 | 109.46 | 16.18 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 32.13 | 32.13 | 28.39 | 10.39 | 9.88 | 9.88 | 18.38 | 17.92 | 16.16 | 25.44 | 25.44 | 25.44 |
| Movement LOS | C | C | C | B | A | A | B | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 29.96 | | | 10.11 | | | 17.31 | | | 25.44 | | |
| Approach LOS | C | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 19.17 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.531 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 11: 11 - Story Mill Road / Bridger Drive**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 32.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.075 |

**Intersection Setup**

| Name | Story Mill Road | | | Story Mill Road | | | Bridger Drive | | | Bridger Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**volumes**

| Name | Story Mill Road | | | Story Mill Road | | | Bridger Drive | | | Bridger Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 7 | 15 | 14 | 4 | 41 | 93 | 61 | 121 | 4 | 41 | 172 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 6.70 | 0.00 | 25.00 | 0.00 | 4.30 | 8.20 | 7.40 | 25.00 | 0.00 | 0.60 | 0.00 |
| Growth Rate | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 11 | 23 | 22 | 6 | 64 | 144 | 95 | 188 | 6 | 64 | 267 | 5 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 3 | 6 | 6 | 2 | 17 | 38 | 25 | 49 | 2 | 17 | 70 | 1 |
| Total Analysis Volume [veh/h] | 11 | 24 | 23 | 6 | 67 | 150 | 99 | 196 | 6 | 67 | 279 | 5 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.07 | 0.09 | 0.03 | 0.03 | 0.25 | 0.20 | 0.08 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 32.27 | 21.36 | 12.07 | 28.61 | 24.97 | 16.54 | 8.15 | 0.00 | 0.00 | 7.74 | 0.00 | 0.00 |
| Movement LOS | D | C | B | D | C | C | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.70 | 0.70 | 0.70 | 2.51 | 2.51 | 2.51 | 0.26 | 0.00 | 0.00 | 1.01 | 1.01 | 1.01 |
| 95th-Percentile Queue Length [ft] | 17.44 | 17.44 | 17.44 | 62.69 | 62.69 | 62.69 | 6.48 | 0.00 | 0.00 | 25.34 | 25.34 | 25.34 |
| d_A, Approach Delay [s/veh] | 19.75 | | | 19.40 | | | 2.68 | | | 1.48 | | |
| Approach LOS | C | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 7.28 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 12: 12 - Wilson Avenue / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 17.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.178 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 44 | 10 | 14 | 2 | 3 | 2 | 0 | 232 | 71 | 19 | 139 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.30 | 2.80 | 0.00 | 4.30 | 0.00 |
| Growth Rate | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 62 | 14 | 20 | 3 | 4 | 3 | 0 | 325 | 99 | 27 | 195 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 16 | 4 | 5 | 1 | 1 | 1 | 0 | 85 | 26 | 7 | 51 | 0 |
| Total Analysis Volume [veh/h] | 65 | 15 | 21 | 3 | 4 | 3 | 0 | 339 | 103 | 28 | 203 | 0 |
| Pedestrian Volume [ped/h] | 3 | | | 4 | | | 2 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.18 | 0.04 | 0.03 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 17.78 | 17.56 | 13.41 | 15.77 | 15.51 | 9.54 | 7.63 | 0.00 | 0.00 | 8.29 | 0.00 | 0.00 |
| Movement LOS | C | C | B | C | C | A | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.97 | 0.97 | 0.97 | 0.07 | 0.07 | 0.07 | 0.00 | 0.00 | 0.00 | 0.77 | 0.77 | 0.77 |
| 95th-Percentile Queue Length [ft] | 24.34 | 24.34 | 24.34 | 1.83 | 1.83 | 1.83 | 0.00 | 0.00 | 0.00 | 19.30 | 19.30 | 19.30 |
| d_A, Approach Delay [s/veh] | 16.84 | | | 13.80 | | | 0.00 | | | 1.00 | | |
| Approach LOS | C | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 2.64 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 13: 13 - Rouse Avenue / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.671 |

**Intersection Setup**

| Name | Rouse Avenue | | | Rouse Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Rouse Avenue | | | Rouse Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 56 | 334 | 9 | 70 | 421 | 69 | 29 | 52 | 75 | 5 | 51 | 122 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 0.00 | 1.40 | 0.70 | 1.40 | 0.00 | 5.80 | 1.30 | 0.00 | 0.00 | 0.80 |
| Growth Rate | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 88 | 524 | 14 | 110 | 661 | 108 | 46 | 82 | 118 | 8 | 80 | 192 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 23 | 137 | 4 | 29 | 172 | 28 | 12 | 21 | 31 | 2 | 21 | 50 |
| Total Analysis Volume [veh/h] | 92 | 547 | 15 | 115 | 690 | 113 | 48 | 86 | 123 | 8 | 83 | 200 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 63 | 0 | 0 | 63 | 0 | 0 | 27 | 0 | 0 | 27 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 58 | 58 | 58 | 58 | 22 | 22 | 22 | 22 |
| g / C, Green / Cycle | 0.64 | 0.64 | 0.64 | 0.64 | 0.24 | 0.24 | 0.24 | 0.24 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.33 | 0.15 | 0.48 | 0.05 | 0.14 | 0.01 | 0.19 |
| s, saturation flow rate [veh/h] | 620 | 1687 | 765 | 1657 | 1002 | 1464 | 1072 | 1520 |
| c, Capacity [veh/h] | 258 | 1087 | 420 | 1068 | 130 | 358 | 183 | 372 |
| d1, Uniform Delay [s] | 26.80 | 8.53 | 16.34 | 11.04 | 42.71 | 29.97 | 37.02 | 31.56 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.80 | 1.76 | 1.61 | 4.90 | 7.96 | 6.81 | 0.45 | 13.71 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.52 | 0.27 | 0.75 | 0.37 | 0.58 | 0.04 | 0.76 |
| d, Delay for Lane Group [s/veh] | 30.60 | 10.29 | 17.95 | 15.93 | 50.67 | 36.78 | 37.46 | 45.27 |
| Lane Group LOS | C | B | B | B | D | D | D | D |
| Critical Lane Group | No | No | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.88 | 5.59 | 1.68 | 10.81 | 1.34 | 4.58 | 0.18 | 6.98 |
| 50th-Percentile Queue Length [ft] | 47.12 | 139.79 | 41.92 | 270.20 | 33.48 | 114.48 | 4.54 | 174.52 |
| 95th-Percentile Queue Length [veh] | 3.39 | 9.47 | 3.02 | 16.20 | 2.41 | 8.09 | 0.33 | 11.31 |
| 95th-Percentile Queue Length [ft] | 84.81 | 236.74 | 75.45 | 404.99 | 60.26 | 202.21 | 8.17 | 282.84 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.60 | 10.29 | 10.29 | 17.95 | 15.93 | 15.93 | 50.67 | 36.78 | 36.78 | 37.46 | 45.27 | 45.27 |
| Movement LOS | C | B | B | B | B | B | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 13.15 | | | 16.19 | | | 39.37 | | | 45.06 | | |
| Approach LOS | B | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 22.02 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.671 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: 14 - Willson Avenue / Mendenhall Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 14.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.285 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Mendenhall Street | | | Mendenhall Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Mendenhall Street | | | Mendenhall Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 53 | 107 | 0 | 0 | 97 | 10 | 0 | 0 | 0 | 72 | 238 | 17 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.90 | 0.00 | 2.00 | 2.00 | 4.10 | 0.00 | 2.00 | 2.00 | 2.00 | 0.00 | 0.50 | 5.90 |
| Growth Rate | 1.28 | 1.28 | 1.00 | 1.00 | 1.28 | 1.28 | 1.00 | 1.00 | 1.00 | 1.28 | 1.28 | 1.28 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 68 | 137 | 0 | 0 | 124 | 13 | 0 | 0 | 0 | 92 | 305 | 22 |
| Peak Hour Factor | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 1.0000 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 18 | 36 | 0 | 0 | 32 | 3 | 0 | 0 | 0 | 24 | 80 | 6 |
| Total Analysis Volume [veh/h] | 71 | 143 | 0 | 0 | 129 | 14 | 0 | 0 | 0 | 96 | 318 | 23 |
| Presence of On-Street Parking | No | | No | No | | No | | | | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 7 | | | 7 | | | 9 | | | 9 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | | | | No | |
| Maximum Recall | | No | | | No | | | | | | No | |
| Pedestrian Recall | | No | | | No | | | | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | | C | C |
|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 35 | 35 | | 15 | 15 |
| g / C, Green / Cycle | 0.58 | 0.58 | | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.09 | | 0.14 | 0.14 |
| s, saturation flow rate [veh/h] | 1447 | 1614 | | 1667 | 1516 |
| c, Capacity [veh/h] | 920 | 937 | | 422 | 383 |
| d1, Uniform Delay [s] | 6.05 | 5.80 | | 19.41 | 19.41 |
| k, delay calibration | 0.50 | 0.50 | | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.59 | 0.35 | | 1.09 | 1.20 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.23 | 0.15 | | 0.54 | 0.54 |
| d, Delay for Lane Group [s/veh] | 6.64 | 6.14 | | 20.49 | 20.61 |
| Lane Group LOS | A | A | | C | C |
| Critical Lane Group | Yes | No | | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.15 | 0.73 | | 2.67 | 2.44 |
| 50th-Percentile Queue Length [ft] | 28.76 | 18.27 | | 66.75 | 61.11 |
| 95th-Percentile Queue Length [veh] | 2.07 | 1.32 | | 4.81 | 4.40 |
| 95th-Percentile Queue Length [ft] | 51.76 | 32.88 | | 120.15 | 110.00 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.64 | 6.64 | 0.00 | 0.00 | 6.14 | 6.14 | 0.00 | 0.00 | 0.00 | 20.49 | 20.56 | 20.61 |
| Movement LOS | A | A | | | A | A | | | | C | C | C |
| d_A, Approach Delay [s/veh] | 6.64 | | | 6.14 | | | 0.00 | | | 20.55 | | |
| Approach LOS | A | | | A | | | A | | | C | | |
| d_I, Intersection Delay [s/veh] | 14.21 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.285 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: 15 - Willson Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.344 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Babcock Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 125.00 | 110.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Babcock Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 229 | 217 | 22 | 234 | 0 | 17 | 337 | 51 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 1.30 | 0.50 | 9.10 | 2.10 | 2.00 | 0.00 | 0.60 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.18 | 1.18 | 1.18 | 1.18 | 1.00 | 1.18 | 1.18 | 1.18 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 270 | 256 | 26 | 276 | 0 | 20 | 398 | 60 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 70 | 67 | 7 | 72 | 0 | 5 | 104 | 16 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 282 | 267 | 27 | 288 | 0 | 21 | 415 | 63 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 4 | | | 8 | | | 1 | | | 7 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 60 | 0 | 0 | 0 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | | |
| Maximum Recall | | No | | | No | | | No | | | | |
| Pedestrian Recall | | No | | | No | | | No | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | C | C | |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| g_i, Effective Green Time [s] | 35 | 35 | 35 | 35 | 15 | 15 | |
| g / C, Green / Cycle | 0.58 | 0.58 | 0.58 | 0.58 | 0.25 | 0.25 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | 0.19 | 0.03 | 0.17 | 0.16 | 0.16 | |
| s, saturation flow rate [veh/h] | 1688 | 1441 | 918 | 1675 | 1693 | 1473 | |
| c, Capacity [veh/h] | 980 | 836 | 533 | 972 | 428 | 373 | |
| d1, Uniform Delay [s] | 6.35 | 6.49 | 9.37 | 6.38 | 19.85 | 19.89 | |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 0.74 | 1.01 | 0.18 | 0.78 | 1.46 | 1.73 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

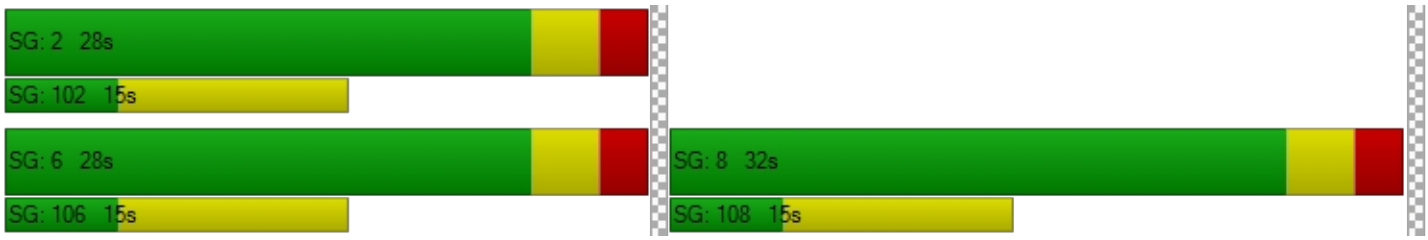
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.29 | 0.32 | 0.05 | 0.30 | 0.62 | 0.63 | |
| d, Delay for Lane Group [s/veh] | 7.09 | 7.49 | 9.55 | 7.16 | 21.31 | 21.63 | |
| Lane Group LOS | A | A | A | A | C | C | |
| Critical Lane Group | No | Yes | No | No | No | Yes | |
| 50th-Percentile Queue Length [veh] | 1.58 | 1.57 | 0.20 | 1.63 | 3.19 | 2.84 | |
| 50th-Percentile Queue Length [ft] | 39.62 | 39.32 | 5.02 | 40.77 | 79.79 | 71.09 | |
| 95th-Percentile Queue Length [veh] | 2.85 | 2.83 | 0.36 | 2.94 | 5.74 | 5.12 | |
| 95th-Percentile Queue Length [ft] | 71.32 | 70.77 | 9.04 | 73.39 | 143.62 | 127.96 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 7.09 | 7.49 | 9.55 | 7.16 | 0.00 | 21.31 | 21.44 | 21.63 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | A | A | A | A | | C | C | C | | | |
| d_A, Approach Delay [s/veh] | 7.28 | | | 7.37 | | | 21.46 | | | 0.00 | | |
| Approach LOS | A | | | A | | | C | | | A | | |
| d_I, Intersection Delay [s/veh] | 12.49 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.344 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: 16 - Broadway Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 10.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.457 |

**Intersection Setup**

| Name | Broadway Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | No | |

**volumes**

| Name | Broadway Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 93 | 23 | 41 | 508 | 524 | 114 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 4.40 | 8.60 | 3.60 | 0.00 | 2.10 | 4.40 |
| Growth Rate | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 143 | 35 | 63 | 782 | 807 | 176 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 37 | 9 | 17 | 206 | 213 | 46 |
| Total Analysis Volume [veh/h] | 149 | 37 | 66 | 825 | 851 | 186 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 4 | | 5 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 0 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - |
| Minimum Green [s] | 15 | 0 | 0 | 30 | 30 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 90 | 90 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 20 | 0 | 0 | 40 | 40 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | C | C |
|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 14 | 36 | 36 | 36 | 36 |
| g / C, Green / Cycle | 0.24 | 0.59 | 0.59 | 0.59 | 0.59 |
| (v / s)_i Volume / Saturation Flow Rate | 0.13 | 0.32 | 0.32 | 0.31 | 0.33 |
| s, saturation flow rate [veh/h] | 1465 | 1196 | 1556 | 1675 | 1573 |
| c, Capacity [veh/h] | 354 | 778 | 921 | 991 | 931 |
| d1, Uniform Delay [s] | 19.77 | 6.69 | 7.39 | 7.24 | 7.46 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.21 | 2.27 | 2.33 | 1.97 | 2.40 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

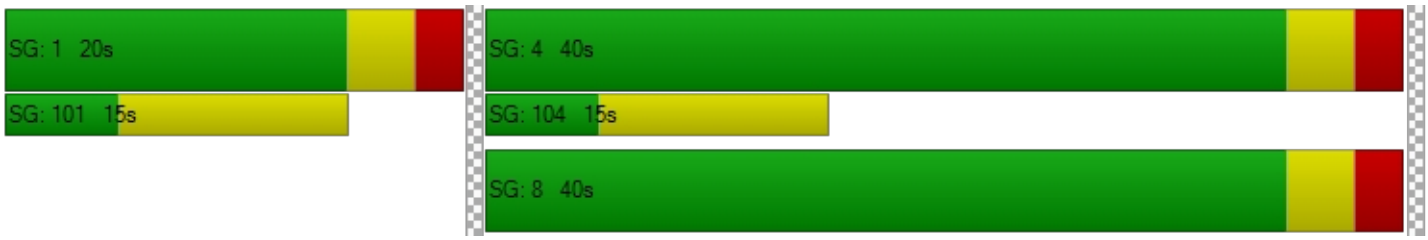
| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.53 | 0.50 | 0.55 | 0.52 | 0.56 |
| d, Delay for Lane Group [s/veh] | 20.98 | 8.96 | 9.71 | 9.22 | 9.86 |
| Lane Group LOS | C | A | A | A | A |
| Critical Lane Group | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 2.20 | 2.44 | 3.49 | 3.47 | 3.63 |
| 50th-Percentile Queue Length [ft] | 55.07 | 60.98 | 87.25 | 86.74 | 90.86 |
| 95th-Percentile Queue Length [veh] | 3.97 | 4.39 | 6.28 | 6.24 | 6.54 |
| 95th-Percentile Queue Length [ft] | 99.13 | 109.77 | 157.05 | 156.12 | 163.56 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 20.98 | 20.98 | 8.96 | 9.42 | 9.47 | 9.86 |
| Movement LOS | C | C | A | A | A | A |
| d_A, Approach Delay [s/veh] | 20.98 | | 9.38 | | 9.54 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 10.48 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.457 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 17: 17 - Highland Boulevard / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.628 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northeastbound | | | Southwestbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 173 | 1 | 129 | 0 | 0 | 0 | 379 | 463 | 0 | 0 | 287 | 264 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.80 | 2.00 | 3.90 | 2.00 | 2.00 | 2.00 | 1.90 | 2.80 | 2.00 | 2.00 | 3.10 | 1.10 |
| Growth Rate | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 254 | 1 | 190 | 0 | 0 | 0 | 557 | 681 | 0 | 0 | 422 | 388 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 66 | 0 | 50 | 0 | 0 | 0 | 147 | 180 | 0 | 0 | 111 | 102 |
| Total Analysis Volume [veh/h] | 265 | 1 | 198 | 0 | 0 | 0 | 587 | 718 | 0 | 0 | 445 | 409 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 1 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 70 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 8 | 0 | 0 | 4 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 10 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 25 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 15 | 50 | 0 | 0 | 35 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | | No | |
| Maximum Recall | | No | | | No | | No | No | | | No | |
| Pedestrian Recall | | No | | | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 15 | 15 | 15 | 45 | 45 | 45 | 30 | 30 | 30 |
| g / C, Green / Cycle | 0.21 | 0.21 | 0.21 | 0.64 | 0.64 | 0.64 | 0.43 | 0.43 | 0.43 |
| (v / s)_i Volume / Saturation Flow Rate | 0.19 | 0.13 | 0.00 | 0.60 | 0.19 | 0.19 | 0.00 | 0.24 | 0.26 |
| s, saturation flow rate [veh/h] | 1414 | 1564 | 1863 | 971 | 1848 | 1848 | 731 | 1843 | 1566 |
| c, Capacity [veh/h] | 366 | 335 | 451 | 651 | 1188 | 1188 | 332 | 790 | 671 |
| d1, Uniform Delay [s] | 28.56 | 24.76 | 0.00 | 11.40 | 5.54 | 5.54 | 0.00 | 15.07 | 15.47 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.41 | 0.11 | 0.11 | 0.11 | 0.12 | 0.15 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 11.85 | 7.54 | 0.00 | 15.40 | 0.14 | 0.14 | 0.00 | 0.69 | 1.25 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.72 | 0.59 | 0.00 | 0.90 | 0.30 | 0.30 | 0.00 | 0.56 | 0.61 |
| d, Delay for Lane Group [s/veh] | 40.40 | 32.30 | 0.00 | 26.80 | 5.68 | 5.68 | 0.00 | 15.76 | 16.71 |
| Lane Group LOS | D | C | A | C | A | A | A | B | B |
| Critical Lane Group | Yes | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 5.43 | 3.53 | 0.00 | 6.34 | 1.86 | 1.86 | 0.00 | 4.98 | 4.79 |
| 50th-Percentile Queue Length [ft] | 135.64 | 88.20 | 0.00 | 158.59 | 46.39 | 46.39 | 0.00 | 124.44 | 119.66 |
| 95th-Percentile Queue Length [veh] | 9.25 | 6.35 | 0.00 | 10.47 | 3.34 | 3.34 | 0.00 | 8.64 | 8.37 |
| 95th-Percentile Queue Length [ft] | 231.14 | 158.75 | 0.00 | 261.85 | 83.51 | 83.51 | 0.00 | 215.92 | 209.36 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 40.40 | 32.30 | 32.30 | 0.00 | 0.00 | 0.00 | 26.80 | 5.68 | 5.68 | 0.00 | 15.76 | 16.71 |
| Movement LOS | D | C | C | A | A | A | C | A | A | A | B | B |
| d_A, Approach Delay [s/veh] | 36.93 | | | 0.00 | | | 15.18 | | | 16.22 | | |
| Approach LOS | D | | | A | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 19.36 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.628 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 18: 18 - Haggerty Lane / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 473.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | Haggerty Lane | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northeastbound | | | Southwestbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**volumes**

| Name | Haggerty Lane | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 62 | 0 | 49 | 1 | 0 | 0 | 92 | 773 | 2 | 2 | 332 | 83 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.60 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 3.30 | 2.50 | 0.00 | 0.00 | 3.30 | 3.60 |
| Growth Rate | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 97 | 0 | 76 | 2 | 0 | 0 | 144 | 1206 | 3 | 3 | 518 | 129 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 25 | 0 | 20 | 1 | 0 | 0 | 38 | 318 | 1 | 1 | 137 | 34 |
| Total Analysis Volume [veh/h] | 101 | 0 | 79 | 2 | 0 | 0 | 152 | 1272 | 3 | 3 | 546 | 136 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 1.55 | 0.00 | 0.12 | 0.06 | 0.00 | 0.00 | 0.17 | 0.01 | 0.00 | 0.01 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 430.95 | 473.57 | 381.13 | 114.49 | 119.12 | 19.68 | 9.82 | 0.00 | 0.00 | 11.56 | 0.00 | 0.00 |
| Movement LOS | F | F | F | F | F | C | A | A | A | B | A | A |
| 95th-Percentile Queue Length [veh] | 13.90 | 13.90 | 13.90 | 0.18 | 0.18 | 0.18 | 0.61 | 0.00 | 0.00 | 4.23 | 2.12 | 0.00 |
| 95th-Percentile Queue Length [ft] | 347.58 | 347.58 | 347.58 | 4.38 | 4.38 | 4.38 | 15.18 | 0.00 | 0.00 | 105.79 | 52.90 | 0.00 |
| d_A, Approach Delay [s/veh] | 409.08 | | | 114.49 | | | 1.05 | | | 0.05 | | |
| Approach LOS | F | | | F | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 32.86 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 19: 19 - Willson Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 56.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.014 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 158 | 471 | 50 | 19 | 302 | 53 | 1 | 1 | 66 | 1 | 4 | 18 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.30 | 1.30 | 2.00 | 5.30 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 182 | 542 | 57 | 22 | 347 | 61 | 1 | 1 | 76 | 1 | 5 | 21 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 47 | 141 | 15 | 6 | 91 | 16 | 0 | 0 | 20 | 0 | 1 | 6 |
| Total Analysis Volume [veh/h] | 190 | 566 | 59 | 23 | 362 | 64 | 1 | 1 | 79 | 1 | 5 | 23 |
| Pedestrian Volume [ped/h] | 5 | | | 4 | | | 0 | | | 3 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.17 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.01 | 0.12 | 0.01 | 0.05 | 0.05 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.80 | 0.00 | 0.00 | 8.95 | 0.00 | 0.00 | 51.02 | 44.36 | 11.60 | 56.56 | 45.20 | 13.99 |
| Movement LOS | A | A | A | A | A | A | F | E | B | F | E | B |
| 95th-Percentile Queue Length [veh] | 6.53 | 6.53 | 6.53 | 2.65 | 2.65 | 2.65 | 0.50 | 0.50 | 0.50 | 0.38 | 0.38 | 0.38 |
| 95th-Percentile Queue Length [ft] | 163.29 | 163.29 | 163.29 | 66.32 | 66.32 | 66.32 | 12.54 | 12.54 | 12.54 | 9.45 | 9.45 | 9.45 |
| d_A, Approach Delay [s/veh] | 2.05 | | | 0.46 | | | 12.49 | | | 20.84 | | |
| Approach LOS | A | | | A | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 2.54 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 20: 20 - Highland Boulevard / Ellis Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 83.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.170 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Ellis Street | | | Ellis Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 75.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Ellis Street | | | Ellis Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 253 | 49 | 74 | 300 | 257 | 18 | 2 | 4 | 28 | 10 | 34 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.80 | 0.00 | 1.40 | 2.60 | 1.20 | 0.00 | 0.00 | 25.00 | 0.00 | 0.00 | 2.90 |
| Growth Rate | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 8 | 390 | 75 | 114 | 462 | 396 | 28 | 3 | 6 | 43 | 15 | 52 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 2 | 102 | 20 | 30 | 121 | 103 | 8 | 1 | 2 | 12 | 4 | 14 |
| Total Analysis Volume [veh/h] | 8 | 407 | 78 | 119 | 482 | 413 | 30 | 3 | 7 | 47 | 16 | 57 |
| Pedestrian Volume [ped/h] | 3 | | | 0 | | | 1 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.01 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 | 0.37 | 0.03 | 0.02 | 0.45 | 0.17 | 0.09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.75 | 0.00 | 0.00 | 8.74 | 0.00 | 0.00 | 72.57 | 58.69 | 37.39 | 80.18 | 83.79 | 51.53 |
| Movement LOS | A | A | A | A | A | A | F | F | E | F | F | F |
| 95th-Percentile Queue Length [veh] | 0.03 | 0.00 | 0.00 | 0.37 | 0.00 | 0.00 | 1.69 | 1.69 | 1.69 | 4.35 | 4.35 | 4.35 |
| 95th-Percentile Queue Length [ft] | 0.79 | 0.00 | 0.00 | 9.25 | 0.00 | 0.00 | 42.17 | 42.17 | 42.17 | 108.64 | 108.64 | 108.64 |
| d_A, Approach Delay [s/veh] | 0.16 | | | 1.03 | | | 65.37 | | | 67.06 | | |
| Approach LOS | A | | | A | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 7.07 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 21: 21 - Sourdough Road / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 1,427.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 2.788 |

**Intersection Setup**

| Name | Sourdough Road | | | Kagy Boulevard | | | Kagy Boulevard | | | Sourdough Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Eastbound | | | Westbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | Yes | | |

**volumes**

| Name | Sourdough Road | | | Kagy Boulevard | | | Kagy Boulevard | | | Sourdough Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 67 | 42 | 79 | 36 | 315 | 31 | 26 | 560 | 20 | 5 | 21 | 30 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 1.30 | 0.00 | 0.60 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 3.30 |
| Growth Rate | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 104 | 65 | 122 | 56 | 488 | 48 | 40 | 868 | 31 | 8 | 33 | 47 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 27 | 17 | 32 | 15 | 127 | 13 | 10 | 226 | 8 | 2 | 9 | 12 |
| Total Analysis Volume [veh/h] | 109 | 68 | 127 | 58 | 509 | 50 | 42 | 906 | 32 | 8 | 34 | 49 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 5 | | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free | Stop |
|---|---|---|---|---|
| Flared Lane | No | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 2.79 | 0.81 | 0.23 | 0.08 | 0.01 | 0.00 | 0.04 | 0.01 | 0.00 | 0.51 | 0.41 | 0.15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 1427.79 | 1378.39 | 1342.27 | 10.34 | 0.00 | 0.00 | 8.67 | 0.00 | 0.00 | 396.41 | 208.90 | 176.85 |
| Movement LOS | F | F | F | B | A | A | A | A | A | F | F | F |
| 95th-Percentile Queue Length [veh] | 31.67 | 31.67 | 31.67 | 0.26 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 | 6.24 | 6.24 | 6.24 |
| 95th-Percentile Queue Length [ft] | 791.74 | 791.74 | 791.74 | 6.43 | 0.00 | 0.00 | 3.21 | 0.00 | 0.00 | 156.08 | 156.08 | 156.08 |
| d_A, Approach Delay [s/veh] | 1381.01 | | | 0.97 | | | 0.37 | | | 208.12 | | |
| Approach LOS | F | | | A | | | A | | | F | | |
| d_I, Intersection Delay [s/veh] | 220.75 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 22: 22 - Highland Boulevard / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 10,000.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.074 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 2 | 0 | 7 | 0 | 331 | 319 | 71 | 1 | 1 | 270 | 21 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.30 | 0.00 | 0.00 | 0.00 | 0.40 | 0.00 |
| Growth Rate | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 3 | 0 | 12 | 0 | 556 | 536 | 119 | 2 | 2 | 454 | 35 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 0 | 3 | 0 | 145 | 140 | 31 | 1 | 1 | 118 | 9 |
| Total Analysis Volume [veh/h] | 3 | 3 | 0 | 13 | 0 | 580 | 559 | 124 | 2 | 2 | 474 | 37 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.07 | 0.00 | 0.34 | 0.00 | 1.00 | 0.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10000.0 | 10000.0 | 10000.0 | 282.22 | 274.53 | 193.78 | 12.11 | 0.00 | 0.00 | 7.45 | 0.00 | 0.00 |
| Movement LOS | F | F | F | F | F | F | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.92 | 1.92 | 1.92 | 27.21 | 27.21 | 27.21 | 3.18 | 0.00 | 0.00 | 1.58 | 1.58 | 1.58 |
| 95th-Percentile Queue Length [ft] | 48.03 | 48.03 | 48.03 | 680.15 | 680.15 | 680.15 | 79.47 | 0.00 | 0.00 | 39.56 | 39.56 | 39.56 |
| d_A, Approach Delay [s/veh] | 10000.00 | | | 195.72 | | | 9.88 | | | 0.03 | | |
| Approach LOS | F | | | F | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 101.75 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 23: 23 - Wagon Wheel Road / 3rd Avenue**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 10.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Wagon Wheel Road | | 3rd Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 115.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | Yes | |

**volumes**

| Name | Wagon Wheel Road | | 3rd Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 7 | 163 | 33 | 171 | 275 | 3 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 2.40 | 0.00 | 0.00 |
| Growth Rate | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 8 | 176 | 36 | 185 | 297 | 3 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 2 | 48 | 9 | 48 | 77 | 1 |
| Total Analysis Volume [veh/h] | 9 | 191 | 38 | 193 | 310 | 3 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 3 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.19 | 0.19 | 1.07 | 2.32 |
| 95th-Percentile Queue Length [ft] | 29.87 | 4.71 | 26.67 | 57.93 |
| Approach Delay [s/veh] | 10.29 | 9.30 | | 12.24 |
| Approach LOS | B | A | | B |
| Intersection Delay [s/veh] | 10.81 | | | |
| Intersection LOS | B | | | |

**Intersection Level Of Service Report**
**Intersection 27: 25 - 11th Avenue / Grant Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 22.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Grant Street | | | Grant Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Grant Street | | | Grant Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 5 | 101 | 96 | 79 | 109 | 39 | 10 | 47 | 18 | 50 | 36 | 40 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 3.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 2.00 | 2.80 | 0.00 |
| Growth Rate | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 10 | 195 | 185 | 152 | 210 | 75 | 19 | 91 | 35 | 97 | 69 | 77 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 3 | 51 | 48 | 40 | 55 | 20 | 5 | 25 | 10 | 25 | 18 | 20 |
| Total Analysis Volume [veh/h] | 10 | 203 | 193 | 159 | 219 | 78 | 21 | 99 | 38 | 101 | 72 | 80 |
| Pedestrian Volume [ped/h] | 154 | | | 130 | | | 106 | | | 65 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 5.48 | 7.57 | 1.37 | 2.66 |
| 95th-Percentile Queue Length [ft] | 136.93 | 189.22 | 34.17 | 66.50 |
| Approach Delay [s/veh] | 21.97 | 28.86 | 13.68 | 16.45 |
| Approach LOS | C | D | B | C |
| Intersection Delay [s/veh] | 22.31 | | | |
| Intersection LOS | C | | | |

**Intersection Level Of Service Report**
**Intersection 28: 26 - 11th Avenue / Lincoln Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 30.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Lincoln Street | | | Bobcat Circle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Lincoln Street | | | Bobcat Circle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 31 | 126 | 24 | 3 | 129 | 27 | 73 | 38 | 208 | 13 | 8 | 7 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.20 | 0.80 | 0.00 | 0.00 | 0.80 | 11.10 | 1.40 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 56 | 227 | 43 | 5 | 232 | 49 | 131 | 68 | 374 | 23 | 14 | 13 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 15 | 59 | 11 | 1 | 61 | 13 | 34 | 18 | 98 | 6 | 4 | 4 |
| Total Analysis Volume [veh/h] | 58 | 237 | 45 | 5 | 242 | 51 | 137 | 71 | 390 | 25 | 15 | 14 |
| Pedestrian Volume [ped/h] | 35 | | | 36 | | | 48 | | | 110 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.43 | 3.39 | 2.79 | 0.32 | 12.79 | 0.37 |
| 95th-Percentile Queue Length [ft] | 10.71 | 84.71 | 69.86 | 7.95 | 319.73 | 9.18 |
| Approach Delay [s/veh] | 17.33 | | 16.08 | | 45.98 | 11.21 |
| Approach LOS | C | | C | | E | B |
| Intersection Delay [s/veh] | 30.07 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 29: 27 - 11th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 34.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.767 |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 200.00 | 100.00 | 100.00 | 115.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 10 | 41 | 7 | 52 | 55 | 42 | 141 | 520 | 74 | 17 | 513 | 103 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.40 | 0.00 | 7.70 | 1.80 | 4.80 | 2.10 | 1.00 | 0.00 | 0.00 | 0.60 | 0.00 |
| Growth Rate | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 17 | 71 | 12 | 90 | 96 | 73 | 245 | 905 | 129 | 30 | 893 | 179 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 5 | 19 | 3 | 23 | 25 | 19 | 64 | 236 | 34 | 8 | 233 | 47 |
| Total Analysis Volume [veh/h] | 18 | 77 | 13 | 94 | 100 | 76 | 256 | 944 | 135 | 31 | 932 | 187 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 23 | | | 49 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 20 | 0 | 0 | 20 | 0 | 10 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 25 | 90 | 0 | 0 | 90 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 25 | 0 | 0 | 25 | 0 | 13 | 95 | 0 | 0 | 82 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | | No | |
| Maximum Recall | | No | | | No | | No | No | | | No | |
| Pedestrian Recall | | No | | | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 22 | 22 | 22 | 22 | 88 | 88 | 75 | 75 |
| g / C, Green / Cycle | 0.19 | 0.19 | 0.19 | 0.19 | 0.73 | 0.73 | 0.62 | 0.62 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.05 | 0.08 | 0.10 | 0.39 | 0.59 | 0.06 | 0.61 |
| s, saturation flow rate [veh/h] | 1219 | 1765 | 1160 | 1682 | 660 | 1841 | 531 | 1834 |
| c, Capacity [veh/h] | 152 | 328 | 201 | 312 | 298 | 1345 | 196 | 1142 |
| d1, Uniform Delay [s] | 52.10 | 41.92 | 50.41 | 44.43 | 37.55 | 10.50 | 35.34 | 21.91 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.31 | 0.11 | 0.43 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.60 | 2.07 | 7.65 | 7.18 | 25.95 | 3.23 | 0.37 | 20.42 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

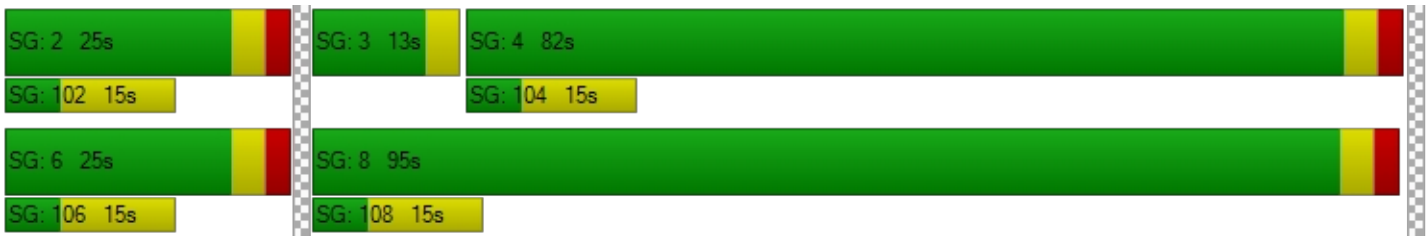
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.12 | 0.27 | 0.47 | 0.56 | 0.86 | 0.80 | 0.16 | 0.98 |
| d, Delay for Lane Group [s/veh] | 53.69 | 43.99 | 58.06 | 51.61 | 63.50 | 13.73 | 35.72 | 42.33 |
| Lane Group LOS | D | D | E | D | E | B | D | D |
| Critical Lane Group | No | No | No | Yes | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.58 | 2.49 | 3.13 | 5.39 | 3.97 | 17.08 | 0.74 | 34.30 |
| 50th-Percentile Queue Length [ft] | 14.44 | 62.22 | 78.19 | 134.78 | 99.28 | 426.88 | 18.57 | 857.48 |
| 95th-Percentile Queue Length [veh] | 1.04 | 4.48 | 5.63 | 9.20 | 7.15 | 23.85 | 1.34 | 43.90 |
| 95th-Percentile Queue Length [ft] | 26.00 | 111.99 | 140.74 | 229.98 | 178.70 | 596.30 | 33.42 | 1097.59 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 53.69 | 43.99 | 43.99 | 58.06 | 51.61 | 51.61 | 63.50 | 13.73 | 13.73 | 35.72 | 42.33 | 42.33 |
| Movement LOS | D | D | D | E | D | D | E | B | B | D | D | D |
| d_A, Approach Delay [s/veh] | 45.60 | | | 53.86 | | | 23.27 | | | 42.15 | | |
| Approach LOS | D | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 34.58 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.767 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 30: 28 - 8th Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 20.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 8th Avenue | | | 8th Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 8th Avenue | | | 8th Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 68 | 35 | 2 | 23 | 106 | 45 | 59 | 123 | 77 | 4 | 253 | 52 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.70 | 0.00 | 1.30 | 0.00 | 0.40 | 0.00 |
| Growth Rate | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 95 | 49 | 3 | 32 | 148 | 63 | 83 | 172 | 108 | 6 | 354 | 73 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 25 | 13 | 1 | 8 | 39 | 16 | 22 | 45 | 28 | 2 | 92 | 19 |
| Total Analysis Volume [veh/h] | 99 | 51 | 3 | 33 | 154 | 66 | 87 | 179 | 113 | 6 | 369 | 76 |
| Pedestrian Volume [ped/h] | 5 | | | 11 | | | 21 | | | 20 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 1.31 | 2.52 | 4.70 | 6.83 |
| 95th-Percentile Queue Length [ft] | 32.76 | 62.97 | 117.54 | 170.87 |
| Approach Delay [s/veh] | 13.56 | 15.65 | 19.90 | 25.60 |
| Approach LOS | B | C | C | D |
| Intersection Delay [s/veh] | 20.33 | | | |
| Intersection LOS | C | | | |

**Intersection Level Of Service Report**
**Intersection 31: 29 - 7th Avenue / Grant Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 26.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 7th Avenue | | Grant Street | | Grant Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**volumes**

| Name | 7th Avenue | | Grant Street | | Grant Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 59 | 37 | 84 | 87 | 112 | 78 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.40 | 2.70 | 1.20 | 1.10 | 0.00 | 1.30 |
| Growth Rate | 2.74 | 2.74 | 2.74 | 2.74 | 2.74 | 2.74 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 162 | 101 | 230 | 238 | 307 | 214 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 42 | 26 | 60 | 62 | 80 | 56 |
| Total Analysis Volume [veh/h] | 169 | 105 | 240 | 248 | 320 | 223 |
| Pedestrian Volume [ped/h] | 12 | | 100 | | 160 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | |
|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 2.73 | 6.56 | 10.00 |
| 95th-Percentile Queue Length [ft] | 68.21 | 163.93 | 250.08 |
| Approach Delay [s/veh] | 15.71 | 22.41 | 34.95 |
| Approach LOS | C | C | D |
| Intersection Delay [s/veh] | 26.22 | | |
| Intersection LOS | D | | |

**Intersection Level Of Service Report**
**Intersection 32: 30 - 7th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 7.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.580 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 12 | 2 | 1 | 7 | 38 | 127 | 401 | 19 | 29 | 637 | 111 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.30 | 1.60 | 1.70 | 5.30 | 0.00 | 0.40 | 1.80 |
| Growth Rate | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 15 | 3 | 1 | 9 | 48 | 161 | 509 | 24 | 37 | 809 | 141 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 4 | 1 | 0 | 2 | 13 | 42 | 133 | 6 | 10 | 211 | 37 |
| Total Analysis Volume [veh/h] | 3 | 16 | 3 | 1 | 9 | 50 | 168 | 531 | 25 | 39 | 844 | 147 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 4 | | | 6 | | | 29 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 69 | 0 | 0 | 69 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 8 | 8 | 8 | 8 | 72 | 72 | 72 | 72 |
| g / C, Green / Cycle | 0.09 | 0.09 | 0.09 | 0.09 | 0.80 | 0.80 | 0.80 | 0.80 |
| (v / s)_i Volume / Saturation Flow Rate | 0.00 | 0.01 | 0.00 | 0.04 | 0.30 | 0.30 | 0.05 | 0.54 |
| s, saturation flow rate [veh/h] | 1225 | 1848 | 1416 | 1407 | 568 | 1853 | 866 | 1843 |
| c, Capacity [veh/h] | 116 | 160 | 163 | 122 | 386 | 1487 | 676 | 1479 |
| d1, Uniform Delay [s] | 42.52 | 37.95 | 39.89 | 39.20 | 13.65 | 2.51 | 4.58 | 3.80 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.09 | 0.33 | 0.01 | 2.98 | 3.56 | 0.72 | 0.16 | 2.43 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.03 | 0.12 | 0.01 | 0.49 | 0.44 | 0.37 | 0.06 | 0.67 |
| d, Delay for Lane Group [s/veh] | 42.61 | 38.28 | 39.90 | 42.18 | 17.20 | 3.23 | 4.74 | 6.23 |
| Lane Group LOS | D | D | D | D | B | A | A | A |
| Critical Lane Group | No | No | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.07 | 0.40 | 0.02 | 1.33 | 2.45 | 1.92 | 0.23 | 5.37 |
| 50th-Percentile Queue Length [ft] | 1.68 | 9.95 | 0.53 | 33.26 | 61.14 | 47.97 | 5.77 | 134.36 |
| 95th-Percentile Queue Length [veh] | 0.12 | 0.72 | 0.04 | 2.39 | 4.40 | 3.45 | 0.42 | 9.18 |
| 95th-Percentile Queue Length [ft] | 3.03 | 17.91 | 0.96 | 59.86 | 110.05 | 86.35 | 10.38 | 229.41 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 42.61 | 38.28 | 38.28 | 39.90 | 42.18 | 42.18 | 17.20 | 3.23 | 3.23 | 4.74 | 6.23 | 6.23 |
| Movement LOS | D | D | D | D | D | D | B | A | A | A | A | A |
| d_A, Approach Delay [s/veh] | 38.87 | | | 42.14 | | | 6.47 | | | 6.17 | | |
| Approach LOS | D | | | D | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 7.86 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.580 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 33: 31 - Valley Center Spur / Frontage Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 13.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.110 |

**Intersection Setup**

| Name | Valley Center Spur | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Approach | Northeastbound | | Northwestbound | | Southeastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 825.00 | 100.00 | 100.00 | 615.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Valley Center Spur | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 64 | 101 | 61 | 66 | 236 | 103 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.10 | 2.00 | 4.90 | 6.10 | 5.90 | 4.90 |
| Growth Rate | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 56 | 89 | 54 | 58 | 208 | 91 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0500 | 1.0500 | 1.0500 | 1.0500 |
| Total 15-Minute Volume [veh/h] | 15 | 24 | 15 | 17 | 59 | 26 |
| Total Analysis Volume [veh/h] | 61 | 97 | 62 | 66 | 237 | 104 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.11 | 0.12 | 0.05 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 13.10 | 11.07 | 8.16 | 0.00 | 0.00 | 0.00 |
| Movement LOS | B | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.89 | 0.89 | 0.16 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 22.28 | 22.28 | 4.07 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 11.85 | | 3.95 | | 0.00 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 3.79 | | | | | |
| Intersection LOS | B | | | | | |

**Intersection Level Of Service Report**
**Intersection 34: 32 - Valley Center Spur / Valley Center Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 185.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.206 |

**Intersection Setup**

| Name | Valley Center Spur | | Valley Center Road | | Valley Center Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 120.00 | 430.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Valley Center Spur | | Valley Center Road | | Valley Center Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 105 | 62 | 104 | 217 | 70 | 60 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.90 | 4.80 | 1.00 | 4.10 | 15.80 | 1.70 |
| Growth Rate | 1.91 | 1.91 | 1.91 | 1.91 | 1.91 | 1.91 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 201 | 118 | 199 | 414 | 134 | 115 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0500 | 1.0500 | 1.0500 | 1.0500 |
| Total 15-Minute Volume [veh/h] | 55 | 32 | 57 | 118 | 38 | 33 |
| Total Analysis Volume [veh/h] | 218 | 128 | 227 | 473 | 153 | 131 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 1.21 | 0.16 | 0.18 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 185.00 | 10.24 | 8.40 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 11.66 | 0.56 | 0.64 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 291.53 | 13.90 | 16.03 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 120.35 | | 2.73 | | 0.00 | |
| Approach LOS | F | | A | | A | |
| d_I, Intersection Delay [s/veh] | 32.74 | | | | | |
| Intersection LOS | F | | | | | |

**Intersection Level Of Service Report**
**Intersection 35: 33 - Nelson Road / Frontage Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 19.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.221 |

**Intersection Setup**

| Name | Nelson Road | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Approach | Southwestbound | | Northwestbound | | Southeastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 575.00 | 600.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Nelson Road | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 53 | 25 | 139 | 11 | 6 | 448 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 4.00 | 1.40 | 0.00 | 0.00 | 0.90 |
| Growth Rate | 1.23 | 1.23 | 1.23 | 1.23 | 1.23 | 1.23 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 65 | 31 | 171 | 14 | 7 | 551 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0900 | 1.0900 | 1.0900 | 1.0900 |
| Total 15-Minute Volume [veh/h] | 18 | 8 | 51 | 4 | 2 | 163 |
| Total Analysis Volume [veh/h] | 71 | 34 | 203 | 17 | 8 | 653 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.22 | 0.04 | 0.00 | 0.00 | 0.01 | 0.01 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 19.33 | 12.47 | 0.00 | 0.00 | 7.66 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.03 | 1.03 | 0.00 | 0.00 | 0.02 | 0.00 |
| 95th-Percentile Queue Length [ft] | 25.83 | 25.83 | 0.00 | 0.00 | 0.44 | 0.00 |
| d_A, Approach Delay [s/veh] | 17.11 | | 0.00 | | 0.09 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 1.88 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 36: 34 - 19th Avenue / I-90 EB Ramp**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 44.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.884 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 WB On | | | I-90 WB Off | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 350.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 100.00 | 100.00 |
| Speed [mph] | | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | |
| Grade [%] | | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | |
| Crosswalk | | No | | | No | | | No | | | No | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 WB On | | | I-90 WB Off | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 308 | 200 | 103 | 440 | 0 | 0 | 0 | 0 | 18 | 0 | 302 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 6.20 | 12.00 | 2.90 | 2.20 | 2.00 | 2.00 | 2.00 | 2.00 | 5.60 | 2.00 | 4.90 |
| Growth Rate | 1.00 | 1.88 | 1.88 | 1.88 | 1.88 | 1.00 | 1.00 | 1.00 | 1.00 | 1.88 | 1.00 | 1.88 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 579 | 376 | 194 | 827 | 0 | 0 | 0 | 0 | 34 | 0 | 568 |
| Peak Hour Factor | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9200 | 1.0000 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 157 | 102 | 53 | 225 | 0 | 0 | 0 | 0 | 9 | 0 | 154 |
| Total Analysis Volume [veh/h] | 0 | 629 | 409 | 211 | 899 | 0 | 0 | 0 | 0 | 37 | 0 | 617 |
| Presence of On-Street Parking | No | | No | No | | No | | | | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | | 0 | | | 0 | | | 0 | | | 0 | |
| Bicycle Volume [bicycles/h] | | 0 | | | 0 | | | 0 | | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Overlap | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 2 | 1 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| Auxiliary Signal Groups | | | 2,3 | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 30 | 30 | 5 | 30 | 0 | 0 | 0 | 0 | 20 | 0 | 0 |
| Maximum Green [s] | 0 | 90 | 90 | 20 | 90 | 0 | 0 | 0 | 0 | 45 | 0 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Split [s] | 0 | 50 | 50 | 14 | 64 | 0 | 0 | 0 | 0 | 56 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Minimum Recall | | No | No | No | No | | | | | No | | |
| Maximum Recall | | No | No | No | No | | | | | No | | |
| Pedestrian Recall | | No | No | No | No | | | | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | | L | R |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 0.00 | 3.00 | | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 47 | 102 | 60 | 60 | | 50 | 50 |
| g / C, Green / Cycle | 0.39 | 0.85 | 0.50 | 0.50 | | 0.42 | 0.42 |
| (v / s)_i Volume / Saturation Flow Rate | 0.35 | 0.28 | 0.22 | 0.48 | | 0.02 | 0.40 |
| s, saturation flow rate [veh/h] | 1789 | 1442 | 970 | 1859 | | 1714 | 1540 |
| c, Capacity [veh/h] | 698 | 1222 | 311 | 932 | | 712 | 640 |
| d1, Uniform Delay [s] | 34.41 | 1.95 | 25.76 | 28.90 | | 20.96 | 34.22 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | | 0.11 | 0.41 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 17.00 | 0.74 | 11.30 | 22.09 | | 0.03 | 24.85 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.90 | 0.33 | 0.68 | 0.96 | | 0.05 | 0.96 |
| d, Delay for Lane Group [s/veh] | 51.41 | 2.69 | 37.07 | 50.99 | | 20.99 | 59.07 |
| Lane Group LOS | D | A | D | D | | C | E |
| Critical Lane Group | No | No | No | Yes | | No | Yes |
| 50th-Percentile Queue Length [veh] | 20.19 | 1.50 | 4.27 | 29.63 | | 0.63 | 21.51 |
| 50th-Percentile Queue Length [ft] | 504.84 | 37.51 | 106.76 | 740.72 | | 15.85 | 537.86 |
| 95th-Percentile Queue Length [veh] | 27.56 | 2.70 | 7.66 | 38.56 | | 1.14 | 29.12 |
| 95th-Percentile Queue Length [ft] | 689.08 | 67.52 | 191.48 | 963.89 | | 28.53 | 728.04 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 51.41 | 2.69 | 37.07 | 50.99 | 0.00 | 0.00 | 0.00 | 0.00 | 20.99 | 0.00 | 59.07 |
| Movement LOS | | D | A | D | D | | | | | C | | E |
| d_A, Approach Delay [s/veh] | 32.21 | | | 48.34 | | | 0.00 | | | 56.91 | | |
| Approach LOS | C | | | D | | | A | | | E | | |
| d_I, Intersection Delay [s/veh] | 44.37 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.884 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 37: 35 - 19th Avenue / I-90 WB Ramp**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 21.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.662 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 EB Off | | | I-90 EB On | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 275.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 260.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 EB Off | | | I-90 EB On | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 160 | 170 | 0 | 0 | 467 | 12 | 81 | 0 | 19 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 10.60 | 2.40 | 2.00 | 2.00 | 1.30 | 0.00 | 13.50 | 2.00 | 5.30 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.58 | 1.58 | 1.00 | 1.00 | 1.58 | 1.58 | 1.58 | 1.00 | 1.58 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 253 | 269 | 0 | 0 | 738 | 19 | 128 | 0 | 30 | 0 | 0 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 0.9200 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 69 | 73 | 0 | 0 | 201 | 5 | 35 | 0 | 8 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 275 | 292 | 0 | 0 | 802 | 21 | 139 | 0 | 33 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 70 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 0 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 0 | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 25 | 60 | 0 | 0 | 60 | 0 | 45 | 0 | 0 | 0 | 0 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 13 | 48 | 0 | 0 | 35 | 0 | 22 | 0 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | No | No | | | No | | No | | | | | |
| Maximum Recall | No | No | | | No | | No | | | | | |
| Pedestrian Recall | No | No | | | No | | No | | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | R | |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| g_i, Effective Green Time [s] | 53 | 53 | 40 | 7 | 7 | |
| g / C, Green / Cycle | 0.75 | 0.75 | 0.57 | 0.10 | 0.10 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.37 | 0.17 | 0.49 | 0.10 | 0.02 | |
| s, saturation flow rate [veh/h] | 741 | 1670 | 1680 | 1435 | 1380 | |
| c, Capacity [veh/h] | 467 | 1258 | 955 | 149 | 143 | |
| d1, Uniform Delay [s] | 13.15 | 2.58 | 12.78 | 31.13 | 28.81 | |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 5.37 | 0.43 | 10.09 | 21.51 | 0.81 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.59 | 0.23 | 0.86 | 0.93 | 0.23 | |
| d, Delay for Lane Group [s/veh] | 18.51 | 3.01 | 22.87 | 52.64 | 29.62 | |
| Lane Group LOS | B | A | C | D | C | |
| Critical Lane Group | Yes | No | Yes | Yes | No | |
| 50th-Percentile Queue Length [veh] | 1.33 | 0.82 | 11.53 | 3.13 | 0.52 | |
| 50th-Percentile Queue Length [ft] | 33.37 | 20.48 | 288.19 | 78.27 | 13.12 | |
| 95th-Percentile Queue Length [veh] | 2.40 | 1.47 | 17.10 | 5.64 | 0.94 | |
| 95th-Percentile Queue Length [ft] | 60.06 | 36.86 | 427.39 | 140.88 | 23.61 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 18.51 | 3.01 | 0.00 | 0.00 | 22.87 | 22.87 | 52.64 | 0.00 | 29.62 | 0.00 | 0.00 | 0.00 |
| Movement LOS | B | A | | | C | C | D | | C | | | |
| d_A, Approach Delay [s/veh] | 10.53 | | | 22.87 | | | 48.22 | | | 0.00 | | |
| Approach LOS | B | | | C | | | D | | | A | | |
| d_I, Intersection Delay [s/veh] | 21.18 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.662 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 38: 36 - 19th Avenue / Tschache Way**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.544 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Tschache Way | | | Tschache Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 200.00 | 100.00 | 200.00 | 275.00 | 100.00 | 175.00 | 80.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Tschache Way | | | Tschache Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 29 | 405 | 11 | 17 | 899 | 18 | 25 | 12 | 55 | 5 | 4 | 6 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 5.40 | 9.10 | 11.80 | 2.10 | 16.70 | 12.00 | 8.30 | 1.80 | 0.00 | 50.00 | 33.40 |
| Growth Rate | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 46 | 644 | 17 | 27 | 1429 | 29 | 40 | 19 | 87 | 8 | 6 | 10 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 13 | 182 | 5 | 8 | 404 | 8 | 11 | 5 | 24 | 2 | 2 | 3 |
| Total Analysis Volume [veh/h] | 52 | 728 | 19 | 31 | 1615 | 33 | 43 | 21 | 95 | 9 | 7 | 11 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 68.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 10 | 30 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 13 | 49 | 0 | 21 | 57 | 0 | 0 | 20 | 0 | 0 | 20 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 60 | 52 | 52 | 60 | 50 | 50 | 9 | 9 | 9 | 9 |
| g / C, Green / Cycle | 0.67 | 0.57 | 0.57 | 0.67 | 0.55 | 0.55 | 0.11 | 0.11 | 0.11 | 0.11 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.21 | 0.01 | 0.04 | 0.46 | 0.02 | 0.03 | 0.08 | 0.01 | 0.02 |
| s, saturation flow rate [veh/h] | 524 | 3432 | 1480 | 765 | 3543 | 1384 | 1265 | 1533 | 1296 | 1143 |
| c, Capacity [veh/h] | 353 | 1968 | 849 | 547 | 1964 | 767 | 172 | 162 | 98 | 121 |
| d1, Uniform Delay [s] | 12.52 | 10.39 | 8.29 | 5.73 | 16.43 | 9.16 | 40.07 | 38.91 | 44.05 | 36.54 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.19 | 0.12 | 0.01 | 0.04 | 0.91 | 0.02 | 0.76 | 5.73 | 0.40 | 0.56 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.15 | 0.37 | 0.02 | 0.06 | 0.82 | 0.04 | 0.25 | 0.71 | 0.09 | 0.15 |
| d, Delay for Lane Group [s/veh] | 12.71 | 10.51 | 8.31 | 5.78 | 17.34 | 9.18 | 40.83 | 44.64 | 44.44 | 37.10 |
| Lane Group LOS | B | B | A | A | B | A | D | D | D | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 0.31 | 3.62 | 0.15 | 0.18 | 12.50 | 0.28 | 0.94 | 2.70 | 0.21 | 0.38 |
| 50th-Percentile Queue Length [ft] | 7.69 | 90.40 | 3.80 | 4.43 | 312.59 | 7.10 | 23.51 | 67.57 | 5.21 | 9.38 |
| 95th-Percentile Queue Length [veh] | 0.55 | 6.51 | 0.27 | 0.32 | 18.30 | 0.51 | 1.69 | 4.87 | 0.37 | 0.68 |
| 95th-Percentile Queue Length [ft] | 13.85 | 162.72 | 6.83 | 7.97 | 457.56 | 12.78 | 42.31 | 121.63 | 9.37 | 16.88 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 12.71 | 10.51 | 8.31 | 5.78 | 17.34 | 9.18 | 40.83 | 44.64 | 44.64 | 44.44 | 37.10 | 37.10 |
| Movement LOS | B | B | A | A | B | A | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 10.60 | | | 16.96 | | | 43.61 | | | 39.55 | | |
| Approach LOS | B | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 16.87 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.544 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 39: 37 - 19th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.703 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 400.00 | 100.00 | 400.00 | 275.00 | 100.00 | 250.00 | 200.00 | 100.00 | 100.00 | 225.00 | 100.00 | 225.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 39 | 312 | 169 | 240 | 705 | 80 | 61 | 313 | 44 | 113 | 167 | 88 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 5.10 | 7.70 | 1.80 | 2.50 | 2.90 | 2.50 | 0.00 | 1.30 | 2.30 | 4.40 | 7.80 | 6.80 |
| Growth Rate | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 73 | 583 | 316 | 449 | 1318 | 150 | 114 | 585 | 82 | 211 | 312 | 165 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 20 | 158 | 86 | 122 | 358 | 41 | 31 | 159 | 22 | 56 | 82 | 43 |
| Total Analysis Volume [veh/h] | 79 | 634 | 343 | 488 | 1433 | 163 | 124 | 636 | 89 | 222 | 329 | 174 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 130 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 40.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 20 | 20 | 42 | 54 | 54 | 9 | 54 | 54 | 14 | 59 | 59 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 76 | 48 | 64 | 76 | 68 | 79 | 44 | 30 | 40 | 44 | 35 | 65 |
| g / C, Green / Cycle | 0.58 | 0.37 | 0.49 | 0.58 | 0.52 | 0.60 | 0.34 | 0.23 | 0.31 | 0.34 | 0.27 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | 0.19 | 0.22 | 0.44 | 0.41 | 0.10 | 0.10 | 0.18 | 0.06 | 0.22 | 0.10 | 0.12 |
| s, saturation flow rate [veh/h] | 469 | 3359 | 1586 | 1116 | 3516 | 1576 | 1185 | 3571 | 1579 | 1030 | 3356 | 1512 |
| c, Capacity [veh/h] | 234 | 1243 | 782 | 615 | 1827 | 952 | 405 | 836 | 491 | 307 | 915 | 755 |
| d1, Uniform Delay [s] | 21.14 | 31.81 | 21.32 | 19.49 | 25.31 | 11.35 | 30.68 | 46.38 | 32.69 | 35.68 | 38.13 | 18.42 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.85 | 1.50 | 1.78 | 10.12 | 3.46 | 0.39 | 1.95 | 1.46 | 0.81 | 3.21 | 0.24 | 0.15 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.34 | 0.51 | 0.44 | 0.79 | 0.78 | 0.17 | 0.31 | 0.76 | 0.18 | 0.72 | 0.36 | 0.23 |
| d, Delay for Lane Group [s/veh] | 25.00 | 33.31 | 23.10 | 29.60 | 28.77 | 11.74 | 32.63 | 47.84 | 33.50 | 38.89 | 38.37 | 18.57 |
| Lane Group LOS | C | C | C | C | C | B | C | D | C | D | D | B |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 1.26 | 8.01 | 7.13 | 9.97 | 18.35 | 2.17 | 3.00 | 9.76 | 2.19 | 5.59 | 4.30 | 3.03 |
| 50th-Percentile Queue Length [ft] | 31.58 | 200.32 | 178.17 | 249.34 | 458.77 | 54.35 | 75.03 | 243.97 | 54.65 | 139.86 | 107.43 | 75.63 |
| 95th-Percentile Queue Length [veh] | 2.27 | 12.65 | 11.50 | 15.15 | 25.38 | 3.91 | 5.40 | 14.88 | 3.93 | 9.47 | 7.70 | 5.45 |
| 95th-Percentile Queue Length [ft] | 56.84 | 316.37 | 287.62 | 378.82 | 634.41 | 97.84 | 135.05 | 372.05 | 98.37 | 236.83 | 192.43 | 136.14 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 25.00 | 33.31 | 23.10 | 29.60 | 28.77 | 11.74 | 32.63 | 47.84 | 33.50 | 38.89 | 38.37 | 18.57 |
| Movement LOS | C | C | C | C | C | B | C | D | C | D | D | B |
| d_A, Approach Delay [s/veh] | 29.37 | | | 27.63 | | | 44.12 | | | 33.78 | | |
| Approach LOS | C | | | C | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 31.94 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.703 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 40: 38 - 19th Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.656 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 90.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 325.00 | 100.00 | 420.00 | 140.00 | 100.00 | 50.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 73 | 402 | 53 | 135 | 670 | 61 | 114 | 367 | 142 | 54 | 158 | 81 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.40 | 4.50 | 3.80 | 6.60 | 2.20 | 3.30 | 0.90 | 0.80 | 0.00 | 1.90 | 3.80 | 9.80 |
| Growth Rate | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 102 | 563 | 74 | 189 | 938 | 85 | 160 | 514 | 199 | 76 | 221 | 113 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 28 | 153 | 20 | 51 | 255 | 23 | 42 | 135 | 52 | 20 | 58 | 30 |
| Total Analysis Volume [veh/h] | 111 | 612 | 80 | 205 | 1020 | 92 | 169 | 542 | 210 | 80 | 233 | 119 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 28.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 30 | 0 | 5 | 30 | 0 | 5 | 15 | 15 | 5 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 35 | 0 | 8 | 35 | 0 | 9 | 44 | 44 | 8 | 43 | 43 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 47 | 39 | 39 | 47 | 39 | 39 | 38 | 30 | 40 | 38 | 29 | 39 |
| g / C, Green / Cycle | 0.50 | 0.41 | 0.41 | 0.50 | 0.41 | 0.41 | 0.40 | 0.32 | 0.42 | 0.40 | 0.30 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | 0.19 | 0.19 | 0.24 | 0.30 | 0.30 | 0.13 | 0.29 | 0.13 | 0.08 | 0.13 | 0.08 |
| s, saturation flow rate [veh/h] | 670 | 1818 | 1746 | 841 | 1859 | 1806 | 1274 | 1885 | 1615 | 993 | 1830 | 1471 |
| c, Capacity [veh/h] | 308 | 752 | 722 | 419 | 769 | 747 | 516 | 600 | 684 | 284 | 553 | 599 |
| d1, Uniform Delay [s] | 17.30 | 20.25 | 20.26 | 16.11 | 23.41 | 23.45 | 19.53 | 30.97 | 18.13 | 21.62 | 26.52 | 18.16 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.22 | 0.50 | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.25 | 2.09 | 2.19 | 4.04 | 6.08 | 6.33 | 1.69 | 9.97 | 1.16 | 0.54 | 0.51 | 0.74 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.47 | 0.47 | 0.49 | 0.73 | 0.73 | 0.33 | 0.90 | 0.31 | 0.28 | 0.42 | 0.20 |
| d, Delay for Lane Group [s/veh] | 20.55 | 22.35 | 22.44 | 20.15 | 29.49 | 29.78 | 21.22 | 40.94 | 19.29 | 22.15 | 27.03 | 18.90 |
| Lane Group LOS | C | C | C | C | C | C | C | D | B | C | C | B |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 1.50 | 5.94 | 5.73 | 2.88 | 11.45 | 11.22 | 2.68 | 13.16 | 3.20 | 1.14 | 4.23 | 1.78 |
| 50th-Percentile Queue Length [ft] | 37.56 | 148.46 | 143.19 | 72.05 | 286.22 | 280.56 | 66.96 | 329.04 | 79.97 | 28.40 | 105.80 | 44.46 |
| 95th-Percentile Queue Length [veh] | 2.70 | 9.93 | 9.65 | 5.19 | 17.00 | 16.72 | 4.82 | 19.11 | 5.76 | 2.04 | 7.61 | 3.20 |
| 95th-Percentile Queue Length [ft] | 67.61 | 248.37 | 241.31 | 129.68 | 424.94 | 417.91 | 120.53 | 477.79 | 143.94 | 51.12 | 190.14 | 80.02 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 20.55 | 22.39 | 22.44 | 20.15 | 29.62 | 29.78 | 21.22 | 40.94 | 19.29 | 22.15 | 27.03 | 18.90 |
| Movement LOS | C | C | C | C | C | C | C | D | B | C | C | B |
| d_A, Approach Delay [s/veh] | 22.14 | | | 28.16 | | | 32.38 | | | 23.89 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 27.36 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.656 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 41: 39 - 7th Avenue / Durston Road / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 38.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.609 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Durston Road | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration |  | | |  | | |  | | |  | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 70.00 | 100.00 | 100.00 | 50.00 | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Durston Road | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 36 | 308 | 19 | 73 | 552 | 81 | 103 | 250 | 78 | 21 | 106 | 35 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.80 | 4.50 | 0.00 | 1.40 | 3.60 | 2.50 | 0.00 | 1.20 | 2.60 | 9.50 | 4.70 | 14.30 |
| Growth Rate | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 47 | 400 | 25 | 95 | 718 | 105 | 134 | 325 | 101 | 27 | 138 | 46 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Total 15-Minute Volume [veh/h] | 13 | 108 | 7 | 26 | 193 | 28 | 35 | 84 | 26 | 7 | 36 | 12 |
| Total Analysis Volume [veh/h] | 51 | 430 | 27 | 102 | 773 | 113 | 138 | 336 | 104 | 28 | 143 | 48 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 8 | 30 | 0 | 8 | 30 | 0 | 0 | 20 | 0 | 0 | 20 | 0 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 11 | 35 | 0 | 11 | 35 | 0 | 0 | 49 | 0 | 0 | 25 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 53 | 42 | 42 | 53 | 44 | 44 | 32 | 32 | 20 |
| g / C, Green / Cycle | 0.44 | 0.35 | 0.35 | 0.44 | 0.36 | 0.36 | 0.26 | 0.26 | 0.17 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.13 | 0.13 | 0.09 | 0.22 | 0.07 | 0.08 | 0.24 | 0.13 |
| s, saturation flow rate [veh/h] | 842 | 1818 | 1781 | 1076 | 3492 | 1576 | 1810 | 1802 | 1737 |
| c, Capacity [veh/h] | 331 | 643 | 630 | 471 | 1269 | 573 | 480 | 478 | 289 |
| d1, Uniform Delay [s] | 21.52 | 28.69 | 28.71 | 20.42 | 31.23 | 26.19 | 35.07 | 42.86 | 47.66 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.20 | 0.23 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.99 | 1.55 | 1.60 | 1.05 | 2.18 | 0.77 | 0.33 | 13.09 | 8.12 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

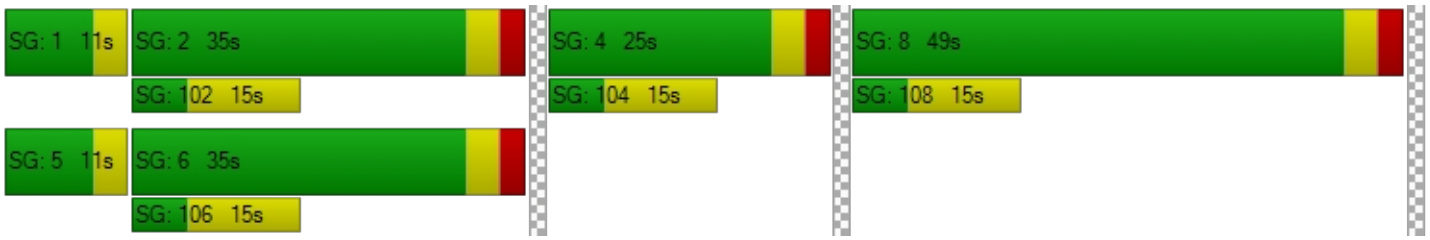
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.15 | 0.36 | 0.36 | 0.22 | 0.61 | 0.20 | 0.29 | 0.92 | 0.75 |
| d, Delay for Lane Group [s/veh] | 22.51 | 30.24 | 30.31 | 21.47 | 33.41 | 26.96 | 35.40 | 55.95 | 55.77 |
| Lane Group LOS | C | C | C | C | C | C | D | E | E |
| Critical Lane Group | Yes | No | No | No | Yes | No | No | Yes | Yes |
| 50th-Percentile Queue Length [veh] | 0.91 | 5.20 | 5.12 | 1.83 | 9.48 | 2.35 | 3.27 | 14.32 | 6.86 |
| 50th-Percentile Queue Length [ft] | 22.84 | 129.88 | 128.05 | 45.80 | 236.94 | 58.81 | 81.84 | 358.09 | 171.47 |
| 95th-Percentile Queue Length [veh] | 1.64 | 8.93 | 8.83 | 3.30 | 14.53 | 4.23 | 5.89 | 20.53 | 11.15 |
| 95th-Percentile Queue Length [ft] | 41.11 | 223.33 | 220.84 | 82.44 | 363.17 | 105.87 | 147.31 | 513.26 | 278.85 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 22.51 | 30.27 | 30.31 | 21.47 | 33.41 | 26.96 | 35.40 | 55.95 | 55.95 | 55.77 | 55.77 | 55.77 |
| Movement LOS | C | C | C | C | C | C | D | E | E | E | E | E |
| d_A, Approach Delay [s/veh] | 29.50 | | | 31.44 | | | 51.05 | | | 55.77 | | |
| Approach LOS | C | | | C | | | D | | | E | | |
| d_I, Intersection Delay [s/veh] | 38.27 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.609 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 42: 40 - 19th Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 54.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.760 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 230.00 | 100.00 | 113.00 | 200.00 | 100.00 | 100.00 | 250.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 60 | 323 | 120 | 107 | 655 | 203 | 142 | 753 | 42 | 103 | 350 | 61 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.70 | 0.80 | 0.90 | 2.30 | 3.90 | 3.50 | 1.30 | 0.00 | 1.00 | 2.80 | 0.00 |
| Growth Rate | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 85 | 455 | 169 | 151 | 924 | 286 | 200 | 1062 | 59 | 145 | 494 | 86 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 22 | 119 | 44 | 39 | 241 | 75 | 52 | 277 | 15 | 38 | 129 | 22 |
| Total Analysis Volume [veh/h] | 89 | 475 | 176 | 158 | 964 | 298 | 209 | 1108 | 62 | 151 | 515 | 90 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 180 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 84.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 0 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lag | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 15 | 15 | 5 | 15 | 15 | 5 | 15 | 0 | 5 | 15 | 15 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 15 | 59 | 59 | 26 | 70 | 70 | 22 | 81 | 0 | 14 | 73 | 73 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 3.00 | 5.00 | 3.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 1.00 | 3.00 | 1.00 | 1.00 | 3.00 | 3.00 | 1.00 | 3.00 | 3.00 | 1.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 12 | 54 | 70 | 23 | 65 | 102 | 19 | 76 | 76 | 11 | 68 | 118 |
| g / C, Green / Cycle | 0.07 | 0.30 | 0.39 | 0.13 | 0.36 | 0.57 | 0.11 | 0.42 | 0.42 | 0.06 | 0.38 | 0.66 |
| (v / s)_i Volume / Saturation Flow Rate | 0.06 | 0.13 | 0.11 | 0.09 | 0.27 | 0.19 | 0.08 | 0.31 | 0.32 | 0.04 | 0.15 | 0.06 |
| s, saturation flow rate [veh/h] | 1440 | 3522 | 1602 | 1793 | 3536 | 1554 | 2702 | 1876 | 1841 | 3479 | 3519 | 1615 |
| c, Capacity [veh/h] | 120 | 1057 | 623 | 229 | 1277 | 881 | 295 | 792 | 777 | 213 | 1329 | 1059 |
| d1, Uniform Delay [s] | 85.51 | 50.97 | 37.76 | 75.08 | 50.50 | 20.91 | 79.99 | 43.82 | 43.88 | 82.94 | 40.82 | 11.31 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 33.45 | 1.38 | 1.13 | 15.68 | 4.18 | 1.04 | 13.42 | 6.28 | 6.46 | 18.20 | 0.85 | 0.16 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

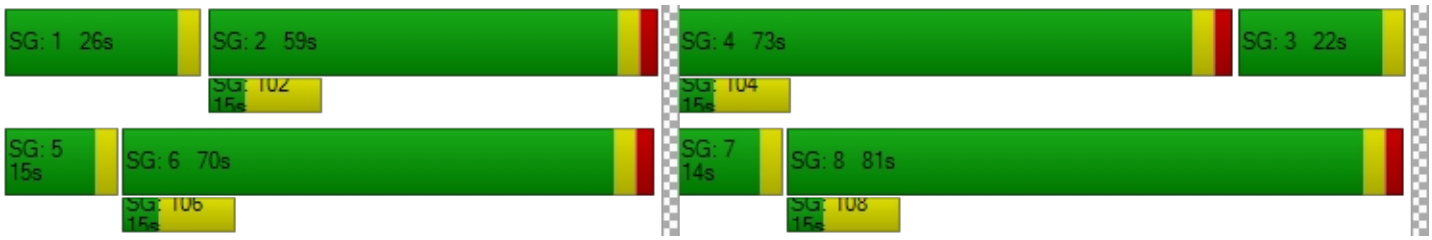
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.74 | 0.45 | 0.28 | 0.69 | 0.75 | 0.34 | 0.71 | 0.74 | 0.75 | 0.71 | 0.39 | 0.09 |
| d, Delay for Lane Group [s/veh] | 118.96 | 52.36 | 38.89 | 90.77 | 54.69 | 21.95 | 93.41 | 50.09 | 50.35 | 101.14 | 41.67 | 11.47 |
| Lane Group LOS | F | D | D | F | D | C | F | D | D | F | D | B |
| Critical Lane Group | Yes | No | Yes | No | Yes | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 5.31 | 9.02 | 5.67 | 8.05 | 20.00 | 7.18 | 5.35 | 23.74 | 23.44 | 4.02 | 8.67 | 1.41 |
| 50th-Percentile Queue Length [ft] | 132.71 | 225.48 | 141.68 | 201.37 | 499.96 | 179.49 | 133.80 | 593.45 | 586.07 | 100.38 | 216.80 | 35.33 |
| 95th-Percentile Queue Length [veh] | 9.09 | 13.94 | 9.57 | 12.71 | 27.33 | 11.57 | 9.15 | 31.73 | 31.38 | 7.23 | 13.50 | 2.54 |
| 95th-Percentile Queue Length [ft] | 227.17 | 348.62 | 239.29 | 317.73 | 683.31 | 289.35 | 228.64 | 793.21 | 784.59 | 180.68 | 337.54 | 63.59 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 118.96 | 52.36 | 38.89 | 90.77 | 54.69 | 21.95 | 93.41 | 50.21 | 50.35 | 101.14 | 41.67 | 11.47 |
| Movement LOS | F | D | D | F | D | C | F | D | D | F | D | B |
| d_A, Approach Delay [s/veh] | 57.16 | | | 51.83 | | | 56.76 | | | 49.95 | | |
| Approach LOS | E | | | D | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 54.00 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.760 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 43: 41 - 7th Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 14.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.390 |

**Intersection Setup**

| Name | 7th Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | Yes | |

**volumes**

| Name | 7th Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 169 | 219 | 118 | 302 | 233 | 59 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.40 | 3.60 | 1.70 | 3.50 | 3.00 | 3.40 |
| Growth Rate | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 226 | 293 | 158 | 405 | 312 | 79 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Total 15-Minute Volume [veh/h] | 57 | 74 | 40 | 102 | 79 | 20 |
| Total Analysis Volume [veh/h] | 228 | 296 | 160 | 409 | 315 | 80 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Overlap | Protected | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 6 | 3 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | 3,6 | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 5 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 24 | 24 | 16 | 36 | 20 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | Yes | No | No | |
| Maximum Recall | No | No | No | No | No | |
| Pedestrian Recall | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | C | C |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 11 | 28 | 12 | 39 | 39 | 22 | 22 |
| g / C, Green / Cycle | 0.19 | 0.47 | 0.20 | 0.65 | 0.65 | 0.37 | 0.37 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.21 | 0.10 | 0.14 | 0.12 | 0.12 | 0.13 |
| s, saturation flow rate [veh/h] | 1590 | 1403 | 1601 | 1652 | 1503 | 1660 | 1549 |
| c, Capacity [veh/h] | 297 | 652 | 312 | 1183 | 972 | 612 | 571 |
| d1, Uniform Delay [s] | 23.16 | 10.89 | 21.61 | 4.35 | 4.26 | 13.58 | 13.71 |
| k, delay calibration | 0.11 | 0.17 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 4.15 | 0.80 | 1.31 | 0.08 | 0.42 | 1.40 | 1.66 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

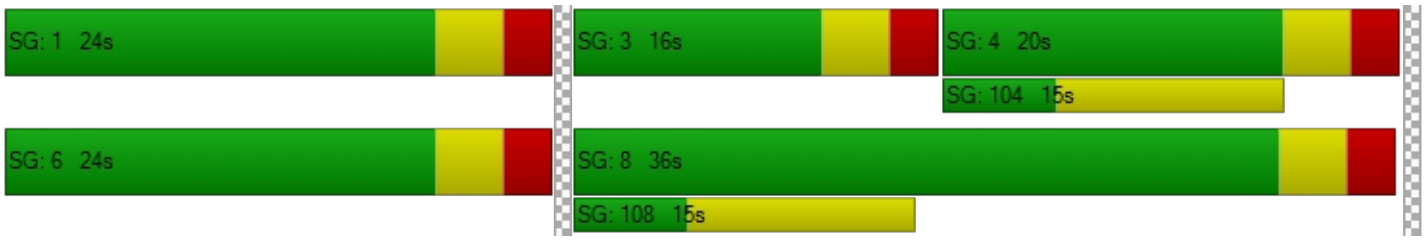
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.77 | 0.45 | 0.51 | 0.19 | 0.18 | 0.32 | 0.35 |
| d, Delay for Lane Group [s/veh] | 27.31 | 11.69 | 22.92 | 4.43 | 4.68 | 14.98 | 15.37 |
| Lane Group LOS | C | B | C | A | A | B | B |
| Critical Lane Group | No | Yes | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 3.19 | 2.41 | 1.98 | 0.82 | 0.72 | 1.95 | 1.99 |
| 50th-Percentile Queue Length [ft] | 79.70 | 60.19 | 49.54 | 20.55 | 18.02 | 48.77 | 49.83 |
| 95th-Percentile Queue Length [veh] | 5.74 | 4.33 | 3.57 | 1.48 | 1.30 | 3.51 | 3.59 |
| 95th-Percentile Queue Length [ft] | 143.47 | 108.34 | 89.18 | 37.00 | 32.43 | 87.79 | 89.70 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.31 | 11.69 | 22.92 | 4.54 | 15.13 | 15.37 |
| Movement LOS | C | B | C | A | B | B |
| d_A, Approach Delay [s/veh] | 18.48 | | 9.71 | | 15.18 | |
| Approach LOS | B | | A | | B | |
| d_I, Intersection Delay [s/veh] | 14.25 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.390 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | - | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 44: 42 - 19th Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 0.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.57 | 1.57 | 1.57 | 1.00 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fixed time |
| Offset [s] | 39.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 109 | 0 | 0 | 109 | 0 | 0 | 11 | 0 | 0 | 11 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | C | C | C | C |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 104 | 104 | 104 | 104 | 104 | 6 | 6 |
| g / C, Green / Cycle | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.05 | 0.05 |
| (v / s)_i Volume / Saturation Flow Rate | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| s, saturation flow rate [veh/h] | 1296 | 1710 | 1710 | 1710 | 1710 | 1710 | 1710 |
| c, Capacity [veh/h] | 1124 | 1434 | 1434 | 1434 | 1434 | 112 | 112 |
| d1, Uniform Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d, Delay for Lane Group [s/veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Lane Group LOS | A | A | A | A | A | A | A |
| Critical Lane Group | No | No | No | No | No | No | No |
| 50th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50th-Percentile Queue Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Movement LOS | A | A | A | | A | A | A | A | A | A | A | A |
| d_A, Approach Delay [s/veh] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Approach LOS | A | | | A | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 0.00 | | | | | | | | | | | |
| Intersection LOS | A | | | | | | | | | | | |
| Intersection V/C | 0.000 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 45: 43 - 19th Avenue / Koch Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 12.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.495 |

**Intersection Setup**

| Name | | | | 19th Avenue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 160.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | | | | 19th Avenue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 10 | 447 | 26 | 42 | 687 | 18 | 27 | 53 | 94 | 27 | 16 | 18 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 10.00 | 1.70 | 3.80 | 0.00 | 1.60 | 0.00 | 3.70 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 16 | 711 | 41 | 67 | 1092 | 29 | 43 | 84 | 149 | 43 | 25 | 29 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 4 | 187 | 11 | 18 | 288 | 8 | 12 | 23 | 40 | 11 | 7 | 8 |
| Total Analysis Volume [veh/h] | 17 | 750 | 43 | 71 | 1151 | 31 | 47 | 91 | 162 | 45 | 26 | 31 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 73.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 67 | 0 | 0 | 67 | 0 | 0 | 23 | 0 | 0 | 23 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 62 | 62 | 62 | 62 | 62 | 62 | 18 | 18 |
| g / C, Green / Cycle | 0.69 | 0.69 | 0.69 | 0.69 | 0.69 | 0.69 | 0.20 | 0.20 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.21 | 0.21 | 0.10 | 0.32 | 0.32 | 0.18 | 0.11 |
| s, saturation flow rate [veh/h] | 438 | 1868 | 1833 | 695 | 1870 | 1853 | 1696 | 957 |
| c, Capacity [veh/h] | 309 | 1295 | 1270 | 487 | 1296 | 1284 | 378 | 245 |
| d1, Uniform Delay [s] | 10.63 | 5.40 | 5.40 | 8.61 | 6.21 | 6.22 | 35.20 | 31.33 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.31 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.34 | 0.62 | 0.63 | 0.63 | 1.17 | 1.18 | 10.17 | 1.13 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.05 | 0.31 | 0.31 | 0.15 | 0.46 | 0.46 | 0.79 | 0.42 |
| d, Delay for Lane Group [s/veh] | 10.97 | 6.02 | 6.03 | 9.24 | 7.38 | 7.40 | 45.38 | 32.45 |
| Lane Group LOS | B | A | A | A | A | A | D | C |
| Critical Lane Group | No | No | No | No | No | Yes | Yes | No |
| 50th-Percentile Queue Length [veh] | 0.19 | 2.65 | 2.61 | 0.68 | 4.57 | 4.54 | 7.34 | 1.99 |
| 50th-Percentile Queue Length [ft] | 4.71 | 66.37 | 65.26 | 16.88 | 114.29 | 113.46 | 183.44 | 49.85 |
| 95th-Percentile Queue Length [veh] | 0.34 | 4.78 | 4.70 | 1.22 | 8.08 | 8.03 | 11.78 | 3.59 |
| 95th-Percentile Queue Length [ft] | 8.48 | 119.46 | 117.47 | 30.38 | 201.95 | 200.81 | 294.50 | 89.74 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10.97 | 6.02 | 6.03 | 9.24 | 7.39 | 7.40 | 45.38 | 45.38 | 45.38 | 32.45 | 32.45 | 32.45 |
| Movement LOS | B | A | A | A | A | A | D | D | D | C | C | C |
| d_A, Approach Delay [s/veh] | 6.13 | | | 7.49 | | | 45.38 | | | 32.45 | | |
| Approach LOS | A | | | A | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 12.69 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.495 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 46: 44 - 19th Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 30.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.639 |

**Intersection Setup**

| Name | 19th Avenue | | | | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 450.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 300.00 | 100.00 | 300.00 | 175.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 120 | 407 | 88 | 168 | 529 | 33 | 67 | 329 | 218 | 63 | 150 | 53 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.80 | 1.00 | 0.00 | 0.60 | 1.00 | 3.00 | 1.50 | 0.00 | 0.00 | 0.00 | 1.30 | 5.70 |
| Growth Rate | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 185 | 627 | 136 | 259 | 815 | 51 | 103 | 507 | 336 | 97 | 231 | 82 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 49 | 165 | 36 | 68 | 215 | 13 | 27 | 134 | 89 | 26 | 61 | 22 |
| Total Analysis Volume [veh/h] | 195 | 661 | 143 | 273 | 859 | 54 | 109 | 535 | 354 | 102 | 244 | 86 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 38.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | 8 | | | 4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Split [s] | 10 | 26 | 0 | 13 | 29 | 0 | 13 | 40 | 40 | 11 | 38 | 38 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 42 | 29 | 29 | 42 | 32 | 32 | 38 | 28 | 28 | 38 | 28 | 28 |
| g / C, Green / Cycle | 0.47 | 0.32 | 0.32 | 0.47 | 0.35 | 0.35 | 0.42 | 0.31 | 0.31 | 0.42 | 0.31 | 0.31 |
| (v / s)_i Volume / Saturation Flow Rate | 0.23 | 0.22 | 0.22 | 0.28 | 0.25 | 0.25 | 0.09 | 0.28 | 0.22 | 0.10 | 0.13 | 0.06 |
| s, saturation flow rate [veh/h] | 842 | 1881 | 1767 | 977 | 1881 | 1842 | 1276 | 1900 | 1615 | 1072 | 1876 | 1528 |
| c, Capacity [veh/h] | 373 | 603 | 566 | 434 | 666 | 652 | 551 | 599 | 509 | 349 | 583 | 475 |
| d1, Uniform Delay [s] | 17.75 | 26.64 | 26.64 | 18.31 | 24.88 | 24.89 | 16.37 | 29.36 | 27.01 | 19.15 | 24.58 | 22.66 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.26 | 0.22 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 5.15 | 6.28 | 6.67 | 6.74 | 5.84 | 5.98 | 0.43 | 9.34 | 1.76 | 0.46 | 0.48 | 0.18 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.52 | 0.69 | 0.69 | 0.63 | 0.69 | 0.69 | 0.20 | 0.89 | 0.69 | 0.29 | 0.42 | 0.18 |
| d, Delay for Lane Group [s/veh] | 22.91 | 32.92 | 33.32 | 25.05 | 30.72 | 30.86 | 16.80 | 38.70 | 28.77 | 19.61 | 25.06 | 22.84 |
| Lane Group LOS | C | C | C | C | C | C | B | D | C | B | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 2.83 | 8.54 | 8.08 | 4.18 | 9.17 | 9.02 | 1.40 | 12.16 | 6.71 | 1.29 | 4.10 | 1.33 |
| 50th-Percentile Queue Length [ft] | 70.63 | 213.55 | 202.10 | 104.58 | 229.28 | 225.43 | 35.12 | 304.04 | 167.66 | 32.29 | 102.58 | 33.29 |
| 95th-Percentile Queue Length [veh] | 5.09 | 13.34 | 12.75 | 7.53 | 14.14 | 13.94 | 2.53 | 17.88 | 10.95 | 2.33 | 7.39 | 2.40 |
| 95th-Percentile Queue Length [ft] | 127.13 | 333.38 | 318.67 | 188.24 | 353.45 | 348.54 | 63.21 | 447.02 | 273.83 | 58.13 | 184.64 | 59.93 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 22.91 | 33.07 | 33.32 | 25.05 | 30.79 | 30.86 | 16.80 | 38.70 | 28.77 | 19.61 | 25.06 | 22.84 |
| Movement LOS | C | C | C | C | C | C | B | D | C | B | C | C |
| d_A, Approach Delay [s/veh] | 31.12 | | | 29.47 | | | 32.79 | | | 23.33 | | |
| Approach LOS | C | | | C | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 30.11 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.639 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 47: 45 - 19th Avenue / Graf Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 66.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.875 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Graf Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 400.00 | 380.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Graf Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 22 | 502 | 110 | 297 | 180 | 14 | 45 | 27 | 2 | 103 | 20 | 310 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.60 | 0.00 | 0.00 | 5.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.79 | 1.79 | 1.00 | 1.00 | 1.79 | 1.79 | 1.79 | 1.00 | 1.79 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 39 | 899 | 110 | 297 | 322 | 25 | 81 | 27 | 4 | 103 | 20 | 310 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 10 | 237 | 30 | 81 | 85 | 7 | 22 | 7 | 1 | 28 | 5 | 84 |
| Total Analysis Volume [veh/h] | 41 | 948 | 120 | 323 | 340 | 26 | 88 | 29 | 4 | 112 | 22 | 337 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 100 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 59 | 0 | 12 | 71 | 0 | 0 | 29 | 0 | 0 | 29 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | No | No | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | R | L | C | L | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 54 | 54 | 66 | 66 | 66 | 24 | 24 | 24 | 24 |
| g / C, Green / Cycle | 0.54 | 0.54 | 0.66 | 0.66 | 0.66 | 0.24 | 0.24 | 0.24 | 0.24 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.58 | 0.44 | 0.19 | 0.02 | 0.08 | 0.02 | 0.08 | 0.22 |
| s, saturation flow rate [veh/h] | 1058 | 1852 | 730 | 1801 | 1615 | 1039 | 1860 | 1398 | 1630 |
| c, Capacity [veh/h] | 539 | 1000 | 304 | 1189 | 1066 | 84 | 446 | 361 | 391 |
| d1, Uniform Delay [s] | 16.21 | 23.00 | 41.05 | 7.12 | 5.87 | 49.92 | 29.40 | 34.22 | 37.04 |
| k, delay calibration | 0.11 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.06 | 48.43 | 69.06 | 0.13 | 0.01 | 111.22 | 0.32 | 2.23 | 28.84 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.08 | 1.07 | 1.06 | 0.29 | 0.02 | 1.05 | 0.07 | 0.31 | 0.92 |
| d, Delay for Lane Group [s/veh] | 16.27 | 71.43 | 110.11 | 7.25 | 5.88 | 161.13 | 29.72 | 36.46 | 65.88 |
| Lane Group LOS | B | F | F | A | A | F | C | D | E |
| Critical Lane Group | No | Yes | Yes | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.55 | 34.96 | 8.23 | 2.78 | 0.18 | 4.69 | 0.65 | 2.56 | 11.53 |
| 50th-Percentile Queue Length [ft] | 13.68 | 874.09 | 205.74 | 69.57 | 4.40 | 117.34 | 16.31 | 63.90 | 288.15 |
| 95th-Percentile Queue Length [veh] | 0.99 | 47.11 | 13.50 | 5.01 | 0.32 | 8.42 | 1.17 | 4.60 | 17.09 |
| 95th-Percentile Queue Length [ft] | 24.63 | 1177.75 | 337.58 | 125.22 | 7.92 | 210.51 | 29.35 | 115.02 | 427.34 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 16.27 | 71.43 | 71.43 | 110.11 | 7.25 | 5.88 | 161.13 | 29.72 | 29.72 | 36.46 | 65.88 | 65.88 |
| Movement LOS | B | E | E | F | A | A | F | C | C | D | E | E |
| d_A, Approach Delay [s/veh] | 69.39 | | | 55.49 | | | 125.30 | | | 58.88 | | |
| Approach LOS | E | | | E | | | F | | | E | | |
| d_I, Intersection Delay [s/veh] | 66.15 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.875 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 49: 47 - Flanders Mill Road / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 18.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.143 |

**Intersection Setup**

| Name | Flanders Mill Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Flanders Mill Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 30 | 101 | 137 | 84 | 87 | 111 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 2.20 | 4.80 | 3.30 | 4.50 |
| Growth Rate | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 45 | 152 | 206 | 126 | 131 | 167 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 12 | 41 | 54 | 33 | 34 | 44 |
| Total Analysis Volume [veh/h] | 49 | 165 | 215 | 131 | 137 | 174 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.14 | 0.22 | 0.00 | 0.00 | 0.11 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 18.84 | 13.09 | 0.00 | 0.00 | 8.37 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.63 | 1.63 | 0.00 | 0.00 | 1.03 | 1.03 |
| 95th-Percentile Queue Length [ft] | 40.72 | 40.72 | 0.00 | 0.00 | 25.83 | 25.83 |
| d_A, Approach Delay [s/veh] | 14.41 | | 0.00 | | 3.69 | |
| Approach LOS | B | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.86 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 50: 48 - Davis Lane / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 18.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.512 |

**Intersection Setup**

| Name | Davis Lane | | | Davis Lane | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | Yes | | | No | | |

**volumes**

| Name | Davis Lane | | | Davis Lane | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 138 | 85 | 41 | 17 | 168 | 84 | 57 | 295 | 70 | 25 | 205 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 208 | 128 | 62 | 26 | 254 | 127 | 86 | 445 | 106 | 38 | 310 | 18 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 62 | 38 | 18 | 8 | 75 | 38 | 23 | 121 | 29 | 10 | 84 | 5 |
| Total Analysis Volume [veh/h] | 246 | 152 | 73 | 31 | 301 | 150 | 93 | 484 | 115 | 41 | 337 | 20 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 75 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 30 | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 34 | 34 | 0 | 34 | 0 | 0 | 41 | 41 | 0 | 41 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 25 | 25 | 25 | 25 |
| g / C, Green / Cycle | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.53 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.26 | 0.04 | 0.05 | 0.02 | 0.12 | 0.13 | 0.09 | 0.25 | 0.07 | 0.04 | 0.19 |
| s, saturation flow rate [veh/h] | 954 | 3618 | 1615 | 1255 | 1900 | 1692 | 1041 | 1900 | 1615 | 926 | 1881 |
| c, Capacity [veh/h] | 513 | 1933 | 863 | 704 | 1015 | 904 | 255 | 631 | 537 | 171 | 625 |
| d1, Uniform Delay [s] | 16.02 | 8.48 | 8.51 | 10.20 | 9.28 | 9.31 | 29.58 | 22.44 | 18.01 | 33.13 | 20.64 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.19 | 0.08 | 0.19 | 0.12 | 0.53 | 0.62 | 0.88 | 1.99 | 0.20 | 0.71 | 0.83 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

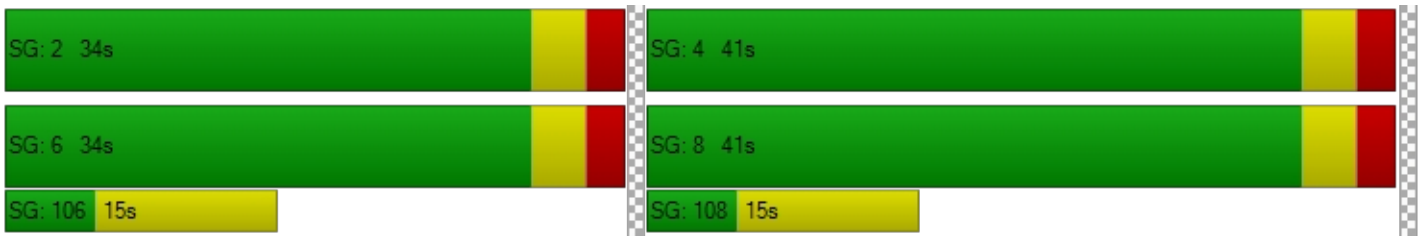
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.48 | 0.08 | 0.08 | 0.04 | 0.23 | 0.24 | 0.37 | 0.77 | 0.21 | 0.24 | 0.57 |
| d, Delay for Lane Group [s/veh] | 19.21 | 8.56 | 8.70 | 10.32 | 9.81 | 9.94 | 30.45 | 24.43 | 18.20 | 33.84 | 21.46 |
| Lane Group LOS | B | A | A | B | A | A | C | C | B | C | C |
| Critical Lane Group | Yes | No | No | No | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 3.38 | 0.56 | 0.57 | 0.27 | 1.98 | 1.84 | 1.57 | 7.52 | 1.40 | 0.73 | 5.01 |
| 50th-Percentile Queue Length [ft] | 84.58 | 14.03 | 14.16 | 6.80 | 49.46 | 45.94 | 39.29 | 187.95 | 34.91 | 18.30 | 125.18 |
| 95th-Percentile Queue Length [veh] | 6.09 | 1.01 | 1.02 | 0.49 | 3.56 | 3.31 | 2.83 | 12.01 | 2.51 | 1.32 | 8.68 |
| 95th-Percentile Queue Length [ft] | 152.25 | 25.25 | 25.49 | 12.24 | 89.03 | 82.69 | 70.72 | 300.36 | 62.83 | 32.94 | 216.93 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 19.21 | 8.56 | 8.70 | 10.32 | 9.84 | 9.94 | 30.45 | 24.43 | 18.20 | 33.84 | 21.46 | 21.46 |
| Movement LOS | B | A | A | B | A | A | C | C | B | C | C | C |
| d_A, Approach Delay [s/veh] | 14.15 | | | 9.90 | | | 24.20 | | | 22.74 | | |
| Approach LOS | B | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 18.22 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.512 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 51: 49 - Laurel Parkway / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.449 |

**Intersection Setup**

| Name | Laurel Parkway | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 35.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Laurel Parkway | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 187 | 13 | 5 | 241 | 170 | 34 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.40 | 3.50 | 0.00 |
| Growth Rate | 1.81 | 1.81 | 1.81 | 1.81 | 1.81 | 1.81 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 338 | 24 | 9 | 436 | 308 | 62 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 92 | 7 | 2 | 114 | 80 | 16 |
| Total Analysis Volume [veh/h] | 367 | 26 | 9 | 455 | 321 | 65 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 0 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 42 | 0 | 0 | 48 | 48 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | C | C |
|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 37 | 37 | 43 | 43 |
| g / C, Green / Cycle | 0.41 | 0.41 | 0.48 | 0.48 |
| (v / s)_i Volume / Saturation Flow Rate | 0.20 | 0.02 | 0.25 | 0.22 |
| s, saturation flow rate [veh/h] | 1810 | 1615 | 1882 | 1783 |
| c, Capacity [veh/h] | 744 | 664 | 940 | 852 |
| d1, Uniform Delay [s] | 19.58 | 15.86 | 16.26 | 15.66 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.33 | 0.11 | 1.85 | 1.74 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

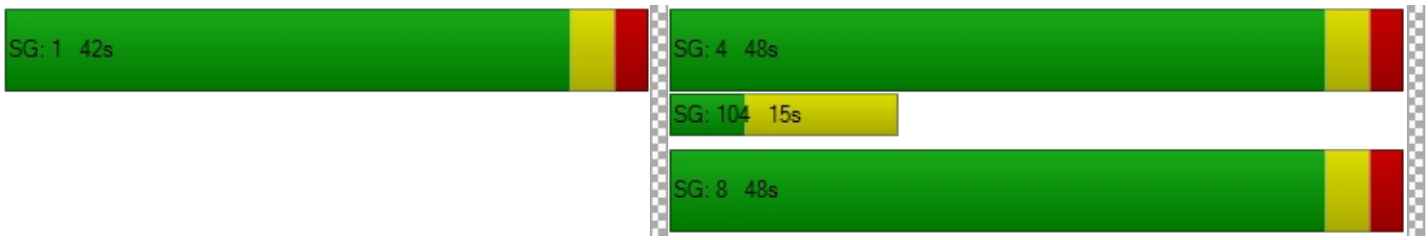
| | | | | |
|---|---|---|---|---|
| X, volume / capacity | 0.49 | 0.04 | 0.49 | 0.45 |
| d, Delay for Lane Group [s/veh] | 21.91 | 15.97 | 18.11 | 17.40 |
| Lane Group LOS | C | B | B | B |
| Critical Lane Group | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 5.93 | 0.33 | 6.74 | 5.42 |
| 50th-Percentile Queue Length [ft] | 148.29 | 8.33 | 168.40 | 135.57 |
| 95th-Percentile Queue Length [veh] | 9.93 | 0.60 | 10.99 | 9.24 |
| 95th-Percentile Queue Length [ft] | 248.15 | 14.99 | 274.81 | 231.04 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 21.91 | 15.97 | 18.11 | 18.11 | 17.40 | 17.40 |
| Movement LOS | C | B | B | B | B | B |
| d_A, Approach Delay [s/veh] | 21.52 | | 18.11 | | 17.40 | |
| Approach LOS | C | | B | | B | |
| d_I, Intersection Delay [s/veh] | 18.97 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.449 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 52: 50 - Cottonwood Road / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 89.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.857 |

**Intersection Setup**

| Name | Cottonwood Road | | | Cottonwood Road | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | Yes | | |

**volumes**

| Name | Cottonwood Road | | | Cottonwood Road | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 32 | 6 | 176 | 16 | 13 | 1 | 2 | 307 | 163 | 168 | 162 | 8 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.10 | 0.00 | 3.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.30 | 0.00 | 1.80 | 3.80 | 0.00 |
| Growth Rate | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 123 | 23 | 678 | 62 | 50 | 4 | 8 | 1182 | 628 | 647 | 624 | 31 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 33 | 6 | 184 | 17 | 14 | 1 | 2 | 308 | 164 | 169 | 163 | 8 |
| Total Analysis Volume [veh/h] | 134 | 25 | 737 | 67 | 54 | 4 | 8 | 1233 | 655 | 675 | 651 | 32 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 150 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | 5,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 19 | 26 | 26 | 8 | 15 | 0 | 70 | 83 | 83 | 33 | 46 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | No | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | No | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 29 | 21 | 56 | 29 | 10 | 10 | 111 | 78 | 99 | 111 | 106 |
| g / C, Green / Cycle | 0.19 | 0.14 | 0.37 | 0.19 | 0.07 | 0.07 | 0.74 | 0.52 | 0.66 | 0.74 | 0.71 |
| (v / s)_i Volume / Saturation Flow Rate | 0.09 | 0.01 | 0.47 | 0.04 | 0.02 | 0.02 | 0.01 | 0.65 | 0.41 | 0.48 | 0.38 |
| s, saturation flow rate [veh/h] | 1576 | 3618 | 1554 | 1491 | 1900 | 1855 | 793 | 1894 | 1615 | 1397 | 1815 |
| c, Capacity [veh/h] | 362 | 510 | 582 | 396 | 129 | 126 | 516 | 983 | 1064 | 970 | 1288 |
| d1, Uniform Delay [s] | 52.69 | 55.71 | 46.91 | 50.53 | 66.19 | 66.20 | 7.69 | 36.09 | 14.68 | 23.64 | 10.16 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.11 | 0.50 | 0.50 | 0.50 | 0.12 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.89 | 0.18 | 133.07 | 0.92 | 0.88 | 4.22 | 0.01 | 122.98 | 2.67 | 4.12 | 0.38 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

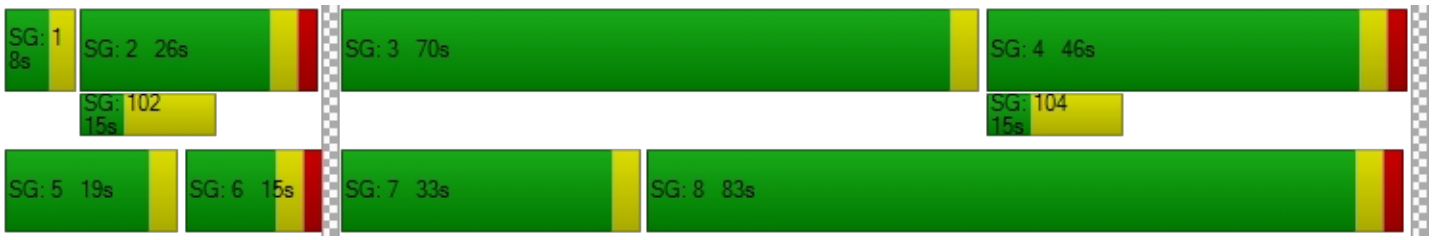
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.37 | 0.05 | 1.27 | 0.17 | 0.23 | 0.23 | 0.02 | 1.25 | 0.62 | 0.70 | 0.53 |
| d, Delay for Lane Group [s/veh] | 55.58 | 55.89 | 179.98 | 51.45 | 67.06 | 70.43 | 7.71 | 159.06 | 17.35 | 27.76 | 10.54 |
| Lane Group LOS | E | E | F | D | E | E | A | F | B | C | B |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 4.74 | 0.43 | 43.10 | 2.24 | 1.09 | 1.20 | 0.07 | 68.58 | 13.25 | 9.79 | 10.21 |
| 50th-Percentile Queue Length [ft] | 118.61 | 10.68 | 1077.55 | 55.94 | 27.35 | 30.11 | 1.64 | 1714.48 | 331.16 | 244.67 | 255.28 |
| 95th-Percentile Queue Length [veh] | 8.32 | 0.77 | 62.56 | 4.03 | 1.97 | 2.17 | 0.12 | 97.05 | 19.22 | 14.92 | 15.45 |
| 95th-Percentile Queue Length [ft] | 207.92 | 19.23 | 1563.99 | 100.69 | 49.24 | 54.20 | 2.96 | 2426.36 | 480.38 | 372.93 | 386.29 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 55.58 | 55.89 | 179.98 | 51.45 | 68.62 | 70.43 | 7.71 | 159.06 | 17.35 | 27.76 | 10.54 | 10.54 |
| Movement LOS | E | E | F | D | E | E | A | F | B | C | B | B |
| d_A, Approach Delay [s/veh] | 157.92 | | | 59.48 | | | 109.47 | | | 19.10 | | |
| Approach LOS | F | | | E | | | F | | | B | | |
| d_I, Intersection Delay [s/veh] | 89.45 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 0.857 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 55: 53 - Fowler Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 30.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.097 |

**Intersection Setup**

| Name | Fowler Avenue | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Fowler Avenue | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 20 | 422 | 1 | 2 | 275 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.10 |
| Growth Rate | 1.85 | 1.85 | 1.85 | 1.85 | 1.85 | 1.85 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 15 | 37 | 781 | 2 | 4 | 509 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 4 | 10 | 204 | 1 | 1 | 133 |
| Total Analysis Volume [veh/h] | 16 | 40 | 815 | 2 | 4 | 531 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.10 | 0.11 | 0.01 | 0.00 | 0.00 | 0.01 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 29.99 | 17.73 | 0.00 | 0.00 | 9.41 | 0.00 |
| Movement LOS | D | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.74 | 0.74 | 0.00 | 0.00 | 0.01 | 0.00 |
| 95th-Percentile Queue Length [ft] | 18.48 | 18.48 | 0.00 | 0.00 | 0.37 | 0.00 |
| d_A, Approach Delay [s/veh] | 21.23 | | 0.00 | | 0.07 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.87 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 56: 54 - Cottonwood Road / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 32.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.778 |

**Intersection Setup**

| Name | Cottonwood Road | | | Cottonwood Road | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 265.00 | 100.00 | 100.00 | 210.00 | 100.00 | 210.00 | 100.00 | 100.00 | 100.00 | 50.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Cottonwood Road | | | Cottonwood Road | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 6 | 199 | 32 | 21 | 313 | 12 | 17 | 12 | 5 | 50 | 5 | 12 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 0.00 | 0.00 | 0.30 | 8.30 | 5.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 34 | 1126 | 181 | 119 | 1772 | 68 | 96 | 68 | 28 | 283 | 28 | 68 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 9 | 306 | 49 | 32 | 482 | 18 | 26 | 18 | 8 | 77 | 8 | 18 |
| Total Analysis Volume [veh/h] | 37 | 1224 | 197 | 129 | 1926 | 74 | 104 | 74 | 30 | 308 | 30 | 74 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 8 | 70 | 0 | 12 | 74 | 0 | 0 | 38 | 0 | 0 | 38 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 77 | 69 | 69 | 77 | 70 | 70 | 33 | 33 | 33 | 33 |
| g / C, Green / Cycle | 0.64 | 0.57 | 0.57 | 0.64 | 0.59 | 0.59 | 0.28 | 0.28 | 0.28 | 0.28 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.39 | 0.39 | 0.26 | 0.53 | 0.53 | 0.08 | 0.06 | 0.23 | 0.06 |
| s, saturation flow rate [veh/h] | 314 | 1863 | 1774 | 502 | 1894 | 1870 | 1238 | 1808 | 1311 | 1688 |
| c, Capacity [veh/h] | 187 | 1065 | 1014 | 304 | 1112 | 1097 | 321 | 497 | 341 | 464 |
| d1, Uniform Delay [s] | 24.32 | 18.02 | 18.15 | 15.48 | 21.70 | 22.02 | 40.78 | 33.46 | 48.27 | 33.61 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.33 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.36 | 3.50 | 3.81 | 4.28 | 11.56 | 12.78 | 0.58 | 0.21 | 21.75 | 0.24 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.20 | 0.68 | 0.69 | 0.42 | 0.90 | 0.91 | 0.32 | 0.21 | 0.90 | 0.22 |
| d, Delay for Lane Group [s/veh] | 26.68 | 21.52 | 21.96 | 19.76 | 33.26 | 34.81 | 41.35 | 33.67 | 70.02 | 33.85 |
| Lane Group LOS | C | C | C | B | C | C | D | C | E | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 0.46 | 14.50 | 14.15 | 1.62 | 26.62 | 27.29 | 2.71 | 2.38 | 11.44 | 2.39 |
| 50th-Percentile Queue Length [ft] | 11.62 | 362.60 | 353.84 | 40.51 | 665.61 | 682.30 | 67.76 | 59.43 | 285.94 | 59.75 |
| 95th-Percentile Queue Length [veh] | 0.84 | 20.75 | 20.32 | 2.92 | 35.09 | 35.86 | 4.88 | 4.28 | 16.98 | 4.30 |
| 95th-Percentile Queue Length [ft] | 20.92 | 518.75 | 508.09 | 72.91 | 877.16 | 896.49 | 121.96 | 106.97 | 424.61 | 107.54 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 26.68 | 21.70 | 21.96 | 19.76 | 34.01 | 34.81 | 41.35 | 33.67 | 33.67 | 70.02 | 33.85 | 33.85 |
| Movement LOS | C | C | C | B | C | C | D | C | C | E | C | C |
| d_A, Approach Delay [s/veh] | 21.86 | | | 33.17 | | | 37.51 | | | 60.89 | | |
| Approach LOS | C | | | C | | | D | | | E | | |
| d_I, Intersection Delay [s/veh] | 32.18 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.778 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 58: 55 - 19th Avenue / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 71.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.964 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 325.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 245.00 | 100.00 | 100.00 | 150.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 75 | 342 | 48 | 120 | 986 | 63 | 117 | 214 | 179 | 60 | 134 | 46 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.70 | 3.50 | 2.10 | 1.60 | 2.10 | 0.00 | 0.90 | 1.90 | 1.70 | 6.70 | 6.00 | 2.20 |
| Growth Rate | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 123 | 561 | 79 | 197 | 1617 | 103 | 192 | 351 | 294 | 98 | 220 | 75 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 32 | 148 | 21 | 52 | 426 | 27 | 50 | 92 | 77 | 26 | 57 | 20 |
| Total Analysis Volume [veh/h] | 130 | 591 | 83 | 208 | 1705 | 109 | 200 | 366 | 307 | 102 | 230 | 78 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 145 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 36.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | | | | 4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 20 | 0 | 60 | 72 | 0 | 12 | 57 | 0 | 8 | 53 | 53 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 75 | 60 | 60 | 75 | 67 | 67 | 60 | 52 | 60 | 48 | 48 |
| g / C, Green / Cycle | 0.52 | 0.41 | 0.41 | 0.52 | 0.46 | 0.46 | 0.41 | 0.36 | 0.41 | 0.33 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.35 | 0.19 | 0.19 | 0.22 | 0.49 | 0.50 | 0.16 | 0.39 | 0.12 | 0.13 | 0.05 |
| s, saturation flow rate [veh/h] | 376 | 1836 | 1758 | 939 | 1861 | 1822 | 1264 | 1726 | 825 | 1792 | 1580 |
| c, Capacity [veh/h] | 150 | 761 | 728 | 452 | 860 | 842 | 483 | 619 | 154 | 593 | 523 |
| d1, Uniform Delay [s] | 41.79 | 30.60 | 30.61 | 21.13 | 39.00 | 39.00 | 29.53 | 46.50 | 36.46 | 37.22 | 34.13 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.15 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 44.24 | 1.94 | 2.03 | 1.02 | 46.18 | 53.94 | 2.60 | 62.24 | 4.86 | 0.41 | 0.13 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.86 | 0.45 | 0.45 | 0.46 | 1.05 | 1.08 | 0.41 | 1.09 | 0.66 | 0.39 | 0.15 |
| d, Delay for Lane Group [s/veh] | 86.03 | 32.54 | 32.64 | 22.15 | 85.18 | 92.94 | 32.13 | 108.74 | 41.32 | 37.64 | 34.26 |
| Lane Group LOS | F | C | C | C | F | F | C | F | D | D | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 4.17 | 9.17 | 8.81 | 4.03 | 41.05 | 42.02 | 5.02 | 32.84 | 2.46 | 6.42 | 1.99 |
| 50th-Percentile Queue Length [ft] | 104.31 | 229.17 | 220.21 | 100.69 | 1026.34 | 1050.40 | 125.38 | 821.06 | 61.42 | 160.42 | 49.83 |
| 95th-Percentile Queue Length [veh] | 7.51 | 14.13 | 13.68 | 7.25 | 53.79 | 55.79 | 8.69 | 44.78 | 4.42 | 10.57 | 3.59 |
| 95th-Percentile Queue Length [ft] | 187.76 | 353.30 | 341.90 | 181.24 | 1344.84 | 1394.84 | 217.19 | 1119.51 | 110.55 | 264.28 | 89.69 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 86.03 | 32.58 | 32.64 | 22.15 | 88.81 | 92.94 | 32.13 | 108.74 | 108.74 | 41.32 | 37.64 | 34.26 |
| Movement LOS | F | C | C | C | F | F | C | F | F | D | D | C |
| d_A, Approach Delay [s/veh] | 41.23 | | | 82.18 | | | 91.19 | | | 37.91 | | |
| Approach LOS | D | | | F | | | F | | | D | | |
| d_I, Intersection Delay [s/veh] | 71.66 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.964 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 59: 56 - 7th Avenue / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 143.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.186 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Baxter Lane | | | Driveway | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 80.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Baxter Lane | | | Driveway | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 160 | 590 | 17 | 60 | 863 | 135 | 0 | 0 | 266 | 0 | 0 | 49 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 5.00 | 3.70 | 5.90 | 6.70 | 2.90 | 4.40 | 2.00 | 2.00 | 4.10 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.00 | 1.00 | 1.45 | 1.00 | 1.00 | 1.45 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 232 | 856 | 25 | 87 | 1251 | 196 | 0 | 0 | 386 | 0 | 0 | 71 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 0.9200 | 1.0000 | 1.0000 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 61 | 226 | 7 | 23 | 330 | 52 | 0 | 0 | 101 | 0 | 0 | 19 |
| Total Analysis Volume [veh/h] | 245 | 903 | 26 | 92 | 1319 | 207 | 0 | 0 | 403 | 0 | 0 | 77 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 3 | | | 2 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.59 | 0.01 | 0.00 | 0.13 | 0.01 | 0.00 | 0.00 | 0.00 | 1.19 | 0.00 | 0.00 | 0.14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 25.30 | 0.00 | 0.00 | 10.91 | 0.00 | 0.00 | 0.00 | 0.00 | 143.47 | 0.00 | 0.00 | 12.74 |
| Movement LOS | D | A | A | B | A | A | | | F | | | B |
| 95th-Percentile Queue Length [veh] | 3.67 | 0.00 | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | 16.86 | 0.00 | 0.00 | 0.49 |
| 95th-Percentile Queue Length [ft] | 91.64 | 0.00 | 0.00 | 11.27 | 0.00 | 0.00 | 0.00 | 0.00 | 421.51 | 0.00 | 0.00 | 12.32 |
| d_A, Approach Delay [s/veh] | 5.28 | | | 0.62 | | | 143.47 | | | 12.74 | | |
| Approach LOS | A | | | A | | | F | | | B | | |
| d_I, Intersection Delay [s/veh] | 20.17 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 60: 57 - 7th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.589 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 150.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 160.00 | 100.00 | 100.00 | 215.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 63 | 359 | 51 | 207 | 651 | 204 | 252 | 224 | 113 | 37 | 142 | 89 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 3.20 | 5.60 | 3.90 | 4.30 | 2.30 | 5.40 | 2.00 | 4.90 | 3.50 | 8.10 | 8.50 | 7.90 |
| Growth Rate | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 90 | 513 | 73 | 296 | 931 | 292 | 360 | 320 | 162 | 53 | 203 | 127 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 0.9800 | 0.9800 | 0.9800 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 25 | 144 | 20 | 83 | 261 | 82 | 96 | 85 | 43 | 14 | 55 | 35 |
| Total Analysis Volume [veh/h] | 101 | 574 | 82 | 331 | 1042 | 327 | 383 | 341 | 173 | 58 | 221 | 138 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 6,8 | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 10 | 30 | 30 | 10 | 30 | 30 | 8 | 15 | 15 | 8 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 90 | 25 | 90 | 90 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 13 | 35 | 35 | 24 | 46 | 46 | 41 | 50 | 50 | 11 | 20 | 20 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 68 | 50 | 62 | 68 | 55 | 102 | 42 | 32 | 47 | 42 | 15 | 35 |
| g / C, Green / Cycle | 0.56 | 0.41 | 0.52 | 0.56 | 0.46 | 0.85 | 0.35 | 0.26 | 0.39 | 0.35 | 0.12 | 0.29 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.17 | 0.05 | 0.32 | 0.29 | 0.21 | 0.25 | 0.19 | 0.11 | 0.05 | 0.07 | 0.09 |
| s, saturation flow rate [veh/h] | 731 | 3426 | 1554 | 1034 | 3536 | 1532 | 1525 | 1811 | 1560 | 1117 | 3334 | 1497 |
| c, Capacity [veh/h] | 379 | 1419 | 806 | 572 | 1613 | 1302 | 555 | 479 | 608 | 317 | 417 | 437 |
| d1, Uniform Delay [s] | 16.00 | 24.73 | 14.70 | 15.60 | 25.15 | 1.72 | 32.47 | 39.96 | 25.13 | 27.89 | 49.20 | 33.13 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.32 | 0.11 | 0.50 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.72 | 0.86 | 0.25 | 4.24 | 2.01 | 0.46 | 4.51 | 1.97 | 1.17 | 0.27 | 1.05 | 0.42 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.27 | 0.40 | 0.10 | 0.58 | 0.65 | 0.25 | 0.69 | 0.71 | 0.28 | 0.18 | 0.53 | 0.32 |
| d, Delay for Lane Group [s/veh] | 17.72 | 25.59 | 14.95 | 19.84 | 27.16 | 2.18 | 36.98 | 41.93 | 26.31 | 28.17 | 50.25 | 33.55 |
| Lane Group LOS | B | C | B | B | C | A | D | D | C | C | D | C |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.43 | 5.90 | 1.20 | 5.43 | 11.71 | 1.05 | 9.84 | 9.35 | 3.60 | 1.15 | 3.17 | 3.20 |
| 50th-Percentile Queue Length [ft] | 35.67 | 147.50 | 29.88 | 135.72 | 292.66 | 26.17 | 245.91 | 233.68 | 89.88 | 28.72 | 79.28 | 80.06 |
| 95th-Percentile Queue Length [veh] | 2.57 | 9.88 | 2.15 | 9.25 | 17.32 | 1.88 | 14.98 | 14.36 | 6.47 | 2.07 | 5.71 | 5.76 |
| 95th-Percentile Queue Length [ft] | 64.21 | 247.08 | 53.79 | 231.25 | 432.94 | 47.11 | 374.50 | 359.03 | 161.79 | 51.69 | 142.70 | 144.11 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 17.72 | 25.59 | 14.95 | 19.84 | 27.16 | 2.18 | 36.98 | 41.93 | 26.31 | 28.17 | 50.25 | 33.55 |
| Movement LOS | B | C | B | B | C | A | D | D | C | C | D | C |
| d_A, Approach Delay [s/veh] | 23.39 | | | 20.93 | | | 36.80 | | | 41.65 | | |
| Approach LOS | C | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 27.49 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.589 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 61: 58 - 15th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.468 |

**Intersection Setup**

| Name | 15th Avenue | | | 15th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 105.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 15th Avenue | | | 15th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 52 | 4 | 57 | 8 | 11 | 15 | 9 | 561 | 145 | 34 | 284 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.90 | 0.00 | 3.50 | 0.00 | 0.00 | 6.70 | 0.00 | 1.40 | 2.80 | 2.90 | 5.60 | 0.00 |
| Growth Rate | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 97 | 7 | 106 | 15 | 20 | 28 | 17 | 1043 | 270 | 63 | 528 | 4 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 |
| Total 15-Minute Volume [veh/h] | 26 | 2 | 29 | 4 | 5 | 8 | 5 | 278 | 72 | 17 | 141 | 1 |
| Total Analysis Volume [veh/h] | 105 | 8 | 115 | 16 | 22 | 30 | 18 | 1111 | 288 | 67 | 562 | 4 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 70 | 0 | 0 | 70 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 32 | 32 | 32 | 32 | 48 | 48 | 48 | 48 | 48 | 48 |
| g / C, Green / Cycle | 0.35 | 0.35 | 0.35 | 0.35 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 |
| (v / s)_i Volume / Saturation Flow Rate | 0.08 | 0.08 | 0.01 | 0.03 | 0.02 | 0.38 | 0.39 | 0.18 | 0.16 | 0.16 |
| s, saturation flow rate [veh/h] | 1348 | 1631 | 1288 | 1724 | 858 | 1874 | 1743 | 381 | 1799 | 1795 |
| c, Capacity [veh/h] | 499 | 570 | 438 | 602 | 446 | 1011 | 941 | 162 | 971 | 968 |
| d1, Uniform Delay [s] | 23.19 | 20.61 | 23.74 | 19.65 | 15.12 | 15.49 | 15.63 | 33.63 | 11.32 | 11.32 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.12 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.96 | 0.87 | 0.16 | 0.28 | 0.04 | 1.00 | 1.19 | 1.68 | 0.16 | 0.17 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.21 | 0.22 | 0.04 | 0.09 | 0.04 | 0.71 | 0.72 | 0.41 | 0.29 | 0.29 |
| d, Delay for Lane Group [s/veh] | 24.15 | 21.48 | 23.90 | 19.93 | 15.16 | 16.49 | 16.82 | 35.32 | 11.49 | 11.49 |
| Lane Group LOS | C | C | C | B | B | B | B | D | B | B |
| Critical Lane Group | Yes | No | No | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 1.76 | 1.92 | 0.26 | 0.76 | 0.22 | 10.38 | 9.93 | 1.44 | 2.95 | 2.95 |
| 50th-Percentile Queue Length [ft] | 44.12 | 47.88 | 6.61 | 19.09 | 5.39 | 259.52 | 248.34 | 35.95 | 73.79 | 73.63 |
| 95th-Percentile Queue Length [veh] | 3.18 | 3.45 | 0.48 | 1.37 | 0.39 | 15.66 | 15.10 | 2.59 | 5.31 | 5.30 |
| 95th-Percentile Queue Length [ft] | 79.41 | 86.19 | 11.89 | 34.37 | 9.70 | 391.62 | 377.56 | 64.71 | 132.82 | 132.54 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 24.15 | 21.48 | 21.48 | 23.90 | 19.93 | 19.93 | 15.16 | 16.60 | 16.82 | 35.32 | 11.49 | 11.49 |
| Movement LOS | C | C | C | C | B | B | B | B | B | D | B | B |
| d_A, Approach Delay [s/veh] | 22.71 | | | 20.86 | | | 16.63 | | | 14.01 | | |
| Approach LOS | C | | | C | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 16.63 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.468 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 62: 59 - 27th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 427.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 3.769 |

**Intersection Setup**

| Name | 27th Avenue | | | 27th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | Yes | | | No | | |

**volumes**

| Name | 27th Avenue | | | 27th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 18 | 54 | 51 | 23 | 46 | 29 | 40 | 358 | 29 | 15 | 218 | 28 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 11.10 | 1.90 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.40 | 0.00 | 6.70 | 7.30 | 3.60 |
| Growth Rate | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 101 | 303 | 287 | 129 | 259 | 163 | 225 | 2012 | 163 | 84 | 1225 | 157 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 27 | 82 | 78 | 35 | 70 | 44 | 61 | 547 | 44 | 23 | 333 | 43 |
| Total Analysis Volume [veh/h] | 110 | 329 | 312 | 140 | 282 | 177 | 245 | 2187 | 177 | 91 | 1332 | 171 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 34 | 0 | 0 | 34 | 0 | 0 | 56 | 0 | 0 | 56 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | C | R | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 29 | 29 | 29 | 29 | 51 | 51 | 51 | 51 | 51 |
| g / C, Green / Cycle | 0.32 | 0.32 | 0.32 | 0.32 | 0.57 | 0.57 | 0.57 | 0.57 | 0.57 |
| (v / s)_i Volume / Saturation Flow Rate | 1.18 | 0.20 | 1.55 | 0.11 | 2.22 | 1.07 | 0.64 | 0.43 | 0.44 |
| s, saturation flow rate [veh/h] | 372 | 1583 | 272 | 1615 | 370 | 1676 | 143 | 1771 | 1702 |
| c, Capacity [veh/h] | 170 | 510 | 141 | 520 | 262 | 950 | 80 | 1003 | 964 |
| d1, Uniform Delay [s] | 32.40 | 25.75 | 34.80 | 23.22 | 32.35 | 19.50 | 45.00 | 14.81 | 14.99 |
| k, delay calibration | 0.50 | 0.15 | 0.50 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 730.77 | 1.66 | 916.89 | 0.38 | 970.84 | 401.67 | 142.63 | 5.35 | 5.92 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

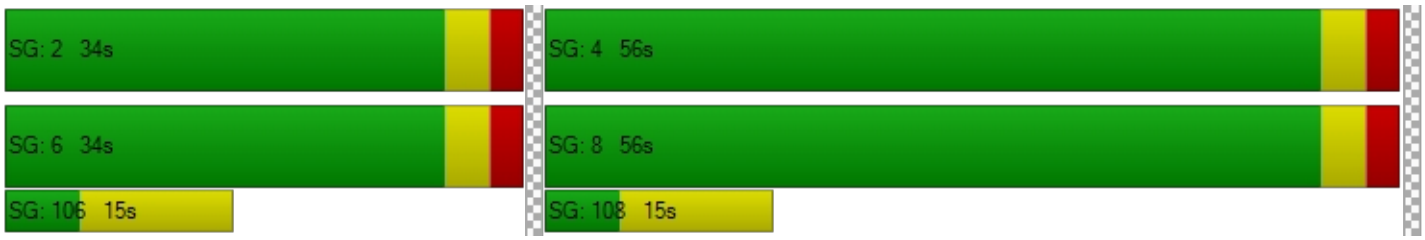
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 2.59 | 0.61 | 3.00 | 0.34 | 3.14 | 1.88 | 1.14 | 0.76 | 0.77 |
| d, Delay for Lane Group [s/veh] | 763.17 | 27.40 | 951.69 | 23.60 | 1003.20 | 421.17 | 187.63 | 20.16 | 20.91 |
| Lane Group LOS | F | C | F | C | F | F | F | C | C |
| Critical Lane Group | No | No | Yes | No | Yes | No | No | No | No |
| 50th-Percentile Queue Length [veh] | 38.21 | 5.70 | 38.99 | 2.85 | 76.33 | 123.38 | 4.94 | 12.09 | 12.06 |
| 50th-Percentile Queue Length [ft] | 955.21 | 142.45 | 974.81 | 71.27 | 1908.20 | 3084.49 | 123.47 | 302.16 | 301.43 |
| 95th-Percentile Queue Length [veh] | 65.37 | 9.61 | 67.03 | 5.13 | 132.81 | 198.91 | 8.89 | 17.79 | 17.75 |
| 95th-Percentile Queue Length [ft] | 1634.16 | 240.32 | 1675.69 | 128.28 | 3320.36 | 4972.65 | 222.24 | 444.70 | 443.80 |

**Movement, Approach, & Intersection Results**

| d_M, Delay for Movement [s/veh] | 763.17 | 763.17 | 27.40 | 951.69 | 951.69 | 23.60 | 1003.20 | 574.23 | 421.17 | 187.63 | 20.48 | 20.91 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement LOS | F | F | C | F | F | C | F | F | F | F | C | C |
| d_A, Approach Delay [s/veh] | 457.50 | | | 677.44 | | | 604.13 | | | 30.07 | | |
| Approach LOS | F | | | F | | | F | | | C | | |
| d_I, Intersection Delay [s/veh] | 427.42 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 3.769 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 64: 61 - Rouse Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 18.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.574 |

**Intersection Setup**

| Name | Rouse Avenue | | | Rouse Avenue | | | Oak Street | | | Birch Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 190.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Rouse Avenue | | | Rouse Avenue | | | Oak Street | | | Birch Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 119 | 315 | 0 | 0 | 317 | 94 | 139 | 4 | 194 | 2 | 1 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 10.10 | 3.20 | 0.00 | 0.00 | 4.40 | 5.30 | 2.20 | 0.00 | 3.60 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 180 | 476 | 0 | 0 | 479 | 142 | 210 | 6 | 293 | 3 | 2 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 48 | 127 | 0 | 0 | 128 | 38 | 57 | 2 | 80 | 1 | 1 | 0 |
| Total Analysis Volume [veh/h] | 192 | 507 | 0 | 0 | 510 | 151 | 228 | 7 | 318 | 3 | 2 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 8 | 60 | 0 | 0 | 52 | 0 | 0 | 35 | 35 | 0 | 35 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | | No | | | No | No | | No | |
| Maximum Recall | No | No | | | No | | | No | No | | No | |
| Pedestrian Recall | No | No | | | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | R | C | R | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 63 | 63 | 55 | 55 | 55 | 22 | 32 | 22 |
| g / C, Green / Cycle | 0.66 | 0.66 | 0.58 | 0.58 | 0.58 | 0.23 | 0.34 | 0.23 |
| (v / s)_i Volume / Saturation Flow Rate | 0.24 | 0.31 | 0.00 | 0.31 | 0.11 | 0.20 | 0.23 | 0.01 |
| s, saturation flow rate [veh/h] | 810 | 1657 | 816 | 1638 | 1380 | 1156 | 1403 | 445 |
| c, Capacity [veh/h] | 479 | 1096 | 385 | 946 | 797 | 344 | 475 | 164 |
| d1, Uniform Delay [s] | 9.40 | 7.84 | 0.00 | 12.32 | 9.52 | 35.73 | 26.89 | 29.29 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.17 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.49 | 1.40 | 0.00 | 2.20 | 0.53 | 3.83 | 7.33 | 0.07 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

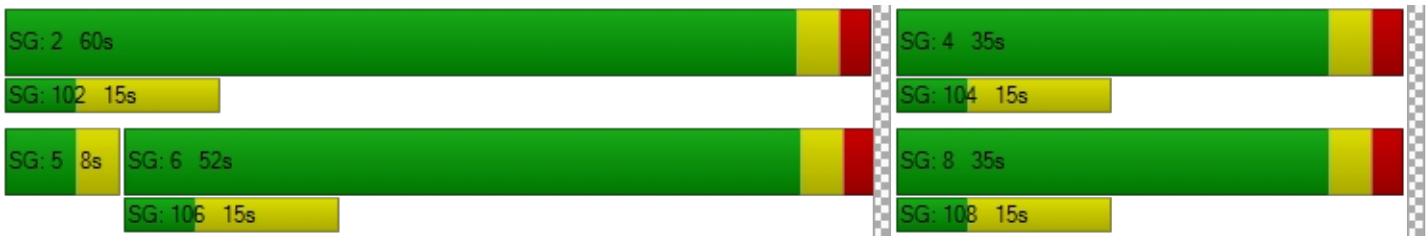
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.40 | 0.46 | 0.00 | 0.54 | 0.19 | 0.68 | 0.67 | 0.03 |
| d, Delay for Lane Group [s/veh] | 11.90 | 9.24 | 0.00 | 14.52 | 10.05 | 39.56 | 34.22 | 29.36 |
| Lane Group LOS | B | A | A | B | B | D | C | C |
| Critical Lane Group | Yes | No | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 1.67 | 4.86 | 0.00 | 6.72 | 1.52 | 5.53 | 6.95 | 0.09 |
| 50th-Percentile Queue Length [ft] | 41.76 | 121.50 | 0.00 | 167.95 | 38.05 | 138.35 | 173.78 | 2.26 |
| 95th-Percentile Queue Length [veh] | 3.01 | 8.48 | 0.00 | 10.97 | 2.74 | 9.39 | 11.27 | 0.16 |
| 95th-Percentile Queue Length [ft] | 75.16 | 211.88 | 0.00 | 274.22 | 68.50 | 234.79 | 281.87 | 4.06 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 11.90 | 9.24 | 9.24 | 0.00 | 14.52 | 10.05 | 39.56 | 39.56 | 34.22 | 29.36 | 29.36 | 29.36 |
| Movement LOS | B | A | A | A | B | B | D | D | C | C | C | C |
| d_A, Approach Delay [s/veh] | 9.97 | | | 13.50 | | | 36.49 | | | 29.36 | | |
| Approach LOS | A | | | B | | | D | | | C | | |
| d_I, Intersection Delay [s/veh] | 18.88 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.574 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 65: 62 - 19th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.796 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 350.00 | 100.00 | 300.00 | 350.00 | 100.00 | 100.00 | 150.00 | 100.00 | 150.00 | 135.00 | 100.00 | 135.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 34 | 360 | 322 | 349 | 252 | 21 | 24 | 26 | 7 | 135 | 24 | 260 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.90 | 0.80 | 0.90 | 2.30 | 4.00 | 9.50 | 4.20 | 7.70 | 0.00 | 4.40 | 0.00 | 0.40 |
| Growth Rate | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 61 | 641 | 573 | 621 | 449 | 37 | 43 | 46 | 12 | 240 | 43 | 463 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 16 | 167 | 149 | 162 | 117 | 10 | 12 | 13 | 3 | 63 | 11 | 121 |
| Total Analysis Volume [veh/h] | 64 | 669 | 598 | 648 | 469 | 39 | 47 | 50 | 13 | 250 | 45 | 483 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 135 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 69.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 11 | 63 | 0 | 37 | 89 | 0 | 0 | 35 | 0 | 0 | 35 | 35 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | No |
| Maximum Recall | No | No | | No | No | | | No | | | No | No |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 95 | 60 | 60 | 95 | 87 | 87 | 30 | 30 | 30 | 30 | 30 | 67 |
| g / C, Green / Cycle | 0.70 | 0.44 | 0.44 | 0.70 | 0.65 | 0.65 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.19 | 0.37 | 0.58 | 0.14 | 0.14 | 0.04 | 0.03 | 0.01 | 0.19 | 0.02 | 0.30 |
| s, saturation flow rate [veh/h] | 932 | 3589 | 1601 | 1115 | 1827 | 1778 | 1327 | 1764 | 1615 | 1318 | 1900 | 1609 |
| c, Capacity [veh/h] | 682 | 1588 | 708 | 766 | 1182 | 1150 | 303 | 392 | 359 | 297 | 422 | 802 |
| d1, Uniform Delay [s] | 6.42 | 25.80 | 33.51 | 14.89 | 9.79 | 9.79 | 46.08 | 42.02 | 41.16 | 55.35 | 41.82 | 24.27 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.32 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.27 | 0.82 | 11.82 | 11.12 | 0.42 | 0.44 | 0.23 | 0.14 | 0.04 | 16.93 | 0.11 | 3.34 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.09 | 0.42 | 0.84 | 0.85 | 0.22 | 0.22 | 0.15 | 0.13 | 0.04 | 0.84 | 0.11 | 0.60 |
| d, Delay for Lane Group [s/veh] | 6.69 | 26.62 | 45.32 | 26.01 | 10.21 | 10.23 | 46.31 | 42.17 | 41.21 | 72.28 | 41.93 | 27.62 |
| Lane Group LOS | A | C | D | C | B | B | D | D | D | E | D | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.60 | 7.59 | 19.53 | 10.78 | 3.24 | 3.16 | 1.36 | 1.37 | 0.35 | 9.94 | 1.22 | 11.74 |
| 50th-Percentile Queue Length [ft] | 14.95 | 189.81 | 488.30 | 269.46 | 80.88 | 78.90 | 34.05 | 34.21 | 8.71 | 248.45 | 30.61 | 293.48 |
| 95th-Percentile Queue Length [veh] | 1.08 | 12.11 | 26.78 | 16.16 | 5.82 | 5.68 | 2.45 | 2.46 | 0.63 | 15.11 | 2.20 | 17.36 |
| 95th-Percentile Queue Length [ft] | 26.92 | 302.78 | 669.50 | 404.07 | 145.59 | 142.02 | 61.29 | 61.57 | 15.68 | 377.71 | 55.09 | 433.95 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 6.69 | 26.62 | 45.32 | 26.01 | 10.22 | 10.23 | 46.31 | 42.17 | 41.21 | 72.28 | 41.93 | 27.62 |
| Movement LOS | A | C | D | C | B | B | D | D | D | E | D | C |
| d_A, Approach Delay [s/veh] | 34.07 | | | 19.07 | | | 43.83 | | | 42.80 | | |
| Approach LOS | C | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 31.26 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.796 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 66: 63 - Willson Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 28.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.698 |

**Intersection Setup**

| Name | Kagy Boulevard | | | Kagy Boulevard | | | 3rd Avenue | | | Willson Avenue | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Eastbound | | | Westbound | | | Northeastbound | | | Southwestbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Pocket Length [ft] | 170.00 | 100.00 | 100.00 | 325.00 | 100.00 | 100.00 | 350.00 | 100.00 | 110.00 | 160.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Kagy Boulevard | | | Kagy Boulevard | | | 3rd Avenue | | | Willson Avenue | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 390 | 331 | 107 | 80 | 117 | 73 | 85 | 283 | 94 | 90 | 405 | 152 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.40 | 2.10 | 0.90 | 3.80 | 3.40 | 0.00 | 1.20 | 0.70 | 1.10 | 3.30 | 1.20 | 1.30 |
| Growth Rate | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 441 | 374 | 121 | 90 | 132 | 82 | 96 | 320 | 106 | 102 | 458 | 172 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 |
| Total 15-Minute Volume [veh/h] | 117 | 100 | 32 | 24 | 35 | 22 | 26 | 85 | 28 | 27 | 122 | 46 |
| Total Analysis Volume [veh/h] | 470 | 398 | 129 | 96 | 141 | 87 | 102 | 341 | 113 | 109 | 488 | 183 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 3 | 8 | 8 | 7 | 4 | 4 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | 8 | | | 1,4 | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 8 | 20 | 20 | 8 | 20 | 20 | 8 | 43 | 0 | 19 | 54 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 36 | 28 | 28 | 36 | 15 | 25 | 44 | 36 | 36 | 44 | 36 |
| g / C, Green / Cycle | 0.40 | 0.32 | 0.32 | 0.40 | 0.17 | 0.28 | 0.49 | 0.39 | 0.39 | 0.49 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.31 | 0.21 | 0.08 | 0.09 | 0.08 | 0.05 | 0.11 | 0.18 | 0.07 | 0.10 | 0.37 |
| s, saturation flow rate [veh/h] | 1531 | 1861 | 1601 | 1090 | 1838 | 1615 | 900 | 1887 | 1597 | 1127 | 1791 |
| c, Capacity [veh/h] | 655 | 587 | 505 | 377 | 309 | 456 | 282 | 745 | 631 | 531 | 720 |
| d1, Uniform Delay [s] | 22.19 | 26.81 | 22.93 | 18.76 | 33.71 | 24.48 | 19.21 | 20.12 | 17.74 | 13.53 | 25.71 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.12 | 0.22 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 6.62 | 6.18 | 1.22 | 1.62 | 4.78 | 0.20 | 0.78 | 0.44 | 0.13 | 0.21 | 11.02 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.72 | 0.68 | 0.26 | 0.25 | 0.46 | 0.19 | 0.36 | 0.46 | 0.18 | 0.21 | 0.93 |
| d, Delay for Lane Group [s/veh] | 28.80 | 33.00 | 24.14 | 20.38 | 38.49 | 24.68 | 19.99 | 20.56 | 17.87 | 13.74 | 36.73 |
| Lane Group LOS | C | C | C | C | D | C | B | C | B | B | D |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 8.90 | 8.21 | 2.17 | 1.40 | 3.15 | 1.41 | 1.14 | 5.19 | 1.51 | 1.19 | 15.15 |
| 50th-Percentile Queue Length [ft] | 222.52 | 205.27 | 54.17 | 34.89 | 78.71 | 35.27 | 28.42 | 129.76 | 37.83 | 29.66 | 378.64 |
| 95th-Percentile Queue Length [veh] | 13.79 | 12.91 | 3.90 | 2.51 | 5.67 | 2.54 | 2.05 | 8.93 | 2.72 | 2.14 | 21.53 |
| 95th-Percentile Queue Length [ft] | 344.84 | 322.75 | 97.51 | 62.79 | 141.69 | 63.49 | 51.16 | 223.17 | 68.10 | 53.39 | 538.20 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 28.80 | 33.00 | 24.14 | 20.38 | 38.49 | 24.68 | 19.99 | 20.56 | 17.87 | 13.74 | 36.73 | 36.73 |
| Movement LOS | C | C | C | C | D | C | B | C | B | B | D | D |
| d_A, Approach Delay [s/veh] | 29.87 | | | 29.41 | | | 19.91 | | | 33.52 | | |
| Approach LOS | C | | | C | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 28.80 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.698 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



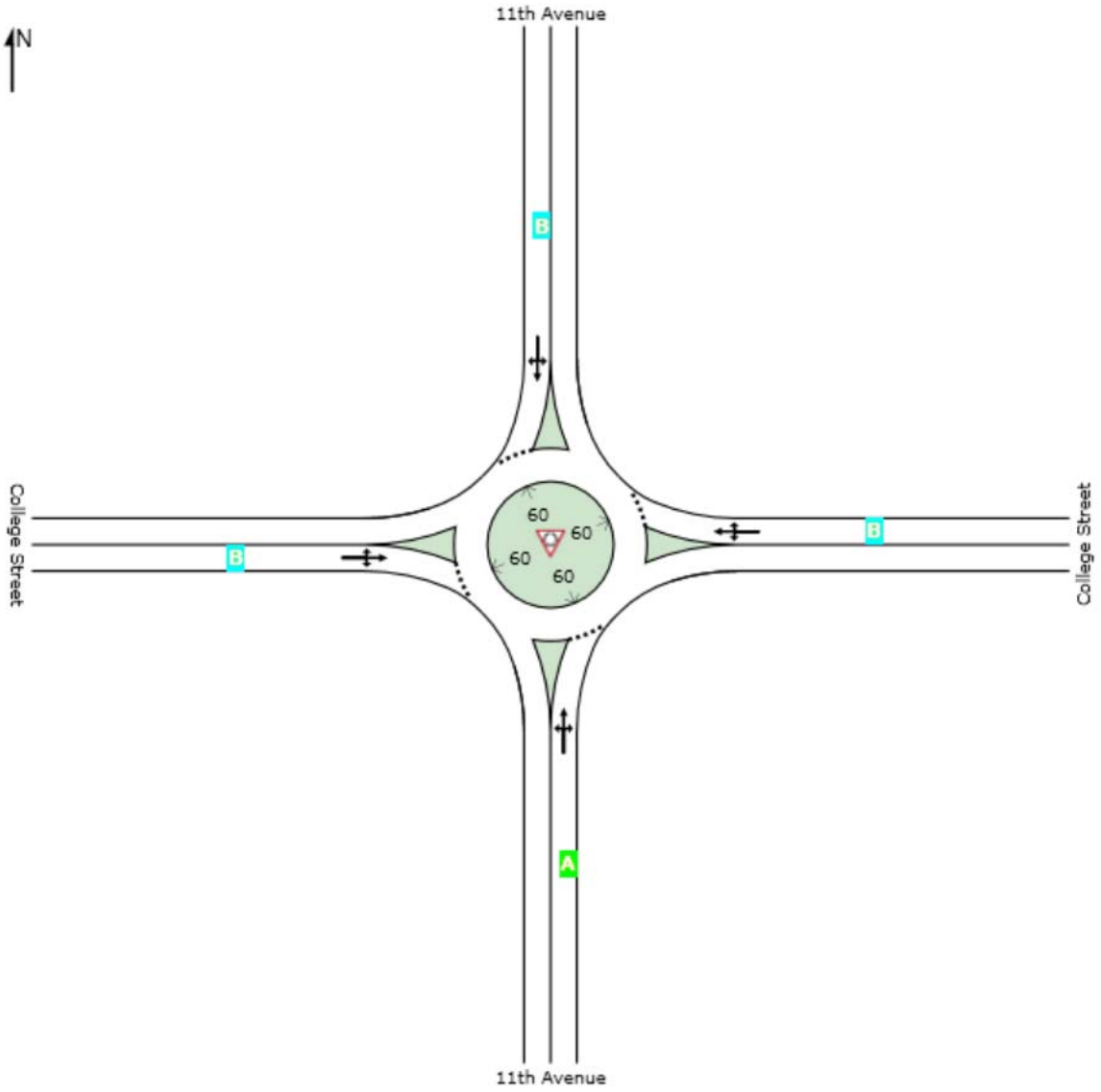
# LEVEL OF SERVICE

## Site: 11th Avenue/College Street - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | South | East | North | West | Intersection |
|---|---|---|---|---|---|
| LOS | A | B | B | B | B |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

# MOVEMENT SUMMARY

## Site: 11th Avenue/College Street - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: 11th Avenue | | | | | | | | | | | |
| 3 | L2 | 91 | 0.0 | 0.288 | 7.4 | LOS A | 1.0 | 26.2 | 0.50 | 0.49 | 23.2 |
| 8 | T1 | 116 | 1.3 | 0.288 | 7.4 | LOS A | 1.0 | 26.2 | 0.50 | 0.49 | 23.0 |
| 18 | R2 | 39 | 0.0 | 0.288 | 7.4 | LOS A | 1.0 | 26.2 | 0.50 | 0.49 | 22.6 |
| Approach | | 245 | 0.6 | 0.288 | 7.4 | LOS A | 1.0 | 26.2 | 0.50 | 0.49 | 23.0 |
| East: College Street | | | | | | | | | | | |
| 1 | L2 | 71 | 0.0 | 0.531 | 10.1 | LOS B | 2.9 | 72.6 | 0.52 | 0.46 | 22.8 |
| 6 | T1 | 282 | 0.5 | 0.531 | 10.1 | LOS B | 2.9 | 72.6 | 0.52 | 0.46 | 22.6 |
| 16 | R2 | 190 | 0.0 | 0.531 | 10.1 | LOS B | 2.9 | 72.6 | 0.52 | 0.46 | 22.2 |
| Approach | | 544 | 0.3 | 0.531 | 10.1 | LOS B | 2.9 | 72.6 | 0.52 | 0.46 | 22.5 |
| North: 11th Avenue | | | | | | | | | | | |
| 7 | L2 | 110 | 0.0 | 0.601 | 12.8 | LOS B | 3.7 | 92.8 | 0.65 | 0.72 | 22.1 |
| 4 | T1 | 242 | 0.6 | 0.601 | 12.8 | LOS B | 3.7 | 92.8 | 0.65 | 0.72 | 21.9 |
| 14 | R2 | 193 | 0.0 | 0.601 | 12.8 | LOS B | 3.7 | 92.8 | 0.65 | 0.72 | 21.5 |
| Approach | | 545 | 0.3 | 0.601 | 12.8 | LOS B | 3.7 | 92.8 | 0.65 | 0.72 | 21.8 |
| West: College Street | | | | | | | | | | | |
| 5 | L2 | 82 | 0.0 | 0.583 | 12.2 | LOS B | 3.4 | 86.7 | 0.62 | 0.67 | 22.3 |
| 2 | T1 | 327 | 1.8 | 0.583 | 12.2 | LOS B | 3.4 | 86.7 | 0.62 | 0.67 | 22.1 |
| 12 | R2 | 123 | 1.2 | 0.583 | 12.2 | LOS B | 3.4 | 86.7 | 0.62 | 0.67 | 21.7 |
| Approach | | 532 | 1.4 | 0.583 | 12.2 | LOS B | 3.4 | 86.7 | 0.62 | 0.67 | 22.0 |
| All Vehicles | | 1865 | 0.6 | 0.601 | 11.1 | LOS B | 3.7 | 92.8 | 0.58 | 0.60 | 22.2 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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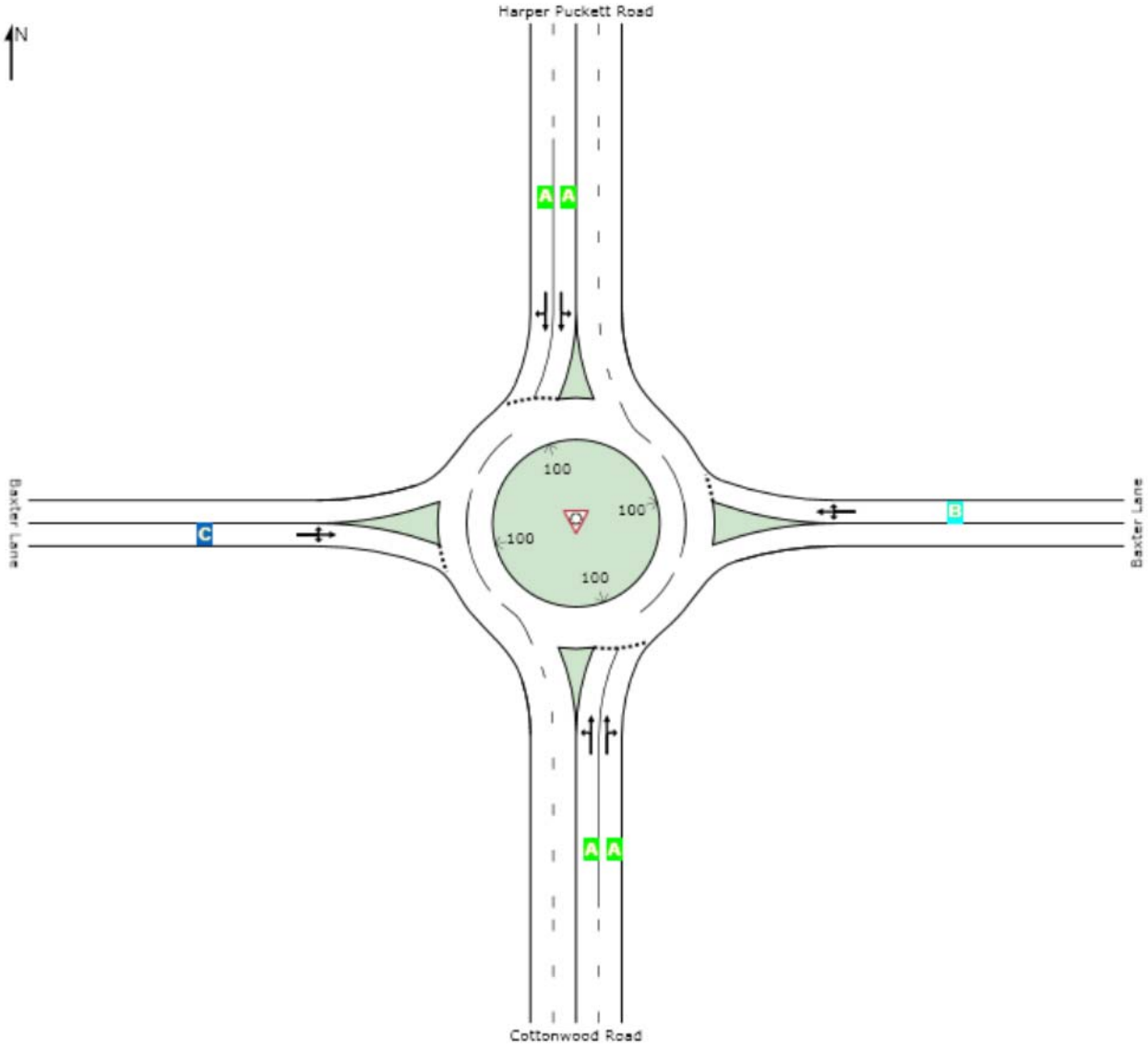
# LEVEL OF SERVICE

## Site: Harper Puckett Road/Baxter Lane - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | South | East | North | West | Intersection |
|---|---|---|---|---|---|
| LOS | A | B | A | C | B |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

# MOVEMENT SUMMARY

## Site: Harper Puckett Road/Baxter Lane - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Cottonwood Road | | | | | | | | | | | |
| 3 | L2 | 191 | 0.0 | 0.320 | 8.8 | LOS A | 1.2 | 29.1 | 0.57 | 0.58 | 31.5 |
| 8 | T1 | 41 | 0.0 | 0.320 | 8.8 | LOS A | 1.2 | 29.1 | 0.57 | 0.58 | 31.3 |
| 18 | R2 | 270 | 0.0 | 0.370 | 9.7 | LOS A | 1.5 | 36.3 | 0.59 | 0.61 | 31.8 |
| Approach | | 502 | 0.0 | 0.370 | 9.3 | LOS A | 1.5 | 36.3 | 0.58 | 0.60 | 31.6 |
| East: Baxter Lane | | | | | | | | | | | |
| 1 | L2 | 185 | 0.0 | 0.621 | 12.2 | LOS B | 3.8 | 96.7 | 0.54 | 0.49 | 31.2 |
| 6 | T1 | 398 | 3.7 | 0.621 | 12.2 | LOS B | 3.8 | 96.7 | 0.54 | 0.49 | 31.0 |
| 16 | R2 | 52 | 7.1 | 0.621 | 12.2 | LOS B | 3.8 | 96.7 | 0.54 | 0.49 | 30.1 |
| Approach | | 634 | 2.9 | 0.621 | 12.2 | LOS B | 3.8 | 96.7 | 0.54 | 0.49 | 31.0 |
| North: Harper Puckett Road | | | | | | | | | | | |
| 7 | L2 | 219 | 5.3 | 0.331 | 9.8 | LOS A | 1.1 | 29.8 | 0.58 | 0.60 | 30.6 |
| 4 | T1 | 114 | 0.0 | 0.263 | 8.3 | LOS A | 0.9 | 22.4 | 0.56 | 0.56 | 33.6 |
| 14 | R2 | 69 | 0.0 | 0.263 | 8.3 | LOS A | 0.9 | 22.4 | 0.56 | 0.56 | 32.5 |
| Approach | | 402 | 2.9 | 0.331 | 9.1 | LOS A | 1.1 | 29.8 | 0.57 | 0.58 | 31.7 |
| West: Baxter Lane | | | | | | | | | | | |
| 5 | L2 | 48 | 0.0 | 0.803 | 22.7 | LOS C | 7.1 | 179.3 | 0.83 | 0.97 | 27.7 |
| 2 | T1 | 446 | 1.7 | 0.803 | 22.7 | LOS C | 7.1 | 179.3 | 0.83 | 0.97 | 27.6 |
| 12 | R2 | 203 | 0.0 | 0.803 | 22.7 | LOS C | 7.1 | 179.3 | 0.83 | 0.97 | 26.9 |
| Approach | | 697 | 1.1 | 0.803 | 22.7 | LOS C | 7.1 | 179.3 | 0.83 | 0.97 | 27.4 |
| All Vehicles | | 2235 | 1.7 | 0.803 | 14.3 | LOS B | 7.1 | 179.3 | 0.65 | 0.68 | 30.0 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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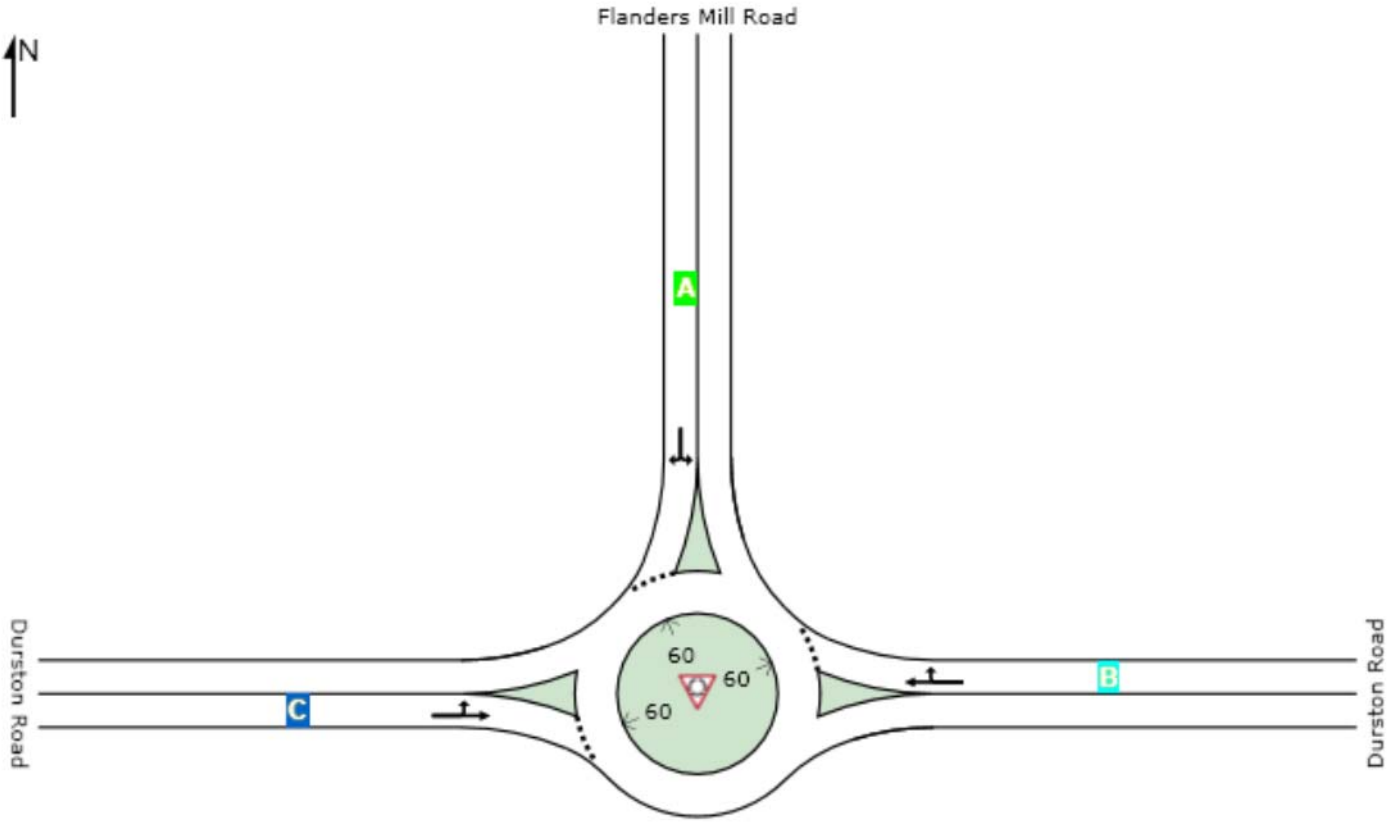
# LEVEL OF SERVICE

## Site: Flanders Mill Road/Durston Road - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | East | North | West | Intersection |
|---|---|---|---|---|
| LOS | B | A | C | B |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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# MOVEMENT SUMMARY

## Site: Flanders Mill Road/Durston Road - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Durston Road | | | | | | | | | | | |
| 6 | T1 | 600 | 2.3 | 0.605 | 11.1 | LOS B | 3.7 | 93.9 | 0.46 | 0.32 | 22.5 |
| 16 | R2 | 71 | 0.0 | 0.605 | 11.1 | LOS B | 3.7 | 93.9 | 0.46 | 0.32 | 22.1 |
| Approach | | 671 | 2.1 | 0.605 | 11.1 | LOS B | 3.7 | 93.9 | 0.46 | 0.32 | 22.5 |
| North: Flanders Mill Road | | | | | | | | | | | |
| 7 | L2 | 117 | 1.5 | 0.386 | 9.6 | LOS A | 1.5 | 38.6 | 0.56 | 0.59 | 22.6 |
| 14 | R2 | 178 | 6.1 | 0.386 | 9.6 | LOS A | 1.5 | 38.6 | 0.56 | 0.59 | 22.0 |
| Approach | | 295 | 4.3 | 0.386 | 9.6 | LOS A | 1.5 | 38.6 | 0.56 | 0.59 | 22.2 |
| West: Durston Road | | | | | | | | | | | |
| 5 | L2 | 163 | 1.1 | 0.790 | 17.6 | LOS C | 8.1 | 205.3 | 0.62 | 0.40 | 21.2 |
| 2 | T1 | 747 | 1.9 | 0.790 | 17.6 | LOS C | 8.1 | 205.3 | 0.62 | 0.40 | 21.0 |
| Approach | | 910 | 1.8 | 0.790 | 17.6 | LOS C | 8.1 | 205.3 | 0.62 | 0.40 | 21.0 |
| All Vehicles | | 1876 | 2.3 | 0.790 | 14.0 | LOS B | 8.1 | 205.3 | 0.55 | 0.40 | 21.7 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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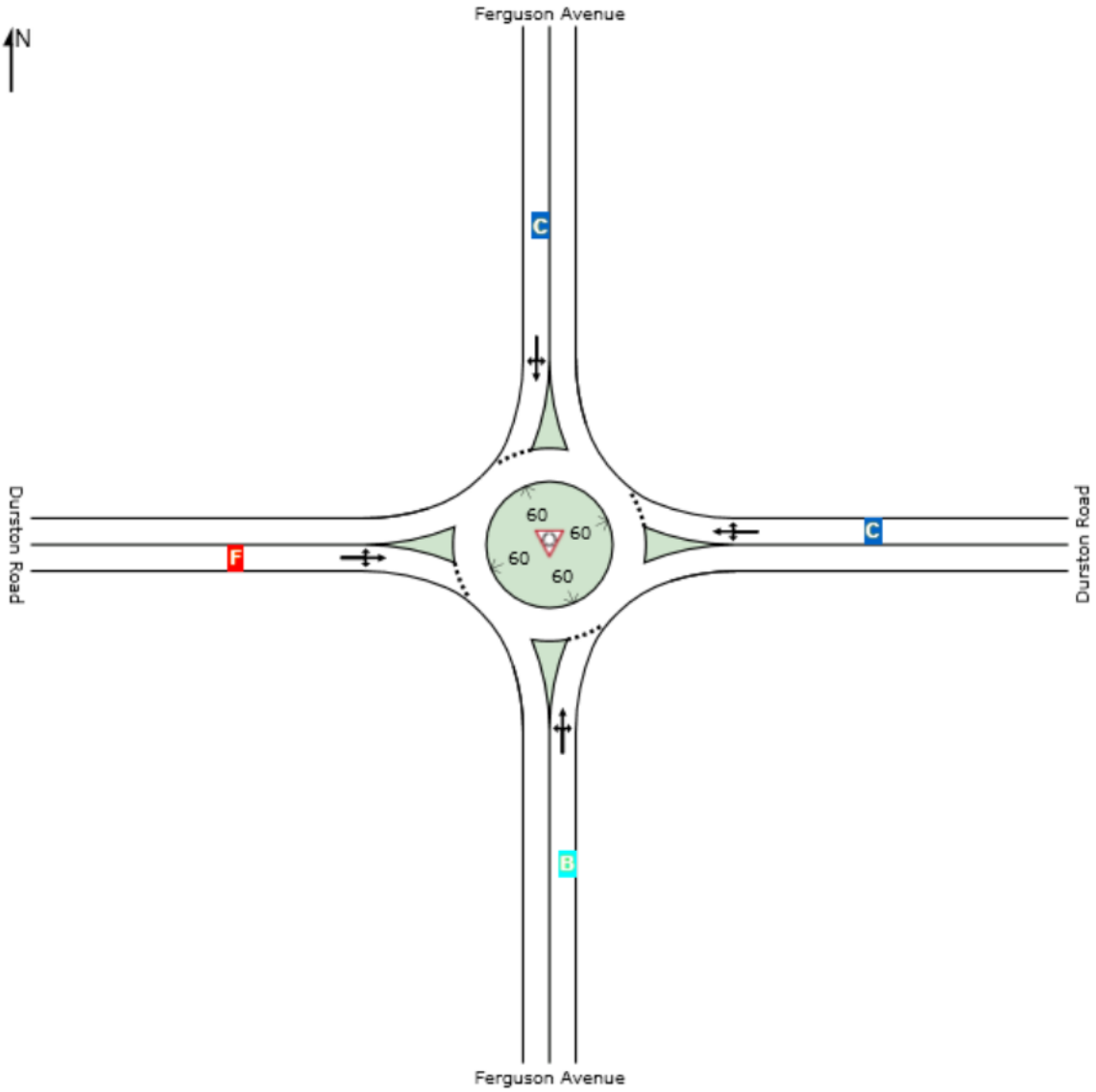
# LEVEL OF SERVICE

## Site: Ferguson Avenue/Durston Road - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | South | East | North | West | Intersection |
|---|---|---|---|---|---|
| LOS | B | C | C | F | E |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

# MOVEMENT SUMMARY

## Site: Ferguson Avenue/Durston Road - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ferguson Avenue | | | | | | | | | | | |
| 3 | L2 | 133 | 0.0 | 0.587 | 13.8 | LOS B | 3.3 | 81.6 | 0.68 | 0.75 | 27.4 |
| 8 | T1 | 223 | 0.9 | 0.587 | 13.8 | LOS B | 3.3 | 81.6 | 0.68 | 0.75 | 27.4 |
| 18 | R2 | 104 | 0.0 | 0.587 | 13.8 | LOS B | 3.3 | 81.6 | 0.68 | 0.75 | 26.9 |
| Approach | | 459 | 0.4 | 0.587 | 13.8 | LOS B | 3.3 | 81.6 | 0.68 | 0.75 | 27.3 |
| East: Durston Road | | | | | | | | | | | |
| 1 | L2 | 145 | 0.0 | 0.697 | 18.1 | LOS C | 4.7 | 117.9 | 0.76 | 0.88 | 26.1 |
| 6 | T1 | 387 | 1.0 | 0.697 | 18.1 | LOS C | 4.7 | 117.9 | 0.76 | 0.88 | 26.1 |
| 16 | R2 | 8 | 0.0 | 0.697 | 18.1 | LOS C | 4.7 | 117.9 | 0.76 | 0.88 | 25.6 |
| Approach | | 539 | 0.7 | 0.697 | 18.1 | LOS C | 4.7 | 117.9 | 0.76 | 0.88 | 26.0 |
| North: Ferguson Avenue | | | | | | | | | | | |
| 7 | L2 | 4 | 0.0 | 0.753 | 21.8 | LOS C | 5.4 | 138.8 | 0.80 | 0.95 | 25.3 |
| 4 | T1 | 338 | 3.6 | 0.753 | 21.8 | LOS C | 5.4 | 138.8 | 0.80 | 0.95 | 25.2 |
| 14 | R2 | 218 | 1.8 | 0.753 | 21.8 | LOS C | 5.4 | 138.8 | 0.80 | 0.95 | 24.8 |
| Approach | | 560 | 2.9 | 0.753 | 21.8 | LOS C | 5.4 | 138.8 | 0.80 | 0.95 | 25.1 |
| West: Durston Road | | | | | | | | | | | |
| 5 | L2 | 301 | 3.2 | 1.081 | 76.2 | LOS F | 39.9 | 1007.9 | 1.00 | 2.45 | 15.5 |
| 2 | T1 | 369 | 0.0 | 1.081 | 76.2 | LOS F | 39.9 | 1007.9 | 1.00 | 2.45 | 15.6 |
| 12 | R2 | 260 | 1.5 | 1.081 | 76.2 | LOS F | 39.9 | 1007.9 | 1.00 | 2.45 | 15.4 |
| Approach | | 930 | 1.5 | 1.081 | 76.2 | LOS F | 39.9 | 1007.9 | 1.00 | 2.45 | 15.5 |
| All Vehicles | | 2488 | 1.4 | 1.081 | 39.9 | LOS E | 39.9 | 1007.9 | 0.84 | 1.46 | 20.8 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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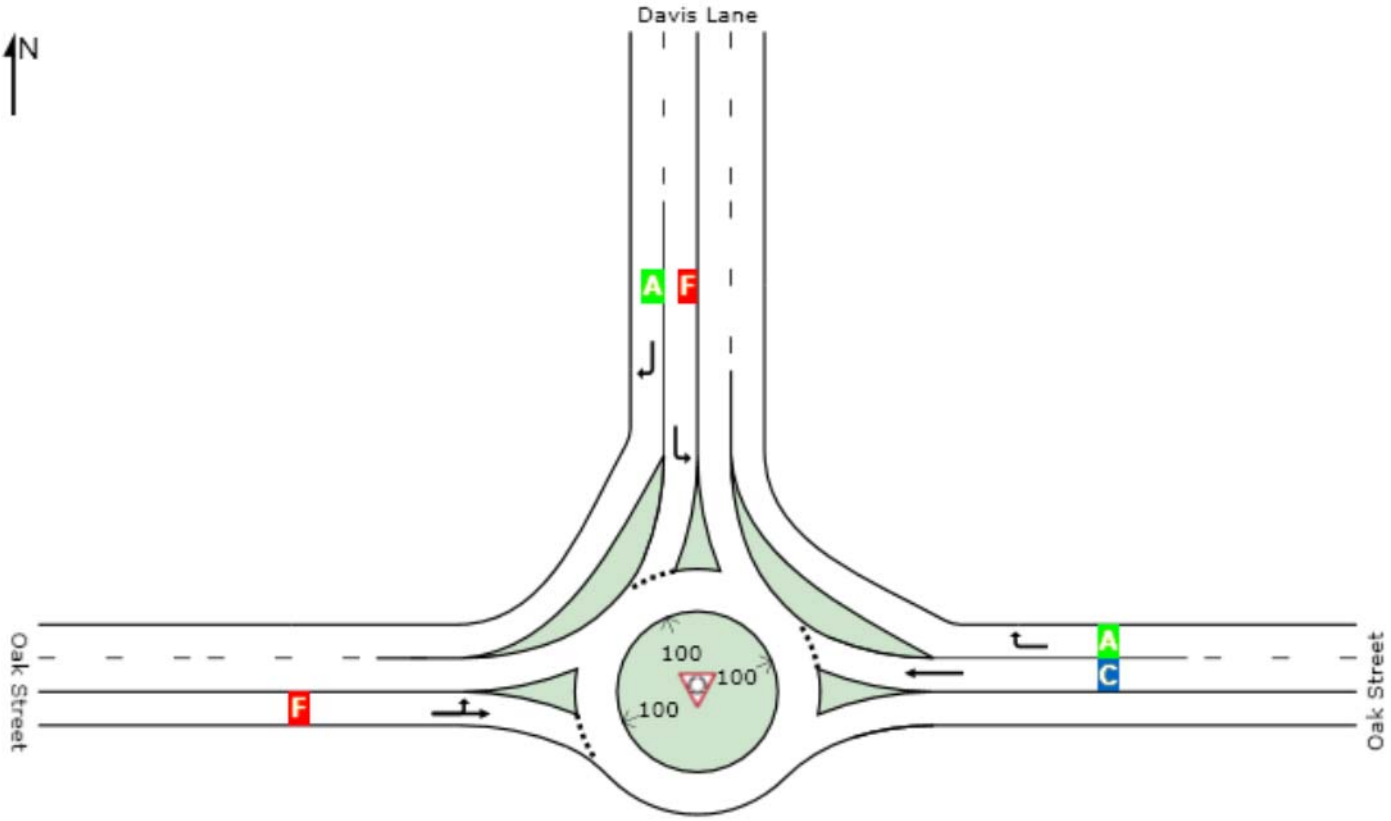
# LEVEL OF SERVICE

## Site: Davis Lane / Oak Street - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | East | North | West | Intersection |
|---|---|---|---|---|
| LOS | B | E | F | F |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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# MOVEMENT SUMMARY

## Site: Davis Lane / Oak Street - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Oak Street | | | | | | | | | | | |
| 6 | T1 | 827 | 5.8 | 0.843 | 23.9 | LOS C | 9.8 | 257.2 | 0.81 | 0.84 | 25.4 |
| 16 | R2 | 587 | 5.7 | 0.370 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 33.7 |
| Approach | | 1414 | 5.8 | 0.843 | 14.0 | LOS B | 9.8 | 257.2 | 0.48 | 0.49 | 28.3 |
| North: Davis Lane | | | | | | | | | | | |
| 7 | L2 | 721 | 1.3 | 1.123 | 98.1 | LOS F | 36.3 | 917.7 | 1.00 | 2.86 | 13.7 |
| 14 | R2 | 750 | 4.5 | 0.468 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 33.6 |
| Approach | | 1472 | 2.9 | 1.123 | 48.1 | LOS E | 36.3 | 917.7 | 0.49 | 1.40 | 19.5 |
| West: Oak Street | | | | | | | | | | | |
| 5 | L2 | 654 | 6.6 | 2.537 | 709.5 | LOS F | 376.9 | 9707.7 | 1.00 | 9.87 | 3.0 |
| 2 | T1 | 1241 | 2.3 | 2.537 | 709.5 | LOS F | 376.9 | 9707.7 | 1.00 | 9.87 | 3.0 |
| Approach | | 1895 | 3.8 | 2.537 | 709.5 | LOS F | 376.9 | 9707.7 | 1.00 | 9.87 | 3.0 |
| All Vehicles | | 4780 | 4.1 | 2.537 | 300.2 | LOS F | 376.9 | 9707.7 | 0.69 | 4.49 | 6.2 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Bozeman TMP

Vistro File: F:\...\BozemanTMP_LOS_+Future.vistro
Report File: F:\...\Projected PM.pdf

Scenario 4: Projected - PM
4/1/2016

**Intersection Analysis Summary**

| ID | Intersection Name | Control Type | Method | Worst Mvmt | V/C | Delay (s/veh) | LOS |
|---|---|---|---|---|---|---|---|
| 1 | 01 - Ferguson Avenue / Babcock Street | Two-way stop | HCM 2010 | EB Thru | 0.798 | 10,000.0 | F |
| 2 | 02 - Fowler Avenue / Babcock Street | Two-way stop | HCM 2010 | NB Left | 0.761 | 83.6 | F |
| 3 | 03 - Ferguson Avenue / Huffine Lane | Signalized | HCM 2010 | SB Left | 0.763 | 27.7 | C |
| 4 | 04 - Fowler Avenue / Huffine Lane | Signalized | HCM 2010 | EB Left | 0.923 | 43.5 | D |
| 5 | 05 - 19th Avenue / Garfield Street | Signalized | HCM 2010 | EB Right | 1.070 | 118.0 | F |
| 6 | 06 - 19th Avenue / Stucky Road | Signalized | HCM 2010 | NB Left | 0.777 | 27.8 | C |
| 7 | 07 - 19th Avenue / Goldenstein Lane | Two-way stop | HCM 2010 | WB Left | 0.202 | 28.6 | D |
| 8 | 08 - 7th Avenue / Griffin Drive | Signalized | HCM 2010 | SB Left | 1.080 | 80.0 | F |
| 9 | 09 - Manley Road / Griffin Drive | Two-way stop | HCM 2010 | SB Left | 0.662 | 67.5 | F |
| 10 | 10 - Rouse Avenue / Griffin Drive | Signalized | HCM 2010 | EB Left | 0.463 | 15.1 | B |
| 11 | 11 - Story Mill Road / Bridger Drive | Two-way stop | HCM 2010 | NB Left | 0.082 | 34.1 | D |
| 12 | 12 - Wilson Avenue / Peach Street | Two-way stop | HCM 2010 | NB Left | 0.530 | 41.8 | E |
| 13 | 13 - Rouse Avenue / Peach Street | Signalized | HCM 2010 | EB Left | 0.668 | 20.6 | C |
| 14 | 14 - Willson Avenue / Mendenhall Street | Signalized | HCM 2010 | WB Right | 0.520 | 18.3 | B |
| 15 | 15 - Willson Avenue / Babcock Street | Signalized | HCM 2010 | EB Right | 0.439 | 13.6 | B |
| 16 | 16 - Broadway Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.759 | 17.5 | B |
| 17 | 17 - Highland Boulevard / Main Street | Signalized | HCM 2010 | NEB Left | 0.890 | 117.2 | F |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18 | 18 - Haggerty Lane / Main Street | Two-way stop | HCM 2010 | NEB Thru | 0.000 | 3,131.6 | F |
| 19 | 19 - Willson Avenue / College Street | Two-way stop | HCM 2010 | WB Left | 0.000 | 105.4 | F |
| 20 | 20 - Highland Boulevard / Ellis Street | Two-way stop | HCM 2010 | EB Left | 5.168 | 2,083.4 | F |
| 21 | 21 - Sourdough Road / Kagy Boulevard | Two-way stop | HCM 2010 | SEB Thru | 1.630 | 10,000.0 | F |
| 22 | 22 - Highland Boulevard / Kagy Boulevard | Two-way stop | HCM 2010 | NB Left | 0.833 | 1,392.0 | F |
| 23 | 23 - Wagon Wheel Road / 3rd Avenue | All-way stop | HCM 2010 | EB Left | | 9.1 | A |
| 27 | 25 - 11th Avenue / Grant Street | All-way stop | HCM 2010 | NB Thru | | 234.6 | F |
| 28 | 26 - 11th Avenue / Lincoln Street | All-way stop | HCM 2010 | NB Thru | | 103.2 | F |
| 29 | 27 - 11th Avenue / Kagy Boulevard | Signalized | HCM 2010 | SB Left | 1.338 | 239.0 | F |
| 30 | 28 - 8th Avenue / College Street | All-way stop | HCM 2010 | EB Thru | | 99.1 | F |
| 31 | 29 - 7th Avenue / Grant Street | All-way stop | HCM 2010 | EB Thru | | 123.0 | F |
| 32 | 30 - 7th Avenue / Kagy Boulevard | Signalized | HCM 2010 | SB Right | 0.561 | 10.7 | B |
| 33 | 31 - Valley Center Spur / Frontage Road | Two-way stop | HCM 2010 | NEB Left | 0.302 | 20.4 | C |
| 34 | 32 - Valley Center Spur / Valley Center Road | Two-way stop | HCM 2010 | SB Left | 1.908 | 500.3 | F |
| 35 | 33 - Nelson Road / Frontage Road | Two-way stop | HCM 2010 | SWB Left | 0.070 | 22.2 | C |
| 36 | 34 - 19th Avenue / I-90 EB Ramp | Signalized | HCM 2010 | SEB Right | 1.353 | 228.9 | F |
| 37 | 35 - 19th Avenue / I-90 WB Ramp | Signalized | HCM 2010 | NWB Left | 0.876 | 69.4 | E |
| 38 | 36 - 19th Avenue / Tschache Way | Signalized | HCM 2010 | EB Left | 0.721 | 31.7 | C |
| 39 | 37 - 19th Avenue / Oak Street | Signalized | HCM 2010 | SB Left | 1.011 | 82.8 | F |
| 40 | 38 - 19th Avenue / Durston Road | Signalized | HCM 2010 | NB Left | 0.831 | 54.0 | D |
| 41 | 39 - 7th Avenue / Durston Road / Peach Street | Signalized | HCM 2010 | EB Thru | 0.758 | 52.7 | D |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 42 | 40 - 19th Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.879 | 63.2 | E |
| 43 | 41 - 7th Avenue / Main Street | Signalized | HCM 2010 | SB Left | 0.608 | 19.7 | B |
| 44 | 42 - 19th Avenue / Babcock Street | Signalized | HCM 2010 | NB Left | 0.542 | 35.5 | D |
| 45 | 43 - 19th Avenue / Koch Street | Signalized | HCM 2010 | WB Thru | 0.627 | 16.3 | B |
| 46 | 44 - 19th Avenue / College Street | Signalized | HCM 2010 | WB Thru | 0.768 | 37.8 | D |
| 47 | 45 - 19th Avenue / Graf Street | Signalized | HCM 2010 | WB Left | 0.708 | 22.7 | C |
| 49 | 47 - Flanders Mill Road / Baxter Lane | Two-way stop | HCM 2010 | NB Left | 0.417 | 31.6 | D |
| 50 | 48 - Davis Lane / Baxter Lane | Signalized | HCM 2010 | EB Left | 0.399 | 14.2 | B |
| 51 | 49 - Laurel Parkway / Durston Road | Signalized | HCM 2010 | SB Left | 0.539 | 13.7 | B |
| 52 | 50 - Cottonwood Road / Durston Road | Signalized | HCM 2010 | NB Right | 0.730 | 70.2 | E |
| 55 | 53 - Fowler Avenue / Durston Road | Two-way stop | HCM 2010 | NB Left | 0.071 | 43.7 | E |
| 56 | 54 - Cottonwood Road / Babcock Street | Signalized | HCM 2010 | EB Left | 0.960 | 52.7 | D |
| 58 | 55 - 19th Avenue / Baxter Lane | Signalized | HCM 2010 | SB Left | 0.999 | 69.9 | E |
| 59 | 56 - 7th Avenue / Baxter Lane | Two-way stop | HCM 2010 | EB Right | 1.350 | 206.3 | F |
| 60 | 57 - 7th Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 0.851 | 39.7 | D |
| 61 | 58 - 15th Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 0.698 | 22.5 | C |
| 62 | 59 - 27th Avenue / Oak Street | Signalized | HCM 2010 | WB Left | 65.597 | 321.3 | F |
| 64 | 61 - Rouse Avenue / Oak Street | Signalized | HCM 2010 | EB Left | 0.649 | 16.9 | B |
| 65 | 62 - 19th Avenue / Kagy Boulevard | Signalized | HCM 2010 | NB Right | 0.915 | 42.5 | D |
| 66 | 63 - Willson Avenue / Kagy Boulevard | Signalized | HCM 2010 | EB Left | 0.564 | 30.3 | C |

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**
**Intersection 1: 01 - Ferguson Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 10,000.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.798 |

**Intersection Setup**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | Yes | | |

**volumes**

| Name | Ferguson Avenue | | | Ferguson Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 64 | 400 | 43 | 38 | 340 | 12 | 4 | 64 | 44 | 47 | 90 | 73 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.80 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 | 1.35 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 86 | 540 | 58 | 51 | 459 | 16 | 5 | 86 | 59 | 63 | 122 | 99 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 22 | 141 | 15 | 13 | 120 | 4 | 1 | 22 | 15 | 17 | 33 | 27 |
| Total Analysis Volume [veh/h] | 90 | 563 | 61 | 53 | 479 | 17 | 5 | 90 | 62 | 68 | 133 | 108 |
| Pedestrian Volume [ped/h] | 0 | | | 3 | | | 0 | | | 4 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.08 | 0.01 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.80 | 0.11 | 2.34 | 1.14 | 0.22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.64 | 0.00 | 0.00 | 8.97 | 0.00 | 0.00 | 10000.0 | 10000.0 | 10000.0 | 903.34 | 254.73 | 230.95 |
| Movement LOS | A | A | A | A | A | A | F | F | F | F | F | F |
| 95th-Percentile Queue Length [veh] | 5.27 | 5.27 | 5.27 | 3.74 | 3.74 | 3.74 | 22.27 | 22.27 | 22.27 | 8.04 | 14.29 | 14.29 |
| 95th-Percentile Queue Length [ft] | 131.77 | 131.77 | 131.77 | 93.39 | 93.39 | 93.39 | 556.72 | 556.72 | 556.72 | 201.11 | 357.36 | 357.36 |
| d_A, Approach Delay [s/veh] | 1.09 | | | 0.87 | | | 10000.00 | | | 389.15 | | |
| Approach LOS | A | | | A | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 978.31 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 2: 02 - Fowler Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 83.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.761 |

**Intersection Setup**

| Name | Fowler Avenue | | Babcock Street | | Babcock Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Fowler Avenue | | Babcock Street | | Babcock Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 163 | 151 | 170 | 79 | 119 | 286 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.60 | 0.00 | 0.80 | 0.00 |
| Growth Rate | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 | 1.18 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 192 | 178 | 201 | 93 | 140 | 337 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 52 | 48 | 52 | 24 | 37 | 88 |
| Total Analysis Volume [veh/h] | 209 | 193 | 210 | 97 | 146 | 352 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | | | | | | |
|---|---|---|---|---|---|---|
| Priority Scheme | Stop | | Free | | Free | |
| Flared Lane | No | | | | | |
| Storage Area [veh] | 0 | | 0 | | 0 | |
| Two-Stage Gap Acceptance | No | | | | | |
| Number of Storage Spaces in Median | 0 | | 0 | | 0 | |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| V/C, Movement V/C Ratio | 0.76 | 0.25 | 0.00 | 0.00 | 0.12 | 0.00 |
| d_M, Delay for Movement [s/veh] | 83.64 | 75.11 | 0.00 | 0.00 | 8.23 | 0.00 |
| Movement LOS | F | F | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 12.45 | 12.45 | 0.00 | 0.00 | 0.39 | 0.00 |
| 95th-Percentile Queue Length [ft] | 311.37 | 311.37 | 0.00 | 0.00 | 9.80 | 0.00 |
| d_A, Approach Delay [s/veh] | 79.55 | | 0.00 | | 2.41 | |
| Approach LOS | F | | A | | A | |
| d_I, Intersection Delay [s/veh] | 27.49 | | | | | |
| Intersection LOS | F | | | | | |

**Intersection Level Of Service Report**
**Intersection 3: 03 - Ferguson Avenue / Huffine Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.763 |

**Intersection Setup**

| Name | Ferguson Avenue | | Huffine Lane | | Huffine Lane | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 0 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 110.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**volumes**

| Name | Ferguson Avenue | | Huffine Lane | | Huffine Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 259 | 222 | 157 | 952 | 1065 | 328 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.40 | 2.80 | 1.90 | 1.00 | 1.80 | 0.00 |
| Growth Rate | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 389 | 333 | 236 | 1428 | 1598 | 492 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 101 | 87 | 62 | 376 | 421 | 130 |
| Total Analysis Volume [veh/h] | 406 | 347 | 249 | 1506 | 1685 | 519 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 2 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 115 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | ProtectedPermissi | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 3 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 0 | 8 | 30 | 30 | 0 |
| Maximum Green [s] | 60 | 0 | 30 | 90 | 90 | 0 |
| Amber [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 53 | 0 | 14 | 62 | 48 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | No | No | No | |
| Maximum Recall | No | | No | No | No | |
| Pedestrian Recall | No | | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | R |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 29 | 29 | 76 | 76 | 61 | 61 |
| g / C, Green / Cycle | 0.25 | 0.25 | 0.66 | 0.66 | 0.53 | 0.53 |
| (v / s)_i Volume / Saturation Flow Rate | 0.23 | 0.22 | 0.46 | 0.42 | 0.47 | 0.32 |
| s, saturation flow rate [veh/h] | 1802 | 1571 | 544 | 3582 | 3554 | 1612 |
| c, Capacity [veh/h] | 455 | 396 | 329 | 2367 | 1887 | 856 |
| d1, Uniform Delay [s] | 41.50 | 41.27 | 31.22 | 11.42 | 24.05 | 18.65 |
| k, delay calibration | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 6.64 | 6.22 | 15.06 | 1.32 | 6.95 | 3.18 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

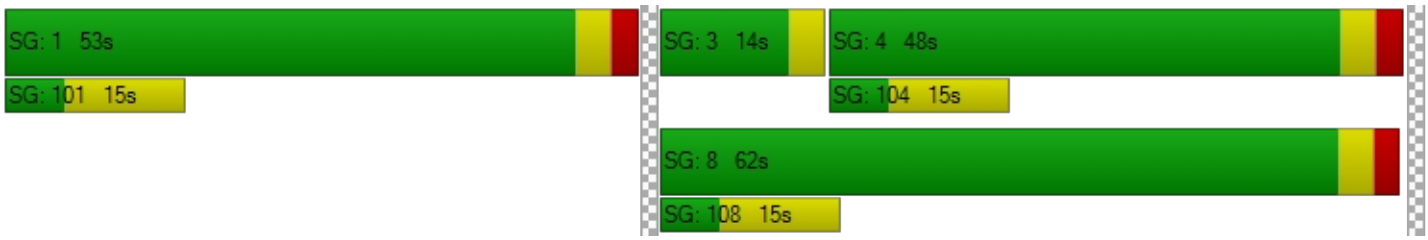
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.89 | 0.88 | 0.76 | 0.64 | 0.89 | 0.61 |
| d, Delay for Lane Group [s/veh] | 48.14 | 47.49 | 46.27 | 12.73 | 31.00 | 21.83 |
| Lane Group LOS | D | D | D | B | C | C |
| Critical Lane Group | Yes | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 11.85 | 10.04 | 3.68 | 10.76 | 21.17 | 10.00 |
| 50th-Percentile Queue Length [ft] | 296.13 | 250.97 | 91.92 | 269.11 | 529.27 | 250.01 |
| 95th-Percentile Queue Length [veh] | 17.49 | 15.24 | 6.62 | 16.15 | 28.72 | 15.19 |
| 95th-Percentile Queue Length [ft] | 437.24 | 380.88 | 165.46 | 403.63 | 717.92 | 379.67 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 48.14 | 47.49 | 46.27 | 12.73 | 31.00 | 21.83 |
| Movement LOS | D | D | D | B | C | C |
| d_A, Approach Delay [s/veh] | 47.84 | | 17.49 | | 28.84 | |
| Approach LOS | D | | B | | C | |
| d_I, Intersection Delay [s/veh] | 27.65 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.763 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 4: 04 - Fowler Avenue / Huffine Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 43.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.923 |

**Intersection Setup**

| Name | Fowler Avenue | | | Fowler Avenue | | | Huffine Lane | | | Huffine Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Pocket Length [ft] | 253.00 | 100.00 | 100.00 | 76.00 | 100.00 | 100.00 | 100.00 | 100.00 | 280.00 | 365.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Fowler Avenue | | | Fowler Avenue | | | Huffine Lane | | | Huffine Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 293 | 292 | 33 | 92 | 148 | 28 | 114 | 844 | 294 | 24 | 768 | 156 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.30 | 0.30 | 3.00 | 1.10 | 0.00 | 0.00 | 0.60 | 1.60 | 0.00 | 4.50 | 1.80 | 0.60 |
| Growth Rate | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 440 | 438 | 50 | 138 | 222 | 42 | 171 | 1266 | 441 | 36 | 1152 | 234 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 120 | 119 | 14 | 38 | 60 | 11 | 45 | 334 | 116 | 9 | 304 | 62 |
| Total Analysis Volume [veh/h] | 478 | 476 | 54 | 150 | 241 | 46 | 180 | 1335 | 465 | 38 | 1215 | 247 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 110 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 60 | 0 | 0 | 60 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 90 | 0 | 0 | 90 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 65 | 0 | 0 | 65 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 40 | 40 | 40 | 40 | 40 | 40 | 60 | 60 | 60 | 60 | 60 | 60 |
| g / C, Green / Cycle | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.36 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 | 0.55 |
| (v / s)_i Volume / Saturation Flow Rate | 0.43 | 0.25 | 0.03 | 0.16 | 0.08 | 0.08 | 0.49 | 0.37 | 0.29 | 0.10 | 0.40 | 0.41 |
| s, saturation flow rate [veh/h] | 1106 | 1894 | 1568 | 923 | 1900 | 1796 | 366 | 3561 | 1615 | 398 | 1866 | 1759 |
| c, Capacity [veh/h] | 389 | 689 | 570 | 187 | 691 | 653 | 148 | 1942 | 881 | 167 | 1018 | 960 |
| d1, Uniform Delay [s] | 41.61 | 29.75 | 23.07 | 49.14 | 24.13 | 24.17 | 48.04 | 18.18 | 15.96 | 33.68 | 18.94 | 19.16 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.39 | 0.11 | 0.11 | 0.11 | 0.26 | 0.27 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 123.49 | 5.62 | 0.33 | 29.43 | 0.70 | 0.75 | 134.22 | 0.44 | 0.50 | 0.68 | 2.51 | 2.93 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

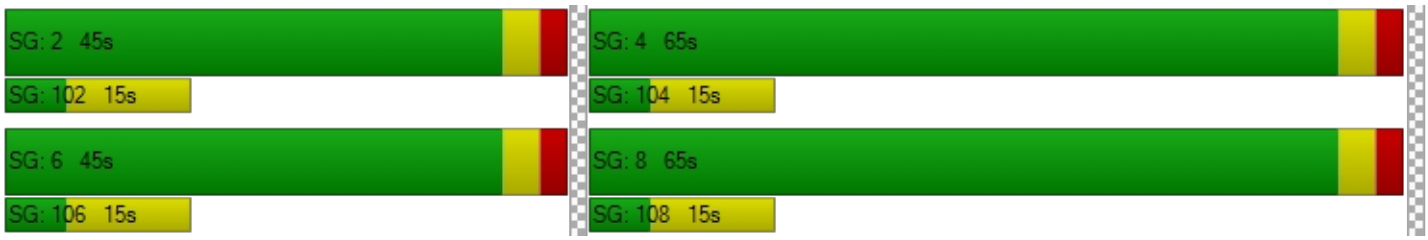
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.23 | 0.69 | 0.09 | 0.80 | 0.21 | 0.22 | 1.21 | 0.69 | 0.53 | 0.23 | 0.73 | 0.75 |
| d, Delay for Lane Group [s/veh] | 165.11 | 35.36 | 23.40 | 78.57 | 24.83 | 24.92 | 182.26 | 18.62 | 16.46 | 34.36 | 21.44 | 22.08 |
| Lane Group LOS | F | D | C | E | C | C | F | B | B | C | C | C |
| Critical Lane Group | Yes | No | No | No | No | No | Yes | No | No | No | No | No |
| 50th-Percentile Queue Length [veh] | 24.12 | 11.60 | 0.98 | 5.68 | 2.76 | 2.66 | 9.64 | 11.87 | 7.31 | 0.87 | 14.40 | 14.05 |
| 50th-Percentile Queue Length [ft] | 602.89 | 290.07 | 24.46 | 141.96 | 68.99 | 66.61 | 240.95 | 296.75 | 182.73 | 21.64 | 359.92 | 351.37 |
| 95th-Percentile Queue Length [veh] | 36.45 | 17.19 | 1.76 | 9.59 | 4.97 | 4.80 | 16.58 | 17.52 | 11.74 | 1.56 | 20.62 | 20.20 |
| 95th-Percentile Queue Length [ft] | 911.21 | 429.73 | 44.03 | 239.66 | 124.18 | 119.90 | 414.48 | 438.01 | 293.58 | 38.96 | 515.49 | 505.08 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 165.11 | 35.36 | 23.40 | 78.57 | 24.87 | 24.92 | 182.26 | 18.62 | 16.46 | 34.36 | 21.69 | 22.08 |
| Movement LOS | F | D | C | E | C | C | F | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 96.25 | | | 43.31 | | | 32.99 | | | 22.08 | | |
| Approach LOS | F | | | D | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 43.53 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.923 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 5: 05 - 19th Avenue / Garfield Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 118.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.070 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Garfield Street | | | Garfield Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 280.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Garfield Street | | | Garfield Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 488 | 863 | 16 | 57 | 710 | 52 | 34 | 23 | 364 | 11 | 21 | 66 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 | 1.62 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 791 | 1398 | 26 | 92 | 1150 | 84 | 55 | 37 | 590 | 18 | 34 | 107 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 206 | 365 | 7 | 24 | 300 | 22 | 15 | 10 | 160 | 5 | 9 | 29 |
| Total Analysis Volume [veh/h] | 825 | 1459 | 27 | 96 | 1200 | 88 | 60 | 40 | 641 | 20 | 37 | 116 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 1 | | | 1 | | | 4 | | |
| Bicycle Volume [bicycles/h] | 3 | | | 3 | | | 2 | | | 1 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 150 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Overlap | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | 8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 10 | 30 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| Maximum Green [s] | 30 | 90 | 0 | 30 | 90 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 50 | 53 | 0 | 44 | 47 | 0 | 0 | 53 | 53 | 0 | 53 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | No | | No | |
| Maximum Recall | No | No | | No | No | | | No | No | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 92 | 79 | 79 | 92 | 42 | 42 | 48 | 48 | 48 | 48 | 48 |
| g / C, Green / Cycle | 0.61 | 0.53 | 0.53 | 0.61 | 0.28 | 0.28 | 0.32 | 0.32 | 0.32 | 0.32 | 0.32 |
| (v / s)_i Volume / Saturation Flow Rate | 0.72 | 0.39 | 0.39 | 0.18 | 0.34 | 0.35 | 0.05 | 0.02 | 0.40 | 0.01 | 0.09 |
| s, saturation flow rate [veh/h] | 1152 | 1900 | 1886 | 533 | 1900 | 1847 | 1254 | 1900 | 1593 | 1389 | 1658 |
| c, Capacity [veh/h] | 657 | 1001 | 994 | 286 | 532 | 517 | 346 | 608 | 510 | 454 | 530 |
| d1, Uniform Delay [s] | 46.78 | 27.55 | 27.68 | 21.93 | 54.00 | 54.00 | 45.79 | 35.43 | 51.00 | 38.14 | 38.21 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.22 | 0.50 | 0.50 | 0.11 | 0.11 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 127.27 | 4.96 | 5.13 | 1.40 | 116.16 | 120.78 | 0.24 | 0.05 | 130.97 | 0.04 | 0.30 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

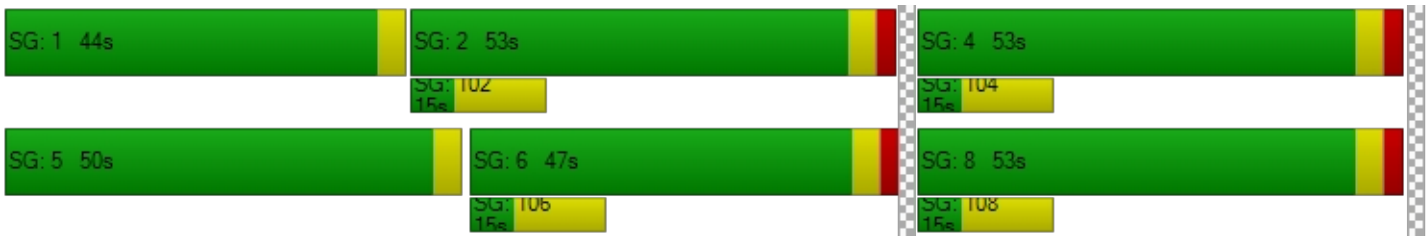
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.26 | 0.74 | 0.75 | 0.34 | 1.22 | 1.23 | 0.17 | 0.07 | 1.26 | 0.04 | 0.29 |
| d, Delay for Lane Group [s/veh] | 174.05 | 32.50 | 32.81 | 23.33 | 170.16 | 174.78 | 46.02 | 35.47 | 181.97 | 38.18 | 38.50 |
| Lane Group LOS | F | C | C | C | F | F | D | D | F | D | D |
| Critical Lane Group | Yes | No | No | No | No | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 36.87 | 21.88 | 22.02 | 1.45 | 37.20 | 36.83 | 1.84 | 1.05 | 37.63 | 0.55 | 4.33 |
| 50th-Percentile Queue Length [ft] | 921.70 | 547.05 | 550.49 | 36.30 | 930.03 | 920.72 | 46.07 | 26.19 | 940.80 | 13.63 | 108.33 |
| 95th-Percentile Queue Length [veh] | 55.31 | 29.55 | 29.72 | 2.61 | 53.14 | 52.87 | 3.32 | 1.89 | 54.71 | 0.98 | 7.75 |
| 95th-Percentile Queue Length [ft] | 1382.86 | 738.84 | 742.88 | 65.35 | 1328.38 | 1321.70 | 82.93 | 47.14 | 1367.80 | 24.53 | 193.68 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 174.05 | 32.65 | 32.81 | 23.33 | 172.27 | 174.78 | 46.02 | 35.47 | 181.97 | 38.18 | 38.50 | 38.50 |
| Movement LOS | F | C | C | C | F | F | D | D | F | D | D | D |
| d_A, Approach Delay [s/veh] | 83.13 | | | 162.10 | | | 163.05 | | | 38.47 | | |
| Approach LOS | F | | | F | | | F | | | D | | |
| d_I, Intersection Delay [s/veh] | 118.02 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 1.070 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 6: 06 - 19th Avenue / Stucky Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 27.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.777 |

**Intersection Setup**

| Name | 19th Avenue | | 19th Avenue | | Stucky Road | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 1 |
| Pocket Length [ft] | 400.00 | 100.00 | 100.00 | 100.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | 19th Avenue | | 19th Avenue | | Stucky Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 26 | 240 | 433 | 309 | 334 | 35 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.20 | 0.70 | 0.60 | 0.90 | 5.70 |
| Growth Rate | 1.79 | 1.79 | 1.79 | 1.79 | 1.79 | 1.79 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 47 | 430 | 775 | 553 | 598 | 63 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 12 | 112 | 202 | 144 | 156 | 16 |
| Total Analysis Volume [veh/h] | 49 | 449 | 809 | 577 | 624 | 66 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 6 | 0 | 3 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | - | - | - | - | Lead | - |
| Minimum Green [s] | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 4.0 | 4.0 | 0.0 | 4.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 25 | 25 | 0 | 65 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 4.0 | 4.0 | 0.0 | 4.0 | 0.0 |
| Minimum Recall | | No | No | | No | |
| Maximum Recall | | No | No | | No | |
| Pedestrian Recall | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | R | L | R |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 |
| g_i, Effective Green Time [s] | 44 | 44 | 44 | 44 | 34 | 34 |
| g / C, Green / Cycle | 0.49 | 0.49 | 0.49 | 0.49 | 0.38 | 0.38 |
| (v / s)_i Volume / Saturation Flow Rate | 0.07 | 0.24 | 0.43 | 0.36 | 0.35 | 0.04 |
| s, saturation flow rate [veh/h] | 685 | 1877 | 1887 | 1605 | 1793 | 1528 |
| c, Capacity [veh/h] | 131 | 919 | 924 | 786 | 676 | 576 |
| d1, Uniform Delay [s] | 41.53 | 15.40 | 20.52 | 18.29 | 26.79 | 18.26 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 8.00 | 1.85 | 11.39 | 6.02 | 5.89 | 0.09 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

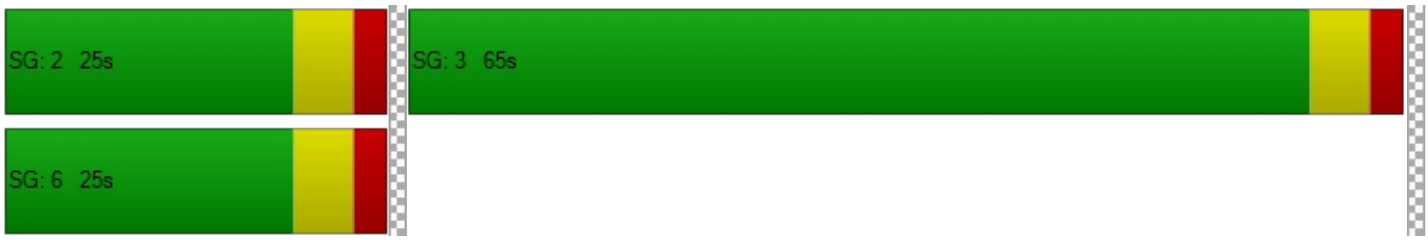
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 0.37 | 0.49 | 0.88 | 0.73 | 0.92 | 0.11 |
| d, Delay for Lane Group [s/veh] | 49.53 | 17.26 | 31.91 | 24.31 | 32.68 | 18.34 |
| Lane Group LOS | D | B | C | C | C | B |
| Critical Lane Group | No | No | Yes | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 1.36 | 6.29 | 16.89 | 10.19 | 13.27 | 0.89 |
| 50th-Percentile Queue Length [ft] | 33.98 | 157.27 | 422.13 | 254.82 | 331.67 | 22.26 |
| 95th-Percentile Queue Length [veh] | 2.45 | 10.40 | 23.62 | 15.43 | 19.24 | 1.60 |
| 95th-Percentile Queue Length [ft] | 61.16 | 260.11 | 590.61 | 385.72 | 481.01 | 40.07 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 49.53 | 17.26 | 31.91 | 24.31 | 32.68 | 18.34 |
| Movement LOS | D | B | C | C | C | B |
| d_A, Approach Delay [s/veh] | 20.43 | | 28.75 | | 31.31 | |
| Approach LOS | C | | C | | C | |
| d_I, Intersection Delay [s/veh] | 27.82 | | | | | |
| Intersection LOS | C | | | | | |
| Intersection V/C | 0.777 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 7: 07 - 19th Avenue / Goldenstein Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 28.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.202 |

**Intersection Setup**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Thru | Right | Left | Thru | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | | | | | | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 135 | 31 | 158 | 290 | 25 | 95 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.50 | 0.00 | 1.30 | 1.70 | 4.00 | 0.00 |
| Growth Rate | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 190 | 44 | 223 | 409 | 35 | 134 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 50 | 11 | 58 | 107 | 10 | 36 |
| Total Analysis Volume [veh/h] | 198 | 46 | 233 | 427 | 38 | 146 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop |
|---|---|---|---|
| Flared Lane | | | No |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.00 | 0.18 | 0.00 | 0.20 | 0.18 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 0.00 | 8.29 | 0.00 | 28.59 | 13.83 |
| Movement LOS | A | A | A | A | D | B |
| 95th-Percentile Queue Length [veh] | 0.00 | 0.00 | 0.64 | 0.00 | 1.75 | 1.75 |
| 95th-Percentile Queue Length [ft] | 0.00 | 0.00 | 15.91 | 0.00 | 43.78 | 43.78 |
| d_A, Approach Delay [s/veh] | 0.00 | | 2.93 | | 16.88 | |
| Approach LOS | A | | A | | C | |
| d_I, Intersection Delay [s/veh] | 4.63 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 8: 08 - 7th Avenue / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 80.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.080 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Mandeville Lane | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Mandeville Lane | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 22 | 373 | 214 | 74 | 292 | 6 | 4 | 7 | 29 | 467 | 5 | 144 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.60 | 6.10 | 9.60 | 1.70 | 0.00 | 0.00 | 0.00 | 3.40 | 2.10 | 0.00 | 2.10 |
| Growth Rate | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 32 | 548 | 315 | 109 | 429 | 9 | 6 | 10 | 43 | 686 | 7 | 212 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 8 | 143 | 82 | 28 | 112 | 2 | 2 | 3 | 12 | 179 | 2 | 55 |
| Total Analysis Volume [veh/h] | 33 | 572 | 329 | 114 | 448 | 9 | 7 | 11 | 47 | 716 | 7 | 221 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 1 | | |
| Bicycle Volume [bicycles/h] | 3 | | | 3 | | | 0 | | | 2 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 20 | 0 | 0 | 20 | 0 |
| Maximum Green [s] | 0 | 60 | 0 | 0 | 60 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 35 | 0 | 0 | 35 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | C | C |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 30 | 30 | 30 | 30 | 40 | 40 |
| g / C, Green / Cycle | 0.38 | 0.38 | 0.38 | 0.38 | 0.50 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | 0.41 | 0.22 | 0.15 | 0.25 | 0.04 | 0.67 |
| s, saturation flow rate [veh/h] | 1494 | 1485 | 779 | 1861 | 1770 | 1399 |
| c, Capacity [veh/h] | 608 | 557 | 97 | 698 | 935 | 779 |
| d1, Uniform Delay [s] | 25.79 | 20.07 | 39.98 | 20.71 | 10.40 | 22.21 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 35.47 | 4.55 | 147.60 | 4.75 | 0.03 | 107.33 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

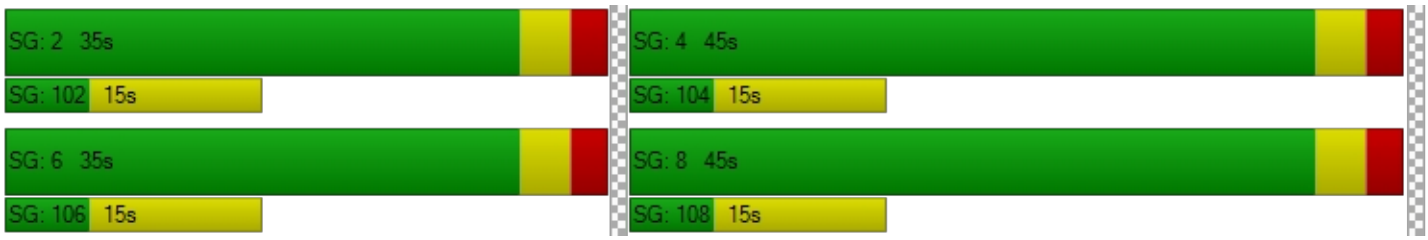
| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 1.00 | 0.59 | 1.18 | 0.65 | 0.07 | 1.21 |
| d, Delay for Lane Group [s/veh] | 61.26 | 24.62 | 187.57 | 25.46 | 10.43 | 129.54 |
| Lane Group LOS | E | C | F | C | B | F |
| Critical Lane Group | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 17.30 | 5.35 | 5.83 | 7.59 | 0.56 | 37.67 |
| 50th-Percentile Queue Length [ft] | 432.46 | 133.87 | 145.82 | 189.68 | 14.11 | 941.83 |
| 95th-Percentile Queue Length [veh] | 24.12 | 9.15 | 10.50 | 12.10 | 1.02 | 54.75 |
| 95th-Percentile Queue Length [ft] | 602.99 | 228.75 | 262.48 | 302.61 | 25.39 | 1368.68 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 61.26 | 61.26 | 24.62 | 187.57 | 25.46 | 25.46 | 10.43 | 10.43 | 10.43 | 129.54 | 129.54 | 129.54 |
| Movement LOS | E | E | C | F | C | C | B | B | B | F | F | F |
| d_A, Approach Delay [s/veh] | 48.36 | | | 57.83 | | | 10.43 | | | 129.54 | | |
| Approach LOS | D | | | E | | | B | | | F | | |
| d_I, Intersection Delay [s/veh] | 80.01 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 1.080 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 9: 09 - Manley Road / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 67.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.662 |

**Intersection Setup**

| Name | Manley Road | | Griffin Drive | | Griffin Drive | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Manley Road | | Griffin Drive | | Griffin Drive | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 55 | 110 | 52 | 241 | 366 | 54 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.80 | 0.90 | 7.70 | 3.80 | 1.10 | 1.90 |
| Growth Rate | 1.71 | 1.71 | 1.71 | 1.71 | 1.71 | 1.71 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 94 | 188 | 89 | 412 | 626 | 92 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 25 | 49 | 23 | 107 | 163 | 24 |
| Total Analysis Volume [veh/h] | 98 | 196 | 93 | 430 | 653 | 96 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.66 | 0.44 | 0.11 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 67.47 | 19.55 | 9.85 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 3.70 | 2.24 | 4.51 | 4.51 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 92.41 | 56.00 | 112.81 | 112.81 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 35.53 | | 1.75 | | 0.00 | |
| Approach LOS | E | | A | | A | |
| d_I, Intersection Delay [s/veh] | 7.25 | | | | | |
| Intersection LOS | F | | | | | |

**Intersection Level Of Service Report**
**Intersection 10: 10 - Rouse Avenue / Griffin Drive**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 15.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.463 |

**Intersection Setup**

| Name | Griffin Drive | | | Rouse Avenue | | | Bridger Drive | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Eastbound | | | Northeastbound | | | Southwestbound | | | Northwestbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 275.00 | 130.00 | 100.00 | 100.00 | 70.00 | 100.00 | 70.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Griffin Drive | | | Rouse Avenue | | | Bridger Drive | | | Griffin Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 108 | 9 | 192 | 163 | 223 | 9 | 1 | 212 | 157 | 8 | 9 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.90 | 11.10 | 6.30 | 1.80 | 1.30 | 11.10 | 0.00 | 1.90 | 2.50 | 12.50 | 0.00 | 0.00 |
| Growth Rate | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 172 | 14 | 305 | 259 | 355 | 14 | 2 | 337 | 250 | 13 | 14 | 2 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 45 | 4 | 80 | 68 | 93 | 4 | 1 | 88 | 65 | 4 | 4 | 1 |
| Total Analysis Volume [veh/h] | 179 | 15 | 318 | 270 | 370 | 15 | 2 | 352 | 261 | 14 | 15 | 2 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 2 | | | 0 | | | 1 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Overlap | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 6 | 8 | 3 | 8 | 0 | 0 | 4 | 0 | 0 | 2 | 0 |
| Auxiliary Signal Groups | | | 6,8 | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 30 | 10 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 60 | 60 | 25 | 60 | 0 | 0 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 39 | 51 | 16 | 51 | 0 | 0 | 35 | 0 | 0 | 39 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | No | No | No | | | No | | | No | |
| Maximum Recall | | No | No | No | No | | | No | | | No | |
| Pedestrian Recall | | No | No | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | L | C | R | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 0.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 30 | 85 | 50 | 50 | 37 | 37 | 37 | 30 |
| g / C, Green / Cycle | 0.33 | 0.94 | 0.56 | 0.56 | 0.41 | 0.41 | 0.41 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.19 | 0.21 | 0.23 | 0.21 | 0.00 | 0.19 | 0.17 | 0.04 |
| s, saturation flow rate [veh/h] | 1034 | 1519 | 1193 | 1863 | 1014 | 1865 | 1572 | 828 |
| c, Capacity [veh/h] | 422 | 1435 | 635 | 1034 | 351 | 764 | 644 | 335 |
| d1, Uniform Delay [s] | 26.04 | 0.18 | 11.76 | 11.24 | 24.22 | 19.31 | 18.78 | 21.60 |
| k, delay calibration | 0.11 | 0.12 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.78 | 0.08 | 2.08 | 1.03 | 0.03 | 1.99 | 1.89 | 0.12 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

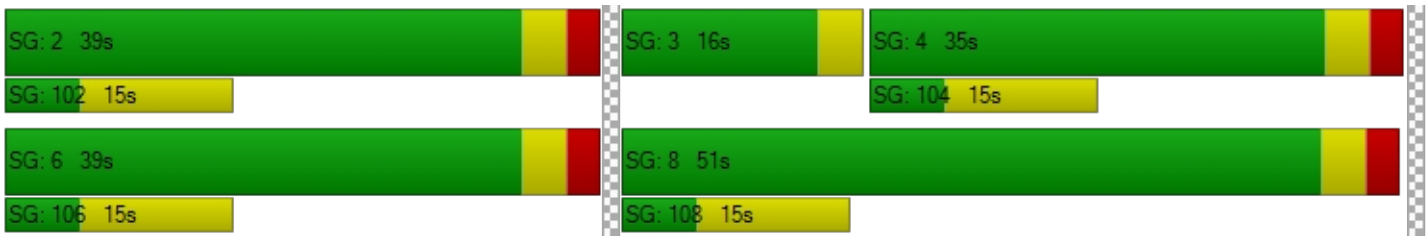
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.46 | 0.22 | 0.43 | 0.37 | 0.01 | 0.46 | 0.41 | 0.09 |
| d, Delay for Lane Group [s/veh] | 26.82 | 0.26 | 13.84 | 12.27 | 24.25 | 21.30 | 20.67 | 21.72 |
| Lane Group LOS | C | A | B | B | C | C | C | C |
| Critical Lane Group | Yes | No | Yes | No | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 3.59 | 0.03 | 2.99 | 4.29 | 0.03 | 5.57 | 4.05 | 0.45 |
| 50th-Percentile Queue Length [ft] | 89.74 | 0.82 | 74.72 | 107.31 | 0.84 | 139.13 | 101.17 | 11.13 |
| 95th-Percentile Queue Length [veh] | 6.46 | 0.06 | 5.38 | 7.69 | 0.06 | 9.43 | 7.28 | 0.80 |
| 95th-Percentile Queue Length [ft] | 161.53 | 1.48 | 134.50 | 192.26 | 1.52 | 235.85 | 182.10 | 20.03 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 26.82 | 26.82 | 0.26 | 13.84 | 12.27 | 12.27 | 24.25 | 21.30 | 20.67 | 21.72 | 21.72 | 21.72 |
| Movement LOS | C | C | A | B | B | B | C | C | C | C | C | C |
| d_A, Approach Delay [s/veh] | 10.32 | | | 12.92 | | | 21.04 | | | 21.72 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 15.09 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.463 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 11: 11 - Story Mill Road / Bridger Drive**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 34.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.082 |

**Intersection Setup**

| Name | Story Mill Road | | | Story Mill Road | | | Bridger Drive | | | Bridger Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**volumes**

| Name | Story Mill Road | | | Story Mill Road | | | Bridger Drive | | | Bridger Drive | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 33 | 44 | 5 | 21 | 69 | 91 | 166 | 10 | 18 | 161 | 4 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 2.50 | 0.00 |
| Growth Rate | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 12 | 51 | 68 | 8 | 33 | 107 | 141 | 257 | 16 | 28 | 250 | 6 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 3 | 13 | 18 | 2 | 9 | 28 | 37 | 67 | 4 | 7 | 65 | 2 |
| Total Analysis Volume [veh/h] | 13 | 53 | 71 | 8 | 34 | 112 | 147 | 268 | 17 | 29 | 261 | 6 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 6 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.08 | 0.22 | 0.09 | 0.05 | 0.14 | 0.15 | 0.11 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 34.08 | 26.25 | 16.17 | 30.95 | 23.78 | 13.58 | 8.10 | 0.00 | 0.00 | 7.86 | 0.00 | 0.00 |
| Movement LOS | D | D | C | D | C | B | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.81 | 1.81 | 1.81 | 1.46 | 1.46 | 1.46 | 0.38 | 0.00 | 0.00 | 0.89 | 0.89 | 0.89 |
| 95th-Percentile Queue Length [ft] | 45.21 | 45.21 | 45.21 | 36.42 | 36.42 | 36.42 | 9.47 | 0.00 | 0.00 | 22.20 | 22.20 | 22.20 |
| d_A, Approach Delay [s/veh] | 21.77 | | | 16.73 | | | 2.76 | | | 0.77 | | |
| Approach LOS | C | | | C | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 6.85 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 12: 12 - Wilson Avenue / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 41.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.530 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 106 | 29 | 27 | 0 | 5 | 4 | 2 | 223 | 67 | 15 | 238 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.90 | 6.00 | 0.00 | 1.70 | 0.00 |
| Growth Rate | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 148 | 41 | 38 | 0 | 7 | 6 | 3 | 312 | 94 | 21 | 333 | 3 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 39 | 11 | 10 | 0 | 2 | 2 | 1 | 81 | 25 | 5 | 87 | 1 |
| Total Analysis Volume [veh/h] | 154 | 43 | 40 | 0 | 8 | 7 | 3 | 326 | 98 | 22 | 347 | 3 |
| Pedestrian Volume [ped/h] | 4 | | | 3 | | | 4 | | | 3 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.53 | 0.14 | 0.06 | 0.00 | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 41.76 | 40.72 | 34.78 | 20.19 | 17.44 | 10.57 | 7.97 | 0.00 | 0.00 | 8.23 | 0.00 | 0.00 |
| Movement LOS | E | E | D | C | C | B | A | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 5.37 | 5.37 | 5.37 | 0.12 | 0.12 | 0.12 | 1.60 | 1.60 | 1.60 | 1.44 | 1.44 | 1.44 |
| 95th-Percentile Queue Length [ft] | 134.17 | 134.17 | 134.17 | 2.88 | 2.88 | 2.88 | 40.07 | 40.07 | 40.07 | 35.89 | 35.89 | 35.89 |
| d_A, Approach Delay [s/veh] | 40.39 | | | 14.23 | | | 0.06 | | | 0.49 | | |
| Approach LOS | E | | | B | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 9.51 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 13: 13 - Rouse Avenue / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 20.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.668 |

**Intersection Setup**

| Name | Rouse Avenue | | | Rouse Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Rouse Avenue | | | Rouse Avenue | | | Peach Street | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 55 | 336 | 9 | 57 | 416 | 70 | 35 | 51 | 74 | 3 | 54 | 121 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.60 | 0.00 | 0.00 | 0.50 | 1.40 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.80 |
| Growth Rate | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 86 | 528 | 14 | 89 | 653 | 110 | 55 | 80 | 116 | 5 | 85 | 190 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 22 | 138 | 4 | 23 | 170 | 29 | 14 | 21 | 30 | 1 | 22 | 50 |
| Total Analysis Volume [veh/h] | 90 | 551 | 15 | 93 | 681 | 115 | 57 | 83 | 121 | 5 | 89 | 198 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 62 | 0 | 0 | 62 | 0 | 0 | 28 | 0 | 0 | 28 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 57 | 57 | 57 | 57 | 23 | 23 | 23 | 23 |
| g / C, Green / Cycle | 0.63 | 0.63 | 0.63 | 0.63 | 0.25 | 0.25 | 0.25 | 0.25 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.33 | 0.12 | 0.48 | 0.06 | 0.13 | 0.00 | 0.19 |
| s, saturation flow rate [veh/h] | 624 | 1692 | 773 | 1659 | 999 | 1518 | 1077 | 1524 |
| c, Capacity [veh/h] | 256 | 1074 | 414 | 1053 | 138 | 386 | 204 | 387 |
| d1, Uniform Delay [s] | 27.08 | 9.02 | 16.46 | 11.54 | 42.38 | 28.92 | 35.43 | 30.84 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.23 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.76 | 1.85 | 1.25 | 5.06 | 1.99 | 1.13 | 0.05 | 5.75 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.35 | 0.53 | 0.22 | 0.76 | 0.41 | 0.53 | 0.02 | 0.74 |
| d, Delay for Lane Group [s/veh] | 30.84 | 10.87 | 17.72 | 16.60 | 44.37 | 30.05 | 35.48 | 36.59 |
| Lane Group LOS | C | B | B | B | D | C | D | D |
| Critical Lane Group | No | No | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.85 | 5.88 | 1.34 | 11.06 | 1.32 | 3.83 | 0.10 | 6.19 |
| 50th-Percentile Queue Length [ft] | 46.32 | 147.02 | 33.52 | 276.62 | 33.12 | 95.78 | 2.48 | 154.63 |
| 95th-Percentile Queue Length [veh] | 3.34 | 9.86 | 2.41 | 16.52 | 2.38 | 6.90 | 0.18 | 10.26 |
| 95th-Percentile Queue Length [ft] | 83.38 | 246.45 | 60.33 | 413.00 | 59.61 | 172.41 | 4.47 | 256.59 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.84 | 10.87 | 10.87 | 17.72 | 16.60 | 16.60 | 44.37 | 30.05 | 30.05 | 35.48 | 36.59 | 36.59 |
| Movement LOS | C | B | B | B | B | B | D | C | C | D | D | D |
| d_A, Approach Delay [s/veh] | 13.61 | | | 16.71 | | | 33.18 | | | 36.57 | | |
| Approach LOS | B | | | B | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 20.56 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.668 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 14: 14 - Willson Avenue / Mendenhall Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 18.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.520 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Mendenhall Street | | | Mendenhall Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Mendenhall Street | | | Mendenhall Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 78 | 136 | 0 | 0 | 140 | 45 | 0 | 0 | 0 | 137 | 434 | 71 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.20 | 2.00 | 2.00 | 0.70 | 2.20 | 2.00 | 2.00 | 2.00 | 0.00 | 1.20 | 0.00 |
| Growth Rate | 1.28 | 1.28 | 1.00 | 1.00 | 1.28 | 1.28 | 1.00 | 1.00 | 1.00 | 1.28 | 1.28 | 1.28 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 100 | 174 | 0 | 0 | 179 | 58 | 0 | 0 | 0 | 175 | 556 | 91 |
| Peak Hour Factor | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 1.0000 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 26 | 45 | 0 | 0 | 47 | 15 | 0 | 0 | 0 | 46 | 145 | 24 |
| Total Analysis Volume [veh/h] | 104 | 182 | 0 | 0 | 187 | 61 | 0 | 0 | 0 | 183 | 580 | 95 |
| Presence of On-Street Parking | No | | No | No | | No | | | | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 20 | | | 6 | | | 32 | | | 20 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 40 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | | | | No | |
| Maximum Recall | | No | | | No | | | | | | No | |
| Pedestrian Recall | | No | | | No | | | | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | | C | C |
|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 31 | 31 | | 19 | 19 |
| g / C, Green / Cycle | 0.51 | 0.51 | | 0.32 | 0.32 |
| (v / s)_i Volume / Saturation Flow Rate | 0.25 | 0.15 | | 0.27 | 0.27 |
| s, saturation flow rate [veh/h] | 1167 | 1619 | | 1656 | 1473 |
| c, Capacity [veh/h] | 675 | 824 | | 538 | 478 |
| d1, Uniform Delay [s] | 10.39 | 8.55 | | 18.85 | 18.87 |
| k, delay calibration | 0.50 | 0.50 | | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.94 | 0.94 | | 3.71 | 4.21 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | | 1.00 | 1.00 |

**Lane Group Results**

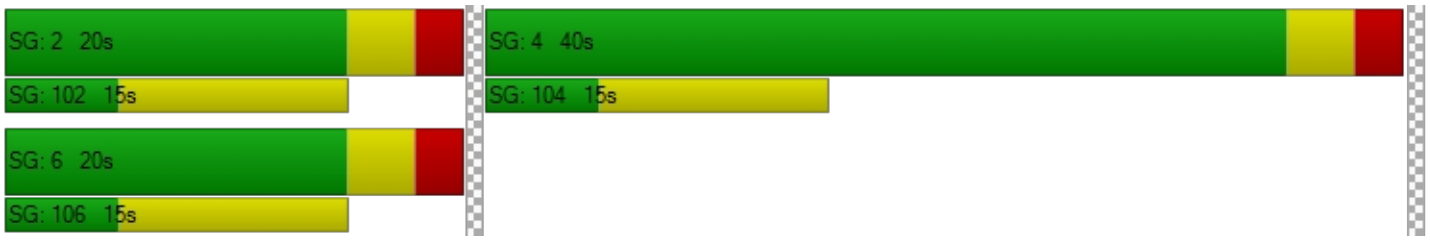
| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.42 | 0.30 | | 0.84 | 0.85 |
| d, Delay for Lane Group [s/veh] | 12.33 | 9.49 | | 22.56 | 23.08 |
| Lane Group LOS | B | A | | C | C |
| Critical Lane Group | Yes | No | | No | Yes |
| 50th-Percentile Queue Length [veh] | 2.70 | 1.76 | | 5.79 | 5.23 |
| 50th-Percentile Queue Length [ft] | 67.53 | 44.12 | | 144.75 | 130.83 |
| 95th-Percentile Queue Length [veh] | 4.86 | 3.18 | | 9.74 | 8.98 |
| 95th-Percentile Queue Length [ft] | 121.56 | 79.42 | | 243.40 | 224.62 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 12.33 | 12.33 | 0.00 | 0.00 | 9.49 | 9.49 | 0.00 | 0.00 | 0.00 | 22.56 | 22.83 | 23.08 |
| Movement LOS | B | B | | | A | A | | | | C | C | C |
| d_A, Approach Delay [s/veh] | 12.33 | | | 9.49 | | | 0.00 | | | 22.80 | | |
| Approach LOS | B | | | A | | | A | | | C | | |
| d_I, Intersection Delay [s/veh] | 18.28 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.520 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 15: 15 - Willson Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.439 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | Babcock Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 125.00 | 110.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | Babcock Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 284 | 189 | 49 | 344 | 0 | 33 | 348 | 99 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.20 | 1.10 | 2.00 | 0.30 | 2.00 | 0.00 | 0.30 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.00 | 1.18 | 1.18 | 1.18 | 1.18 | 1.00 | 1.18 | 1.18 | 1.18 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 335 | 223 | 58 | 406 | 0 | 39 | 411 | 117 | 0 | 0 | 0 |
| Peak Hour Factor | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 87 | 58 | 15 | 106 | 0 | 10 | 107 | 31 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 0 | 350 | 233 | 61 | 424 | 0 | 41 | 429 | 122 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 1 | | | 19 | | | 16 | | | 11 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 0 | 60 | 0 | 0 | 0 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 32 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | | |
| Maximum Recall | | No | | | No | | | No | | | | |
| Pedestrian Recall | | No | | | No | | | No | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | C | C | |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| g_i, Effective Green Time [s] | 35 | 35 | 35 | 35 | 15 | 15 | |
| g / C, Green / Cycle | 0.58 | 0.58 | 0.58 | 0.58 | 0.25 | 0.25 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.21 | 0.16 | 0.07 | 0.25 | 0.19 | 0.19 | |
| s, saturation flow rate [veh/h] | 1673 | 1430 | 923 | 1705 | 1694 | 1437 | |
| c, Capacity [veh/h] | 971 | 829 | 509 | 989 | 429 | 364 | |
| d1, Uniform Delay [s] | 6.68 | 6.32 | 10.75 | 7.04 | 20.61 | 20.67 | |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 1.04 | 0.85 | 0.48 | 1.36 | 2.57 | 3.15 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

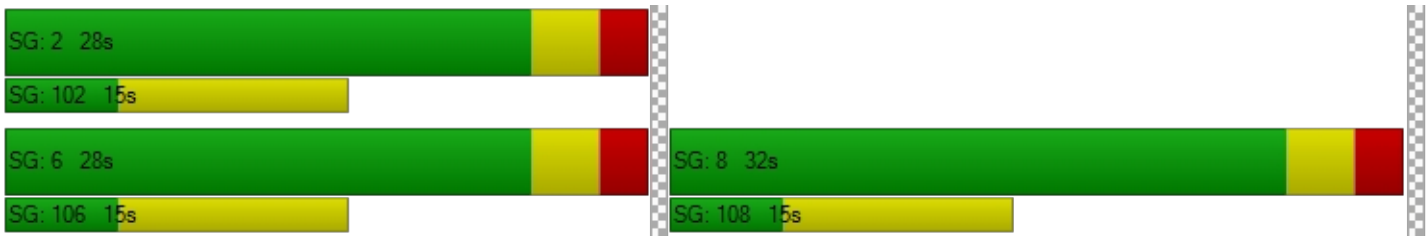
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.28 | 0.12 | 0.43 | 0.74 | 0.75 | |
| d, Delay for Lane Group [s/veh] | 7.73 | 7.16 | 11.23 | 8.39 | 23.18 | 23.81 | |
| Lane Group LOS | A | A | B | A | C | C | |
| Critical Lane Group | No | No | No | Yes | No | Yes | |
| 50th-Percentile Queue Length [veh] | 2.09 | 1.33 | 0.51 | 2.68 | 4.07 | 3.56 | |
| 50th-Percentile Queue Length [ft] | 52.23 | 33.31 | 12.69 | 66.98 | 101.75 | 88.88 | |
| 95th-Percentile Queue Length [veh] | 3.76 | 2.40 | 0.91 | 4.82 | 7.33 | 6.40 | |
| 95th-Percentile Queue Length [ft] | 94.02 | 59.95 | 22.84 | 120.56 | 183.15 | 159.98 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 7.73 | 7.16 | 11.23 | 8.39 | 0.00 | 23.18 | 23.40 | 23.81 | 0.00 | 0.00 | 0.00 |
| Movement LOS | | A | A | B | A | | C | C | C | | | |
| d_A, Approach Delay [s/veh] | 7.50 | | | 8.75 | | | 23.47 | | | 0.00 | | |
| Approach LOS | A | | | A | | | C | | | A | | |
| d_I, Intersection Delay [s/veh] | 13.56 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.439 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 16: 16 - Broadway Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 17.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.759 |

**Intersection Setup**

| Name | Broadway Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | No | |

**volumes**

| Name | Broadway Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 140 | 31 | 73 | 685 | 675 | 138 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.90 | 0.00 | 1.40 | 1.30 | 1.90 | 1.40 |
| Growth Rate | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 216 | 48 | 112 | 1055 | 1040 | 213 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 56 | 13 | 30 | 278 | 274 | 56 |
| Total Analysis Volume [veh/h] | 225 | 50 | 118 | 1112 | 1097 | 225 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 12 | | 5 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 75 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 0 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - |
| Minimum Green [s] | 15 | 0 | 0 | 15 | 15 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 90 | 90 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 21 | 0 | 0 | 54 | 54 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | C | C | C | C |
|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 15 | 50 | 50 | 50 | 50 |
| g / C, Green / Cycle | 0.20 | 0.67 | 0.67 | 0.67 | 0.67 |
| (v / s)_i Volume / Saturation Flow Rate | 0.17 | 0.59 | 0.57 | 0.39 | 0.42 |
| s, saturation flow rate [veh/h] | 1594 | 606 | 1536 | 1678 | 1578 |
| c, Capacity [veh/h] | 320 | 467 | 1022 | 1117 | 1050 |
| d1, Uniform Delay [s] | 28.93 | 12.49 | 9.74 | 6.92 | 7.22 |
| k, delay calibration | 0.25 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 13.94 | 11.10 | 9.15 | 2.31 | 2.86 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

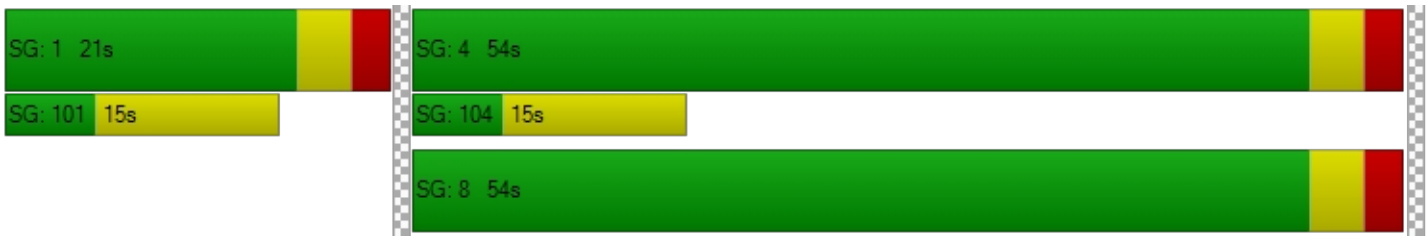
| | | | | | |
|---|---|---|---|---|---|
| X, volume / capacity | 0.86 | 0.76 | 0.86 | 0.59 | 0.63 |
| d, Delay for Lane Group [s/veh] | 42.86 | 23.59 | 18.89 | 9.23 | 10.08 |
| Lane Group LOS | D | C | B | A | B |
| Critical Lane Group | Yes | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 5.82 | 4.34 | 10.86 | 5.15 | 5.46 |
| 50th-Percentile Queue Length [ft] | 145.50 | 108.47 | 271.42 | 128.73 | 136.50 |
| 95th-Percentile Queue Length [veh] | 9.78 | 7.76 | 16.26 | 8.87 | 9.29 |
| 95th-Percentile Queue Length [ft] | 244.41 | 193.88 | 406.51 | 221.76 | 232.30 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 42.86 | 42.86 | 23.59 | 19.89 | 9.57 | 10.08 |
| Movement LOS | D | D | C | B | A | B |
| d_A, Approach Delay [s/veh] | 42.86 | | 20.25 | | 9.65 | |
| Approach LOS | D | | C | | A | |
| d_I, Intersection Delay [s/veh] | 17.49 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.759 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 17: 17 - Highland Boulevard / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 117.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.890 |

**Intersection Setup**

| Name | Highland Boulevard | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northeastbound | | | Southwestbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 185.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 341 | 0 | 363 | 3 | 6 | 8 | 155 | 428 | 0 | 1 | 612 | 180 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.60 | 2.00 | 0.80 | 0.00 | 0.00 | 0.00 | 1.90 | 2.80 | 0.00 | 0.00 | 2.00 | 1.70 |
| Growth Rate | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 | 1.47 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 501 | 0 | 534 | 4 | 9 | 12 | 228 | 629 | 0 | 1 | 900 | 265 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 131 | 0 | 139 | 1 | 2 | 3 | 60 | 166 | 0 | 0 | 237 | 70 |
| Total Analysis Volume [veh/h] | 523 | 0 | 557 | 4 | 10 | 13 | 240 | 663 | 0 | 1 | 949 | 279 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 150 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 3 | 8 | 0 | 0 | 4 | 0 | 5 | 2 | 0 | 0 | 6 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 10 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 25 | 60 | 0 | 0 | 60 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 84 | 0 | 0 | 84 | 0 | 14 | 66 | 0 | 0 | 52 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | | No | |
| Maximum Recall | | No | | | No | | No | No | | | No | |
| Pedestrian Recall | | No | | | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 79 | 79 | 79 | 61 | 61 | 61 | 47 | 47 | 47 |
| g / C, Green / Cycle | 0.53 | 0.53 | 0.53 | 0.41 | 0.41 | 0.41 | 0.31 | 0.31 | 0.31 |
| (v / s)_i Volume / Saturation Flow Rate | 0.41 | 0.39 | 0.03 | 0.37 | 0.20 | 0.20 | 0.00 | 0.38 | 0.38 |
| s, saturation flow rate [veh/h] | 1262 | 1425 | 803 | 642 | 1663 | 1663 | 706 | 1676 | 1548 |
| c, Capacity [veh/h] | 424 | 751 | 450 | 204 | 676 | 676 | 156 | 525 | 485 |
| d1, Uniform Delay [s] | 55.21 | 27.59 | 21.04 | 56.16 | 32.97 | 32.97 | 53.89 | 51.50 | 51.50 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.40 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 124.58 | 6.54 | 0.25 | 112.62 | 0.55 | 0.55 | 0.02 | 112.27 | 116.08 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

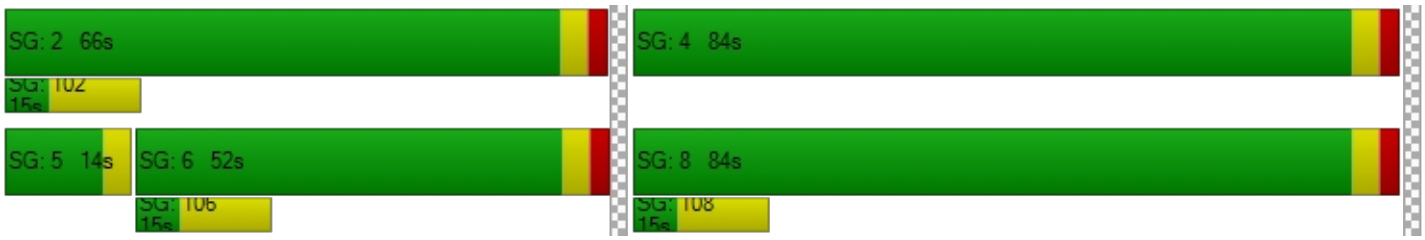
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.23 | 0.74 | 0.06 | 1.18 | 0.49 | 0.49 | 0.01 | 1.21 | 1.22 |
| d, Delay for Lane Group [s/veh] | 179.79 | 34.12 | 21.30 | 168.78 | 33.53 | 33.53 | 53.90 | 163.77 | 167.58 |
| Lane Group LOS | F | C | C | F | C | C | D | F | F |
| Critical Lane Group | Yes | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 31.09 | 16.76 | 0.49 | 11.49 | 9.14 | 9.14 | 0.03 | 36.06 | 33.80 |
| 50th-Percentile Queue Length [ft] | 777.14 | 418.99 | 12.36 | 287.35 | 228.62 | 228.62 | 0.83 | 901.58 | 845.08 |
| 95th-Percentile Queue Length [veh] | 46.60 | 23.47 | 0.89 | 18.77 | 14.10 | 14.10 | 0.06 | 51.66 | 48.86 |
| 95th-Percentile Queue Length [ft] | 1164.94 | 586.84 | 22.25 | 469.15 | 352.60 | 352.60 | 1.49 | 1291.59 | 1221.52 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 179.79 | 34.12 | 34.12 | 21.30 | 21.30 | 21.30 | 168.78 | 33.53 | 33.53 | 53.90 | 165.03 | 167.58 |
| Movement LOS | F | C | C | C | C | C | F | C | C | D | F | F |
| d_A, Approach Delay [s/veh] | 104.66 | | | 21.30 | | | 69.47 | | | 165.52 | | |
| Approach LOS | F | | | C | | | E | | | F | | |
| d_I, Intersection Delay [s/veh] | 117.25 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 0.890 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 18: 18 - Haggerty Lane / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 3,131.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | Haggerty Lane | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northeastbound | | | Southwestbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | No | | |

**volumes**

| Name | Haggerty Lane | | | | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 97 | 0 | 95 | 1 | 0 | 1 | 69 | 496 | 1 | 2 | 811 | 150 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.00 | 2.10 | 0.00 | 0.00 | 0.00 | 0.00 | 2.60 | 0.00 | 0.00 | 2.10 | 0.00 |
| Growth Rate | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 151 | 0 | 148 | 2 | 0 | 2 | 108 | 774 | 2 | 3 | 1265 | 234 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 39 | 0 | 39 | 1 | 0 | 1 | 28 | 204 | 1 | 1 | 333 | 62 |
| Total Analysis Volume [veh/h] | 158 | 0 | 154 | 2 | 0 | 2 | 114 | 816 | 2 | 3 | 1334 | 247 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 1 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 6.86 | 0.00 | 0.46 | 0.08 | 0.00 | 0.00 | 0.27 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 3101.47 | 3131.58 | 2955.99 | 161.66 | 229.47 | 18.25 | 16.67 | 0.00 | 0.00 | 9.41 | 0.00 | 0.00 |
| Movement LOS | F | F | F | F | F | C | C | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 36.85 | 36.85 | 36.85 | 0.27 | 0.27 | 0.27 | 1.08 | 0.00 | 0.00 | 15.62 | 7.81 | 0.00 |
| 95th-Percentile Queue Length [ft] | 921.24 | 921.24 | 921.24 | 6.75 | 6.75 | 6.75 | 27.03 | 0.00 | 0.00 | 390.61 | 195.31 | 0.00 |
| d_A, Approach Delay [s/veh] | 3029.66 | | | 89.95 | | | 2.04 | | | 0.02 | | |
| Approach LOS | F | | | F | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 334.58 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 19: 19 - Willson Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 105.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.000 |

**Intersection Setup**

| Name | Willson Avenue | | | Willson Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Willson Avenue | | | Willson Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 124 | 458 | 20 | 19 | 522 | 70 | 4 | 3 | 139 | 0 | 5 | 25 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.80 | 0.90 | 0.00 | 0.00 | 0.40 | 1.40 | 0.00 | 0.00 | 1.40 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 | 1.15 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 143 | 527 | 23 | 22 | 600 | 81 | 5 | 3 | 160 | 0 | 6 | 29 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 37 | 137 | 6 | 6 | 157 | 21 | 1 | 1 | 42 | 0 | 2 | 8 |
| Total Analysis Volume [veh/h] | 149 | 550 | 24 | 23 | 626 | 85 | 5 | 3 | 167 | 0 | 7 | 32 |
| Pedestrian Volume [ped/h] | 4 | | | 13 | | | 0 | | | 6 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.17 | 0.01 | 0.00 | 0.02 | 0.01 | 0.00 | 0.09 | 0.04 | 0.37 | 0.00 | 0.09 | 0.06 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 9.83 | 0.00 | 0.00 | 8.69 | 0.00 | 0.00 | 76.91 | 60.99 | 22.37 | 105.42 | 56.27 | 14.78 |
| Movement LOS | A | A | A | A | A | A | F | F | C | F | F | B |
| 95th-Percentile Queue Length [veh] | 8.94 | 8.94 | 8.94 | 6.90 | 6.90 | 6.90 | 2.61 | 2.61 | 2.61 | 0.55 | 0.55 | 0.55 |
| 95th-Percentile Queue Length [ft] | 223.58 | 223.58 | 223.58 | 172.38 | 172.38 | 172.38 | 65.28 | 65.28 | 65.28 | 13.73 | 13.73 | 13.73 |
| d_A, Approach Delay [s/veh] | 2.03 | | | 0.27 | | | 24.59 | | | 22.23 | | |
| Approach LOS | A | | | A | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 4.09 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 20: 20 - Highland Boulevard / Ellis Street**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 2,083.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 5.168 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Ellis Street | | | Ellis Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 75.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Ellis Street | | | Ellis Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 455 | 53 | 51 | 289 | 23 | 140 | 3 | 10 | 51 | 3 | 112 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 1.90 | 0.00 | 1.00 | 4.30 | 0.00 | 33.30 | 0.00 | 0.00 | 0.00 | 0.90 |
| Growth Rate | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 701 | 82 | 79 | 445 | 35 | 216 | 5 | 15 | 79 | 5 | 172 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 1 | 183 | 21 | 21 | 116 | 9 | 59 | 1 | 4 | 21 | 1 | 47 |
| Total Analysis Volume [veh/h] | 3 | 731 | 86 | 82 | 464 | 37 | 235 | 5 | 16 | 86 | 5 | 187 |
| Pedestrian Volume [ped/h] | 20 | | | 1 | | | 7 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | No | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 0.01 | 0.00 | 0.10 | 0.00 | 0.00 | 5.17 | 0.05 | 0.03 | 0.94 | 0.04 | 0.47 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 8.41 | 0.00 | 0.00 | 9.88 | 0.00 | 0.00 | 2083.44 | 2041.63 | 2010.77 | 295.14 | 286.52 | 264.88 |
| Movement LOS | A | A | A | A | A | A | F | F | F | F | F | F |
| 95th-Percentile Queue Length [veh] | 0.01 | 0.00 | 0.00 | 0.33 | 0.00 | 0.00 | 29.19 | 29.19 | 29.19 | 16.93 | 16.93 | 16.93 |
| 95th-Percentile Queue Length [ft] | 0.21 | 0.00 | 0.00 | 8.31 | 0.00 | 0.00 | 729.80 | 729.80 | 729.80 | 423.20 | 423.20 | 423.20 |
| d_A, Approach Delay [s/veh] | 0.03 | | | 1.39 | | | 2078.08 | | | 274.63 | | |
| Approach LOS | A | | | A | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 314.49 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 21: 21 - Sourdough Road / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 10,000.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.630 |

**Intersection Setup**

| Name | Sourdough Road | | | Kagy Boulevard | | | Kagy Boulevard | | | Sourdough Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Eastbound | | | Westbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 75.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | Yes | | |

**volumes**

| Name | Sourdough Road | | | Kagy Boulevard | | | Kagy Boulevard | | | Sourdough Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 45 | 38 | 57 | 37 | 487 | 54 | 56 | 435 | 15 | 22 | 56 | 84 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.40 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 1.20 |
| Growth Rate | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 | 1.55 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 70 | 59 | 88 | 57 | 755 | 84 | 87 | 674 | 23 | 34 | 87 | 130 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 18 | 15 | 23 | 15 | 197 | 22 | 23 | 176 | 6 | 9 | 23 | 34 |
| Total Analysis Volume [veh/h] | 73 | 62 | 92 | 59 | 788 | 88 | 91 | 703 | 24 | 35 | 91 | 136 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 1 | | | 17 | | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free | Stop |
|---|---|---|---|---|
| Flared Lane | No | | | No |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.00 | 1.06 | 0.25 | 0.07 | 0.01 | 0.00 | 0.12 | 0.01 | 0.00 | 0.00 | 1.63 | 0.33 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 10000.0 | 10000.0 | 10000.0 | 9.50 | 0.00 | 0.00 | 10.23 | 0.00 | 0.00 | 10000.0 | 10000.0 | 10000.0 |
| Movement LOS | F | F | F | A | A | A | B | A | A | F | F | F |
| 95th-Percentile Queue Length [veh] | 31.11 | 31.11 | 31.11 | 0.22 | 0.00 | 0.00 | 0.39 | 0.00 | 0.00 | 35.52 | 35.52 | 35.52 |
| 95th-Percentile Queue Length [ft] | 777.78 | 777.78 | 777.78 | 5.52 | 0.00 | 0.00 | 9.87 | 0.00 | 0.00 | 887.91 | 887.91 | 887.91 |
| d_A, Approach Delay [s/veh] | 10000.00 | | | 0.60 | | | 1.14 | | | 10000.00 | | |
| Approach LOS | F | | | A | | | A | | | F | | |
| d_I, Intersection Delay [s/veh] | 2181.75 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 22: 22 - Highland Boulevard / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 1,392.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.833 |

**Intersection Setup**

| Name | Highland Boulevard | | | Highland Boulevard | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 80.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | Yes | | | No | | |

**volumes**

| Name | Highland Boulevard | | | Highland Boulevard | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 3 | 1 | 18 | 3 | 346 | 361 | 195 | 4 | 0 | 148 | 14 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.30 | 0.60 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 |
| Growth Rate | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 | 1.68 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 3 | 5 | 2 | 30 | 5 | 581 | 606 | 328 | 7 | 0 | 249 | 24 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 1 | 1 | 8 | 1 | 152 | 158 | 86 | 2 | 0 | 65 | 6 |
| Total Analysis Volume [veh/h] | 3 | 5 | 2 | 31 | 5 | 606 | 632 | 342 | 7 | 0 | 260 | 25 |
| Pedestrian Volume [ped/h] | 0 | | | 3 | | | 5 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Stop | Stop | Free | Free |
|---|---|---|---|---|
| Flared Lane | No | No | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.83 | 0.14 | 0.00 | 1.04 | 0.14 | 0.80 | 0.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 1391.99 | 494.58 | 398.02 | 590.46 | 569.64 | 474.00 | 10.54 | 0.00 | 0.00 | 7.95 | 0.00 | 0.00 |
| Movement LOS | F | F | F | F | F | F | B | A | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.92 | 1.92 | 1.92 | 45.14 | 45.14 | 45.14 | 2.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 48.04 | 48.04 | 48.04 | 1128.43 | 1128.43 | 1128.43 | 70.85 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 744.49 | | | 480.37 | | | 6.79 | | | 0.00 | | |
| Approach LOS | F | | | F | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 168.14 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 23: 23 - Wagon Wheel Road / 3rd Avenue**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 9.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | A |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | Wagon Wheel Road | | 3rd Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Southbound | | Eastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Thru | Thru | Right | Left | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 115.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | Yes | |

**volumes**

| Name | Wagon Wheel Road | | 3rd Avenue | | Graf Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 2 | 64 | 135 | 200 | 161 | 2 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 |
| Growth Rate | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 | 1.08 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 2 | 69 | 146 | 216 | 174 | 2 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 1 | 19 | 38 | 56 | 45 | 1 |
| Total Analysis Volume [veh/h] | 2 | 75 | 152 | 225 | 182 | 2 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 0.35 | 0.81 | 1.11 | 1.03 |
| 95th-Percentile Queue Length [ft] | 8.77 | 20.26 | 27.85 | 25.82 |
| Approach Delay [s/veh] | 8.49 | 8.90 | | 9.83 |
| Approach LOS | A | A | | A |
| Intersection Delay [s/veh] | 9.12 | | | |
| Intersection LOS | A | | | |

**Intersection Level Of Service Report**
**Intersection 27: 25 - 11th Avenue / Grant Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 234.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Grant Street | | | Grant Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Grant Street | | | Grant Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 17 | 234 | 120 | 73 | 210 | 42 | 30 | 39 | 24 | 92 | 60 | 106 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.70 | 0.00 |
| Growth Rate | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 | 1.93 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 33 | 452 | 232 | 141 | 405 | 81 | 58 | 75 | 46 | 178 | 116 | 205 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 9 | 118 | 61 | 37 | 106 | 21 | 16 | 20 | 13 | 46 | 30 | 53 |
| Total Analysis Volume [veh/h] | 34 | 472 | 242 | 147 | 423 | 85 | 63 | 82 | 50 | 186 | 121 | 214 |
| Pedestrian Volume [ped/h] | 116 | | | 204 | | | 111 | | | 86 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 44.49 | 34.61 | 2.82 | 19.75 |
| 95th-Percentile Queue Length [ft] | 1112.23 | 865.15 | 70.49 | 493.74 |
| Approach Delay [s/veh] | 340.55 | 261.39 | 22.05 | 128.26 |
| Approach LOS | F | F | C | F |
| Intersection Delay [s/veh] | 234.58 | | | |
| Intersection LOS | F | | | |

**Intersection Level Of Service Report**
**Intersection 28: 26 - 11th Avenue / Lincoln Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 103.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Lincoln Street | | | Bobcat Circle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Lincoln Street | | | Bobcat Circle | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 159 | 276 | 26 | 8 | 225 | 84 | 88 | 59 | 97 | 37 | 64 | 13 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 | 1.80 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 286 | 497 | 47 | 14 | 405 | 151 | 158 | 106 | 175 | 67 | 115 | 23 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 75 | 130 | 12 | 4 | 106 | 39 | 41 | 28 | 46 | 18 | 31 | 6 |
| Total Analysis Volume [veh/h] | 298 | 519 | 49 | 15 | 423 | 158 | 165 | 111 | 183 | 73 | 125 | 25 |
| Pedestrian Volume [ped/h] | 42 | | | 48 | | | 69 | | | 73 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 6.38 | 27.42 | 14.94 | 1.60 | 14.65 | 3.59 |
| 95th-Percentile Queue Length [ft] | 159.62 | 685.50 | 373.53 | 39.93 | 366.29 | 89.72 |
| Approach Delay [s/veh] | 151.16 | | 75.25 | | 86.97 | 24.98 |
| Approach LOS | F | | F | | F | C |
| Intersection Delay [s/veh] | 103.20 | | | | | |
| Intersection LOS | F | | | | | |

**Intersection Level Of Service Report**
**Intersection 29: 27 - 11th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 239.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.338 |

**Intersection Setup**

| Name | 11th Avenue | | | 11th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 200.00 | 100.00 | 100.00 | 115.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 11th Avenue | | | 11th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 90 | 99 | 49 | 165 | 82 | 168 | 126 | 477 | 520 | 20 | 499 | 116 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 0.00 | 0.60 | 0.90 |
| Growth Rate | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 | 1.74 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 157 | 172 | 85 | 287 | 143 | 292 | 219 | 830 | 905 | 35 | 868 | 202 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 43 | 47 | 23 | 75 | 37 | 76 | 57 | 217 | 236 | 9 | 226 | 53 |
| Total Analysis Volume [veh/h] | 171 | 187 | 92 | 299 | 149 | 305 | 229 | 866 | 944 | 37 | 906 | 211 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 2 | | | 19 | | | 18 | | | 43 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 75 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 3 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 0 | 15 | 0 | 0 | 15 | 0 | 10 | 30 | 0 | 0 | 30 | 0 |
| Maximum Green [s] | 0 | 45 | 0 | 0 | 45 | 0 | 25 | 90 | 0 | 0 | 90 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 23 | 0 | 0 | 23 | 0 | 13 | 52 | 0 | 0 | 39 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | No | No | | | No | |
| Maximum Recall | | No | | | No | | No | No | | | No | |
| Pedestrian Recall | | No | | | No | | No | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 18 | 18 | 18 | 18 | 47 | 47 | 34 | 34 |
| g / C, Green / Cycle | 0.24 | 0.24 | 0.24 | 0.24 | 0.63 | 0.63 | 0.45 | 0.45 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.16 | 0.27 | 0.27 | 0.28 | 1.06 | 0.14 | 0.61 |
| s, saturation flow rate [veh/h] | 952 | 1716 | 1092 | 1653 | 814 | 1703 | 263 | 1819 |
| c, Capacity [veh/h] | 104 | 412 | 177 | 397 | 419 | 1067 | 98 | 826 |
| d1, Uniform Delay [s] | 37.48 | 25.87 | 36.22 | 28.50 | 15.14 | 14.00 | 37.49 | 20.47 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 328.21 | 8.67 | 331.47 | 90.70 | 5.07 | 317.46 | 2.39 | 166.26 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

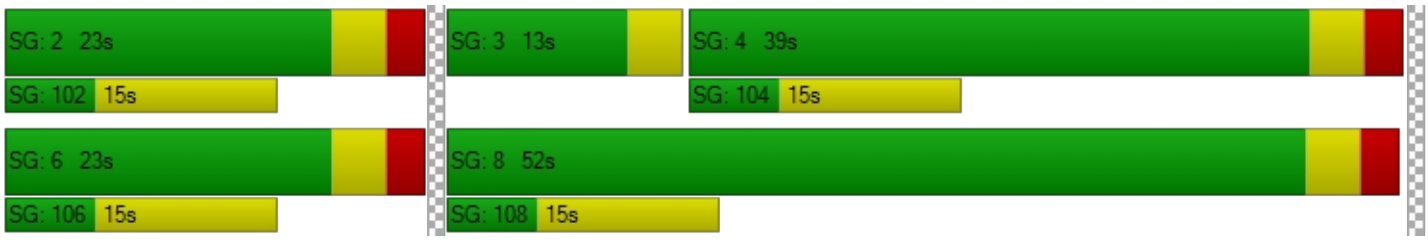
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.64 | 0.68 | 1.69 | 1.14 | 0.55 | 1.70 | 0.38 | 1.35 |
| d, Delay for Lane Group [s/veh] | 365.68 | 34.53 | 367.69 | 119.20 | 20.21 | 331.46 | 39.88 | 186.73 |
| Lane Group LOS | F | C | F | F | C | F | D | F |
| Critical Lane Group | No | No | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 11.36 | 5.31 | 19.52 | 16.76 | 1.87 | 108.07 | 0.73 | 51.01 |
| 50th-Percentile Queue Length [ft] | 283.95 | 132.64 | 488.08 | 418.88 | 46.81 | 2701.77 | 18.23 | 1275.19 |
| 95th-Percentile Queue Length [veh] | 20.35 | 9.08 | 32.91 | 25.24 | 3.37 | 172.16 | 1.31 | 76.14 |
| 95th-Percentile Queue Length [ft] | 508.80 | 227.08 | 822.83 | 631.01 | 84.26 | 4303.97 | 32.81 | 1903.48 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 365.68 | 34.53 | 34.53 | 367.69 | 119.20 | 119.20 | 20.21 | 331.46 | 331.46 | 39.88 | 186.73 | 186.73 |
| Movement LOS | F | C | C | F | F | F | C | F | F | D | F | F |
| d_A, Approach Delay [s/veh] | 160.37 | | | 217.87 | | | 296.50 | | | 182.02 | | |
| Approach LOS | F | | | F | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 239.05 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 1.338 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 30: 28 - 8th Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 99.1 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 8th Avenue | | | 8th Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 8th Avenue | | | 8th Avenue | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 69 | 126 | 7 | 39 | 65 | 55 | 127 | 250 | 77 | 6 | 236 | 38 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 0.40 | 0.00 | 0.00 | 0.40 | 0.00 |
| Growth Rate | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 97 | 176 | 10 | 55 | 91 | 77 | 178 | 350 | 108 | 8 | 330 | 53 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 25 | 46 | 3 | 14 | 24 | 20 | 46 | 91 | 28 | 2 | 86 | 14 |
| Total Analysis Volume [veh/h] | 101 | 184 | 10 | 57 | 95 | 80 | 186 | 365 | 113 | 8 | 344 | 55 |
| Pedestrian Volume [ped/h] | 18 | | | 12 | | | 29 | | | 33 | | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | | |
|---|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 4.73 | 3.02 | 30.17 | 8.53 |
| 95th-Percentile Queue Length [ft] | 118.23 | 75.45 | 754.31 | 213.28 |
| Approach Delay [s/veh] | 25.70 | 20.06 | 196.11 | 39.24 |
| Approach LOS | D | C | F | E |
| Intersection Delay [s/veh] | 99.14 | | | |
| Intersection LOS | F | | | |

**Intersection Level Of Service Report**
**Intersection 31: 29 - 7th Avenue / Grant Street**

| | | | |
|---|---|---|---|
| Control Type: | All-way stop | Delay (sec / veh): | 123.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | | |

**Intersection Setup**

| Name | 7th Avenue | | Grant Street | | Grant Street | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | Yes | | Yes | |

**volumes**

| Name | 7th Avenue | | Grant Street | | Grant Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 100 | 125 | 192 | 49 | 39 | 127 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.80 |
| Growth Rate | 2.74 | 2.74 | 2.74 | 2.74 | 2.74 | 2.74 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 274 | 343 | 526 | 134 | 107 | 348 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 71 | 89 | 137 | 35 | 28 | 91 |
| Total Analysis Volume [veh/h] | 286 | 358 | 549 | 140 | 112 | 363 |
| Pedestrian Volume [ped/h] | 28 | | 129 | | 74 | |

**Intersection Settings**

**Lanes**

**Movement, Approach, & Intersection Results**

| | | | |
|---|---|---|---|
| 95th-Percentile Queue Length [veh] | 23.32 | 28.83 | 11.27 |
| 95th-Percentile Queue Length [ft] | 582.97 | 720.87 | 281.82 |
| Approach Delay [s/veh] | 126.59 | 169.64 | 50.65 |
| Approach LOS | F | F | F |
| Intersection Delay [s/veh] | 123.05 | | |
| Intersection LOS | F | | |

**Intersection Level Of Service Report**
**Intersection 32: 30 - 7th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 10.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.561 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 7 | 38 | 30 | 13 | 86 | 37 | 663 | 4 | 8 | 568 | 50 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 2.60 | 6.70 | 0.00 | 0.00 | 2.70 | 0.60 | 0.00 | 0.00 | 0.90 | 0.00 |
| Growth Rate | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 | 1.27 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 9 | 48 | 38 | 17 | 109 | 47 | 842 | 5 | 10 | 721 | 64 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 0 | 2 | 13 | 10 | 4 | 28 | 12 | 220 | 1 | 3 | 188 | 17 |
| Total Analysis Volume [veh/h] | 0 | 10 | 52 | 40 | 18 | 114 | 49 | 879 | 5 | 10 | 752 | 67 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 2 | | | 2 | | | 42 | | | 2 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 80 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 60 | 0 | 0 | 60 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 11 | 11 | 11 | 11 | 59 | 59 | 59 | 59 |
| g / C, Green / Cycle | 0.14 | 0.14 | 0.14 | 0.14 | 0.73 | 0.73 | 0.73 | 0.73 |
| (v / s)_i Volume / Saturation Flow Rate | 0.00 | 0.04 | 0.03 | 0.09 | 0.07 | 0.47 | 0.02 | 0.44 |
| s, saturation flow rate [veh/h] | 1278 | 1645 | 1269 | 1431 | 660 | 1887 | 638 | 1856 |
| c, Capacity [veh/h] | 140 | 235 | 205 | 204 | 409 | 1381 | 381 | 1359 |
| d1, Uniform Delay [s] | 0.00 | 30.54 | 34.16 | 32.37 | 11.58 | 5.40 | 12.03 | 5.14 |
| k, delay calibration | 0.11 | 0.11 | 0.11 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.00 | 0.59 | 0.46 | 3.39 | 0.60 | 2.28 | 0.13 | 1.99 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

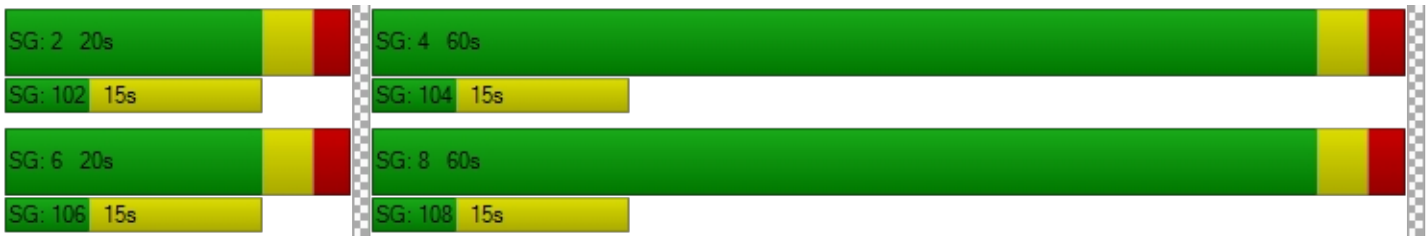
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.00 | 0.26 | 0.20 | 0.65 | 0.12 | 0.64 | 0.03 | 0.60 |
| d, Delay for Lane Group [s/veh] | 0.00 | 31.13 | 34.62 | 35.76 | 12.18 | 7.68 | 12.16 | 7.12 |
| Lane Group LOS | A | C | C | D | B | A | B | A |
| Critical Lane Group | No | No | No | Yes | No | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 0.00 | 1.08 | 0.74 | 2.55 | 0.52 | 5.94 | 0.11 | 5.21 |
| 50th-Percentile Queue Length [ft] | 0.00 | 27.04 | 18.57 | 63.66 | 13.07 | 148.56 | 2.67 | 130.37 |
| 95th-Percentile Queue Length [veh] | 0.00 | 1.95 | 1.34 | 4.58 | 0.94 | 9.94 | 0.19 | 8.96 |
| 95th-Percentile Queue Length [ft] | 0.00 | 48.67 | 33.42 | 114.58 | 23.53 | 248.51 | 4.80 | 224.00 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 31.13 | 31.13 | 34.62 | 35.76 | 35.76 | 12.18 | 7.68 | 7.68 | 12.16 | 7.12 | 7.12 |
| Movement LOS | A | C | C | C | D | D | B | A | A | B | A | A |
| d_A, Approach Delay [s/veh] | 31.13 | | | 35.50 | | | 7.92 | | | 7.19 | | |
| Approach LOS | C | | | D | | | A | | | A | | |
| d_I, Intersection Delay [s/veh] | 10.71 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.561 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 33: 31 - Valley Center Spur / Frontage Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 20.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.302 |

**Intersection Setup**

| Name | Valley Center Spur | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Approach | Northeastbound | | Northwestbound | | Southeastbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 825.00 | 100.00 | 100.00 | 615.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Valley Center Spur | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 108 | 76 | 142 | 298 | 158 | 112 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.90 | 1.30 | 0.70 | 2.60 | 1.30 | 1.80 |
| Growth Rate | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 95 | 67 | 125 | 262 | 139 | 99 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0500 | 1.0500 | 1.0500 | 1.0500 |
| Total 15-Minute Volume [veh/h] | 26 | 18 | 36 | 75 | 40 | 28 |
| Total Analysis Volume [veh/h] | 103 | 73 | 143 | 299 | 159 | 113 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.30 | 0.08 | 0.11 | 0.00 | 0.00 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 20.35 | 13.86 | 8.11 | 0.00 | 0.00 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 1.78 | 1.78 | 0.37 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 44.49 | 44.49 | 9.25 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 17.66 | | 2.63 | | 0.00 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 4.80 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 34: 32 - Valley Center Spur / Valley Center Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 500.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.908 |

**Intersection Setup**

| Name | Valley Center Spur | | Valley Center Road | | Valley Center Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 1 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 120.00 | 430.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Valley Center Spur | | Valley Center Road | | Valley Center Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 109 | 135 | 70 | 195 | 264 | 121 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.80 | 5.20 | 2.90 | 6.60 | 3.00 | 1.70 |
| Growth Rate | 1.91 | 1.91 | 1.91 | 1.91 | 1.91 | 1.91 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 208 | 258 | 134 | 372 | 504 | 231 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0500 | 1.0500 | 1.0500 | 1.0500 |
| Total 15-Minute Volume [veh/h] | 57 | 70 | 38 | 106 | 144 | 66 |
| Total Analysis Volume [veh/h] | 226 | 280 | 153 | 425 | 575 | 264 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 1.91 | 0.65 | 0.19 | 0.00 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 500.26 | 27.71 | 10.63 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | D | B | A | A | A |
| 95th-Percentile Queue Length [veh] | 18.12 | 4.52 | 0.71 | 0.00 | 0.00 | 0.00 |
| 95th-Percentile Queue Length [ft] | 453.06 | 112.89 | 17.80 | 0.00 | 0.00 | 0.00 |
| d_A, Approach Delay [s/veh] | 238.77 | | 2.81 | | 0.00 | |
| Approach LOS | F | | A | | A | |
| d_I, Intersection Delay [s/veh] | 63.67 | | | | | |
| Intersection LOS | F | | | | | |

**Intersection Level Of Service Report**
**Intersection 35: 33 - Nelson Road / Frontage Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 22.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.070 |

**Intersection Setup**

| Name | Nelson Road | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Approach | Southwestbound | | Northwestbound | | Southeastbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 1 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 575.00 | 600.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Nelson Road | | Frontage Road | | Frontage Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 12 | 12 | 481 | 49 | 18 | 241 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 8.30 | 2.70 | 0.00 | 5.60 | 2.50 |
| Growth Rate | 1.23 | 1.23 | 1.23 | 1.23 | 1.23 | 1.23 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 15 | 15 | 592 | 60 | 22 | 296 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0900 | 1.0900 | 1.0900 | 1.0900 |
| Total 15-Minute Volume [veh/h] | 4 | 4 | 175 | 18 | 7 | 88 |
| Total Analysis Volume [veh/h] | 16 | 16 | 701 | 71 | 26 | 351 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.07 | 0.04 | 0.01 | 0.00 | 0.03 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 22.22 | 14.86 | 0.00 | 0.00 | 9.49 | 0.00 |
| Movement LOS | C | B | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.36 | 0.36 | 0.00 | 0.00 | 0.10 | 0.00 |
| 95th-Percentile Queue Length [ft] | 8.93 | 8.93 | 0.00 | 0.00 | 2.43 | 0.00 |
| d_A, Approach Delay [s/veh] | 18.54 | | 0.00 | | 0.65 | |
| Approach LOS | C | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.71 | | | | | |
| Intersection LOS | C | | | | | |

**Intersection Level Of Service Report**
**Intersection 36: 34 - 19th Avenue / I-90 EB Ramp**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 228.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.353 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 WB On | | | I-90 WB Off | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 350.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 270.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | | No | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 WB On | | | I-90 WB Off | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 0 | 877 | 200 | 45 | 486 | 0 | 0 | 0 | 0 | 17 | 0 | 279 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.00 | 2.20 | 3.50 | 0.00 | 1.80 | 2.00 | 2.00 | 2.00 | 2.00 | 5.90 | 2.00 | 4.00 |
| Growth Rate | 1.00 | 1.88 | 1.88 | 1.88 | 1.88 | 1.00 | 1.00 | 1.00 | 1.00 | 1.88 | 1.00 | 1.88 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 0 | 1649 | 376 | 85 | 914 | 0 | 0 | 0 | 0 | 32 | 0 | 525 |
| Peak Hour Factor | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9200 | 1.0000 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 0 | 448 | 102 | 23 | 248 | 0 | 0 | 0 | 0 | 9 | 0 | 143 |
| Total Analysis Volume [veh/h] | 0 | 1792 | 409 | 92 | 993 | 0 | 0 | 0 | 0 | 35 | 0 | 571 |
| Presence of On-Street Parking | No | | No | No | | No | | | | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Overlap | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 2 | 1 | 6 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| Auxiliary Signal Groups | | | 2 | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | Lead | - | - |
| Minimum Green [s] | 0 | 30 | 30 | 15 | 30 | 0 | 0 | 0 | 0 | 20 | 0 | 0 |
| Maximum Green [s] | 0 | 60 | 60 | 30 | 90 | 0 | 0 | 0 | 0 | 45 | 0 | 0 |
| Amber [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| Split [s] | 0 | 71 | 71 | 18 | 89 | 0 | 0 | 0 | 0 | 31 | 0 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 5 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 10 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 |
| Minimum Recall | | No | No | No | No | | | | | No | | |
| Maximum Recall | | No | No | No | No | | | | | No | | |
| Pedestrian Recall | | No | No | No | No | | | | | No | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | L | C | | L | R |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 67 | 67 | 84 | 84 | | 26 | 26 |
| g / C, Green / Cycle | 0.56 | 0.56 | 0.70 | 0.70 | | 0.22 | 0.22 |
| (v / s)_i Volume / Saturation Flow Rate | 0.96 | 0.26 | 0.17 | 0.53 | | 0.02 | 0.37 |
| s, saturation flow rate [veh/h] | 1859 | 1560 | 552 | 1866 | | 1709 | 1553 |
| c, Capacity [veh/h] | 1031 | 865 | 327 | 1306 | | 370 | 336 |
| d1, Uniform Delay [s] | 26.74 | 16.15 | 25.22 | 11.54 | | 37.59 | 47.00 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 336.50 | 1.85 | 2.14 | 4.20 | | 0.11 | 326.21 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.74 | 0.47 | 0.28 | 0.76 | | 0.09 | 1.70 |
| d, Delay for Lane Group [s/veh] | 363.24 | 18.00 | 27.36 | 15.74 | | 37.70 | 373.21 |
| Lane Group LOS | F | B | C | B | | D | F |
| Critical Lane Group | Yes | No | Yes | No | | No | Yes |
| 50th-Percentile Queue Length [veh] | 123.96 | 7.07 | 0.88 | 16.62 | | 0.84 | 40.46 |
| 50th-Percentile Queue Length [ft] | 3099.06 | 176.66 | 22.10 | 415.60 | | 21.03 | 1011.62 |
| 95th-Percentile Queue Length [veh] | 195.45 | 11.43 | 1.59 | 23.31 | | 1.51 | 63.31 |
| 95th-Percentile Queue Length [ft] | 4886.27 | 285.65 | 39.78 | 582.77 | | 37.85 | 1582.70 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 0.00 | 363.24 | 18.00 | 27.36 | 15.74 | 0.00 | 0.00 | 0.00 | 0.00 | 37.70 | 0.00 | 373.21 |
| Movement LOS | | F | B | C | B | | | | | D | | F |
| d_A, Approach Delay [s/veh] | 299.08 | | | 16.73 | | | 0.00 | | | 353.84 | | |
| Approach LOS | F | | | B | | | A | | | F | | |
| d_I, Intersection Delay [s/veh] | 228.89 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 1.353 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 37: 35 - 19th Avenue / I-90 WB Ramp**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 69.4 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.876 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 EB Off | | | I-90 EB On | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Northwestbound | | | Southeastbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 275.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 260.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | No | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | I-90 EB Off | | | I-90 EB On | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 424 | 500 | 0 | 0 | 313 | 26 | 208 | 0 | 60 | 0 | 0 | 0 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.60 | 1.00 | 2.00 | 2.00 | 0.90 | 7.70 | 2.40 | 2.00 | 1.70 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.58 | 1.58 | 1.00 | 1.00 | 1.58 | 1.58 | 1.58 | 1.00 | 1.58 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 670 | 790 | 0 | 0 | 495 | 41 | 329 | 0 | 95 | 0 | 0 | 0 |
| Peak Hour Factor | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 0.9200 | 1.0000 | 1.0000 | 1.0000 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 182 | 215 | 0 | 0 | 135 | 11 | 89 | 0 | 26 | 0 | 0 | 0 |
| Total Analysis Volume [veh/h] | 728 | 859 | 0 | 0 | 538 | 45 | 358 | 0 | 103 | 0 | 0 | 0 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | | | |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 0 | 6 | 0 | 7 | 0 | 0 | 0 | 0 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - | Lead | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 0 | 30 | 0 | 15 | 0 | 0 | 0 | 0 | 0 |
| Maximum Green [s] | 25 | 60 | 0 | 0 | 60 | 0 | 45 | 0 | 0 | 0 | 0 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Split [s] | 46 | 90 | 0 | 0 | 44 | 0 | 30 | 0 | 0 | 0 | 0 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 10 | 0 | 0 | 0 | 0 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Minimum Recall | No | No | | | No | | No | | | | | |
| Maximum Recall | No | No | | | No | | No | | | | | |
| Pedestrian Recall | No | No | | | No | | No | | | | | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | R | |
|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | |
| g_i, Effective Green Time [s] | 85 | 85 | 39 | 25 | 25 | |
| g / C, Green / Cycle | 0.71 | 0.71 | 0.33 | 0.21 | 0.21 | |
| (v / s)_i Volume / Saturation Flow Rate | 0.62 | 0.51 | 0.35 | 0.23 | 0.07 | |
| s, saturation flow rate [veh/h] | 1179 | 1693 | 1672 | 1590 | 1429 | |
| c, Capacity [veh/h] | 680 | 1199 | 543 | 331 | 298 | |
| d1, Uniform Delay [s] | 34.47 | 10.36 | 40.50 | 47.50 | 40.52 | |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.47 | 0.11 | |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| d2, Incremental Delay [s] | 55.20 | 3.68 | 59.62 | 71.24 | 0.69 | |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |

**Lane Group Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| X, volume / capacity | 1.07 | 0.72 | 1.07 | 1.08 | 0.35 | |
| d, Delay for Lane Group [s/veh] | 89.67 | 14.04 | 100.12 | 118.74 | 41.21 | |
| Lane Group LOS | F | B | F | F | D | |
| Critical Lane Group | Yes | No | Yes | Yes | No | |
| 50th-Percentile Queue Length [veh] | 18.55 | 13.15 | 24.79 | 16.39 | 2.67 | |
| 50th-Percentile Queue Length [ft] | 463.64 | 328.75 | 619.77 | 409.86 | 66.65 | |
| 95th-Percentile Queue Length [veh] | 27.09 | 19.10 | 34.52 | 24.02 | 4.80 | |
| 95th-Percentile Queue Length [ft] | 677.34 | 477.43 | 863.12 | 600.40 | 119.97 | |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 89.67 | 14.04 | 0.00 | 0.00 | 100.12 | 100.12 | 118.74 | 0.00 | 41.21 | 0.00 | 0.00 | 0.00 |
| Movement LOS | F | B | | | F | F | F | | D | | | |
| d_A, Approach Delay [s/veh] | 48.74 | | | 100.12 | | | 101.42 | | | 0.00 | | |
| Approach LOS | D | | | F | | | F | | | A | | |
| d_I, Intersection Delay [s/veh] | 69.35 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.876 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 38: 36 - 19th Avenue / Tschache Way**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 31.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.721 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Tschache Way | | | Tschache Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 200.00 | 100.00 | 200.00 | 275.00 | 100.00 | 175.00 | 80.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Tschache Way | | | Tschache Way | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 65 | 1089 | 48 | 73 | 797 | 57 | 102 | 22 | 56 | 76 | 26 | 89 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.90 | 0.00 | 0.00 | 0.70 | 0.00 | 1.00 | 0.00 | 3.60 | 0.00 | 0.00 | 3.40 |
| Growth Rate | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 103 | 1732 | 76 | 116 | 1267 | 91 | 162 | 35 | 89 | 121 | 41 | 142 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0400 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 29 | 489 | 21 | 33 | 358 | 26 | 44 | 10 | 24 | 33 | 11 | 39 |
| Total Analysis Volume [veh/h] | 116 | 1958 | 86 | 131 | 1432 | 103 | 176 | 38 | 97 | 132 | 45 | 154 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 150 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 10 | 30 | 0 | 10 | 30 | 0 | 0 | 15 | 0 | 0 | 15 | 0 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 14 | 96 | 0 | 13 | 95 | 0 | 0 | 41 | 0 | 0 | 41 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 104 | 91 | 91 | 104 | 91 | 91 | 36 | 36 | 36 | 36 |
| g / C, Green / Cycle | 0.69 | 0.61 | 0.61 | 0.69 | 0.61 | 0.61 | 0.24 | 0.24 | 0.24 | 0.24 |
| (v / s)_i Volume / Saturation Flow Rate | 0.22 | 0.55 | 0.05 | 0.33 | 0.40 | 0.06 | 0.15 | 0.08 | 0.10 | 0.12 |
| s, saturation flow rate [veh/h] | 531 | 3585 | 1615 | 395 | 3592 | 1615 | 1190 | 1686 | 1274 | 1672 |
| c, Capacity [veh/h] | 341 | 2176 | 980 | 239 | 2178 | 979 | 198 | 405 | 255 | 401 |
| d1, Uniform Delay [s] | 14.99 | 25.53 | 12.24 | 33.50 | 19.33 | 12.42 | 66.92 | 47.09 | 58.74 | 49.17 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.16 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.70 | 6.49 | 0.18 | 8.79 | 1.57 | 0.22 | 17.33 | 0.48 | 1.63 | 0.95 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.34 | 0.90 | 0.09 | 0.55 | 0.66 | 0.11 | 0.89 | 0.33 | 0.52 | 0.50 |
| d, Delay for Lane Group [s/veh] | 17.69 | 32.03 | 12.42 | 42.29 | 20.90 | 12.63 | 84.25 | 47.57 | 60.37 | 50.12 |
| Lane Group LOS | B | C | B | D | C | B | F | D | E | D |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 1.48 | 31.07 | 1.27 | 1.98 | 16.55 | 1.54 | 7.78 | 4.28 | 4.83 | 6.61 |
| 50th-Percentile Queue Length [ft] | 37.04 | 776.69 | 31.84 | 49.51 | 413.74 | 38.60 | 194.50 | 106.94 | 120.79 | 165.19 |
| 95th-Percentile Queue Length [veh] | 2.67 | 40.21 | 2.29 | 3.56 | 23.22 | 2.78 | 12.35 | 7.67 | 8.44 | 10.82 |
| 95th-Percentile Queue Length [ft] | 66.68 | 1005.21 | 57.32 | 89.11 | 580.53 | 69.49 | 308.86 | 191.74 | 210.92 | 270.58 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 17.69 | 32.03 | 12.42 | 42.29 | 20.90 | 12.63 | 84.25 | 47.57 | 47.57 | 60.37 | 50.12 | 50.12 |
| Movement LOS | B | C | B | D | C | B | F | D | D | E | D | D |
| d_A, Approach Delay [s/veh] | 30.48 | | | 22.07 | | | 68.33 | | | 54.21 | | |
| Approach LOS | C | | | C | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 31.74 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.721 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 39: 37 - 19th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 82.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.011 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 400.00 | 100.00 | 400.00 | 275.00 | 100.00 | 250.00 | 200.00 | 100.00 | 100.00 | 225.00 | 100.00 | 225.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 115 | 836 | 205 | 186 | 645 | 75 | 148 | 227 | 56 | 248 | 423 | 262 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.50 | 0.90 | 2.60 | 1.30 | 1.10 | 3.20 | 0.00 | 4.40 | 1.40 | 3.50 | 0.50 | 2.40 |
| Growth Rate | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 215 | 1563 | 383 | 348 | 1206 | 140 | 277 | 424 | 105 | 464 | 791 | 490 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 58 | 425 | 104 | 95 | 328 | 38 | 75 | 115 | 29 | 122 | 208 | 129 |
| Total Analysis Volume [veh/h] | 234 | 1699 | 416 | 378 | 1311 | 152 | 301 | 461 | 114 | 489 | 834 | 517 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 165 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 10 | 30 | 30 | 10 | 30 | 30 | 10 | 20 | 20 | 10 | 20 | 20 |
| Maximum Green [s] | 30 | 90 | 90 | 30 | 90 | 90 | 30 | 45 | 45 | 30 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 18 | 75 | 75 | 27 | 84 | 84 | 22 | 27 | 27 | 36 | 41 | 41 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 97 | 70 | 108 | 97 | 81 | 105 | 58 | 22 | 40 | 58 | 36 | 65 |
| g / C, Green / Cycle | 0.59 | 0.42 | 0.65 | 0.59 | 0.49 | 0.64 | 0.35 | 0.13 | 0.24 | 0.35 | 0.22 | 0.39 |
| (v / s)_i Volume / Saturation Flow Rate | 0.38 | 0.47 | 0.26 | 0.56 | 0.37 | 0.10 | 0.28 | 0.13 | 0.07 | 0.35 | 0.23 | 0.33 |
| s, saturation flow rate [veh/h] | 611 | 3585 | 1574 | 675 | 3578 | 1565 | 1062 | 3465 | 1593 | 1403 | 3600 | 1577 |
| c, Capacity [veh/h] | 300 | 1521 | 1030 | 339 | 1765 | 999 | 293 | 462 | 383 | 437 | 785 | 621 |
| d1, Uniform Delay [s] | 30.75 | 47.50 | 13.38 | 64.25 | 33.45 | 11.93 | 58.87 | 71.48 | 51.30 | 56.66 | 64.50 | 45.08 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.34 | 0.50 | 0.11 | 0.29 | 0.50 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 17.97 | 62.21 | 1.18 | 83.35 | 2.88 | 0.22 | 60.08 | 18.95 | 1.17 | 79.87 | 34.69 | 12.34 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

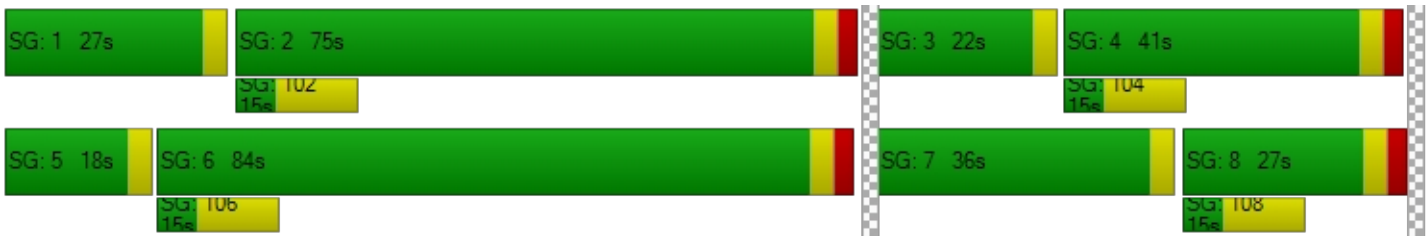
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.78 | 1.12 | 0.40 | 1.11 | 0.74 | 0.15 | 1.03 | 1.00 | 0.30 | 1.12 | 1.06 | 0.83 |
| d, Delay for Lane Group [s/veh] | 48.72 | 109.71 | 14.56 | 147.60 | 36.32 | 12.16 | 118.95 | 90.43 | 52.48 | 136.53 | 99.19 | 57.42 |
| Lane Group LOS | D | F | B | F | D | B | F | F | D | F | F | E |
| Critical Lane Group | Yes | No | No | Yes | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 5.81 | 44.19 | 7.66 | 14.56 | 21.73 | 2.36 | 14.26 | 11.01 | 4.05 | 25.31 | 20.33 | 21.28 |
| 50th-Percentile Queue Length [ft] | 145.23 | 1104.74 | 191.48 | 363.90 | 543.27 | 59.02 | 356.44 | 275.26 | 101.23 | 632.81 | 508.33 | 531.91 |
| 95th-Percentile Queue Length [veh] | 9.76 | 59.79 | 12.20 | 22.50 | 29.38 | 4.25 | 20.83 | 16.45 | 7.29 | 36.14 | 28.70 | 28.84 |
| 95th-Percentile Queue Length [ft] | 244.05 | 1494.63 | 304.94 | 562.49 | 734.40 | 106.24 | 520.63 | 411.30 | 182.22 | 903.56 | 717.41 | 721.03 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 48.72 | 109.71 | 14.56 | 147.60 | 36.32 | 12.16 | 118.95 | 90.43 | 52.48 | 136.53 | 99.19 | 57.42 |
| Movement LOS | D | F | B | F | D | B | F | F | D | F | F | E |
| d_A, Approach Delay [s/veh] | 86.78 | | | 57.18 | | | 95.29 | | | 97.38 | | |
| Approach LOS | F | | | E | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 82.79 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 1.011 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 40: 38 - 19th Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 54.0 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.831 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 90.00 | 100.00 | 100.00 | 250.00 | 100.00 | 100.00 | 325.00 | 100.00 | 420.00 | 140.00 | 100.00 | 50.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 178 | 918 | 62 | 96 | 763 | 139 | 145 | 251 | 103 | 80 | 368 | 117 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.50 | 1.60 | 1.00 | 0.80 | 0.00 | 0.00 | 0.80 | 1.00 | 0.00 | 0.50 | 0.00 |
| Growth Rate | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 249 | 1285 | 87 | 134 | 1068 | 195 | 203 | 351 | 144 | 112 | 515 | 164 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 68 | 349 | 24 | 36 | 290 | 53 | 54 | 93 | 38 | 30 | 136 | 43 |
| Total Analysis Volume [veh/h] | 271 | 1397 | 95 | 146 | 1161 | 212 | 214 | 370 | 152 | 118 | 543 | 173 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 150 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 8 | 30 | 0 | 8 | 30 | 0 | 8 | 15 | 15 | 8 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 18 | 70 | 0 | 11 | 63 | 0 | 14 | 56 | 56 | 13 | 55 | 55 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 79 | 68 | 68 | 79 | 61 | 61 | 61 | 50 | 70 | 61 | 47 | 60 |
| g / C, Green / Cycle | 0.53 | 0.45 | 0.45 | 0.53 | 0.41 | 0.41 | 0.41 | 0.33 | 0.46 | 0.41 | 0.31 | 0.40 |
| (v / s)_i Volume / Saturation Flow Rate | 0.40 | 0.40 | 0.41 | 0.28 | 0.37 | 0.38 | 0.20 | 0.20 | 0.10 | 0.10 | 0.29 | 0.11 |
| s, saturation flow rate [veh/h] | 683 | 1872 | 1831 | 516 | 1885 | 1786 | 1064 | 1885 | 1599 | 1148 | 1891 | 1615 |
| c, Capacity [veh/h] | 292 | 862 | 843 | 215 | 780 | 739 | 255 | 612 | 732 | 364 | 579 | 634 |
| d1, Uniform Delay [s] | 45.67 | 36.37 | 36.73 | 32.75 | 40.95 | 41.36 | 37.95 | 42.57 | 24.35 | 31.16 | 50.67 | 30.98 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.13 | 0.41 | 0.11 | 0.35 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 36.91 | 11.54 | 12.79 | 15.97 | 15.07 | 17.42 | 26.80 | 1.16 | 0.53 | 0.51 | 19.62 | 1.06 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

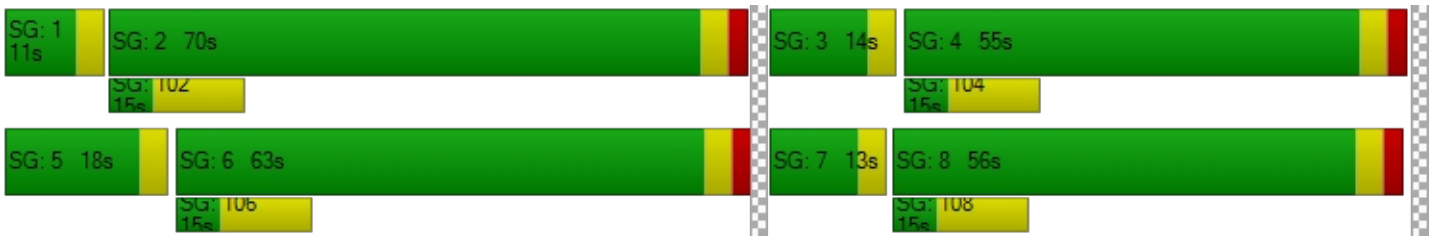
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.93 | 0.87 | 0.88 | 0.68 | 0.90 | 0.91 | 0.84 | 0.60 | 0.21 | 0.32 | 0.94 | 0.27 |
| d, Delay for Lane Group [s/veh] | 82.58 | 47.91 | 49.52 | 48.72 | 56.02 | 58.79 | 64.75 | 43.73 | 24.88 | 31.67 | 70.30 | 32.04 |
| Lane Group LOS | F | D | D | D | E | E | E | D | C | C | E | C |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 8.35 | 27.55 | 27.84 | 3.62 | 27.51 | 27.16 | 7.21 | 11.70 | 3.37 | 2.81 | 22.78 | 4.48 |
| 50th-Percentile Queue Length [ft] | 208.80 | 688.77 | 695.96 | 90.61 | 687.65 | 679.11 | 180.20 | 292.60 | 84.34 | 70.32 | 569.49 | 111.97 |
| 95th-Percentile Queue Length [veh] | 13.09 | 36.16 | 36.49 | 6.52 | 36.11 | 35.71 | 11.61 | 17.31 | 6.07 | 5.06 | 30.61 | 7.95 |
| 95th-Percentile Queue Length [ft] | 327.29 | 903.98 | 912.28 | 163.09 | 902.68 | 892.79 | 290.27 | 432.87 | 151.81 | 126.57 | 765.17 | 198.74 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 82.58 | 48.65 | 49.52 | 48.72 | 57.12 | 58.79 | 64.75 | 43.73 | 24.88 | 31.67 | 70.30 | 32.04 |
| Movement LOS | F | D | D | D | E | E | E | D | C | C | E | C |
| d_A, Approach Delay [s/veh] | 53.92 | | | 56.54 | | | 45.95 | | | 56.90 | | |
| Approach LOS | D | | | E | | | D | | | E | | |
| d_I, Intersection Delay [s/veh] | 54.04 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.831 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 41: 39 - 7th Avenue / Durston Road / Peach Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 52.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.758 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Durston Road | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 70.00 | 100.00 | 100.00 | 50.00 | 100.00 | 50.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Durston Road | | | Peach Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 72 | 681 | 34 | 64 | 489 | 189 | 194 | 233 | 57 | 23 | 233 | 72 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 0.00 | 1.60 | 1.00 | 0.50 | 1.00 | 0.40 | 0.00 | 0.00 | 0.40 | 0.00 |
| Growth Rate | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 | 1.30 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 94 | 885 | 44 | 83 | 636 | 246 | 252 | 303 | 74 | 30 | 303 | 94 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9900 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 | 0.9500 |
| Total 15-Minute Volume [veh/h] | 25 | 238 | 12 | 22 | 171 | 66 | 65 | 78 | 19 | 8 | 78 | 24 |
| Total Analysis Volume [veh/h] | 101 | 952 | 47 | 89 | 684 | 265 | 260 | 313 | 76 | 31 | 313 | 97 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 115 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 8 | 30 | 0 | 8 | 30 | 0 | 0 | 20 | 0 | 0 | 20 | 0 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 0 | 45 | 0 | 0 | 45 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 11 | 36 | 0 | 11 | 36 | 0 | 0 | 25 | 0 | 0 | 43 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | R | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 44 | 33 | 33 | 44 | 33 | 33 | 26 | 26 | 30 |
| g / C, Green / Cycle | 0.38 | 0.29 | 0.29 | 0.38 | 0.29 | 0.29 | 0.23 | 0.23 | 0.26 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.27 | 0.27 | 0.11 | 0.19 | 0.16 | 0.15 | 0.21 | 0.24 |
| s, saturation flow rate [veh/h] | 976 | 1881 | 1850 | 802 | 3582 | 1607 | 1792 | 1829 | 1816 |
| c, Capacity [veh/h] | 338 | 542 | 533 | 254 | 1027 | 461 | 410 | 418 | 474 |
| d1, Uniform Delay [s] | 25.24 | 39.81 | 39.82 | 27.77 | 36.17 | 35.04 | 40.01 | 43.44 | 41.44 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.14 | 0.34 | 0.25 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.25 | 24.69 | 25.02 | 3.79 | 3.42 | 5.16 | 2.09 | 22.37 | 16.47 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

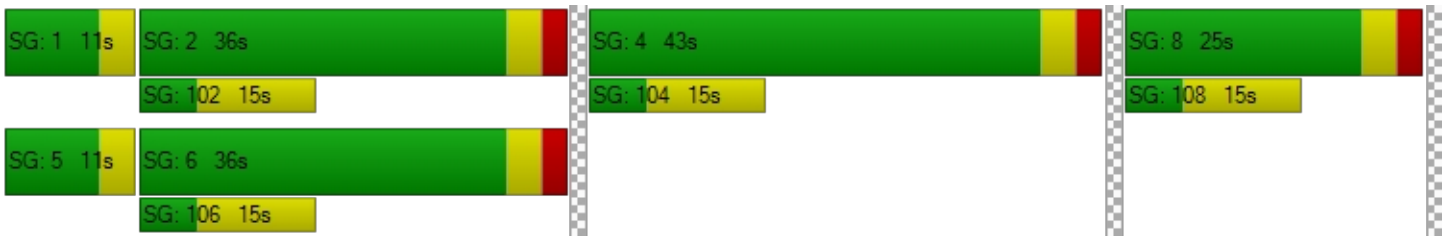
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.30 | 0.93 | 0.93 | 0.35 | 0.67 | 0.58 | 0.63 | 0.93 | 0.93 |
| d, Delay for Lane Group [s/veh] | 27.49 | 64.51 | 64.84 | 31.56 | 39.59 | 40.20 | 42.10 | 65.82 | 57.91 |
| Lane Group LOS | C | E | E | C | D | D | D | E | E |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | Yes |
| 50th-Percentile Queue Length [veh] | 2.02 | 17.38 | 17.15 | 1.85 | 8.91 | 6.98 | 6.85 | 13.34 | 14.24 |
| 50th-Percentile Queue Length [ft] | 50.61 | 434.56 | 428.74 | 46.36 | 222.67 | 174.49 | 171.26 | 333.55 | 355.89 |
| 95th-Percentile Queue Length [veh] | 3.64 | 24.22 | 23.94 | 3.34 | 13.80 | 11.31 | 11.14 | 19.33 | 20.42 |
| 95th-Percentile Queue Length [ft] | 91.10 | 605.49 | 598.53 | 83.46 | 345.03 | 282.80 | 278.58 | 483.31 | 510.59 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 27.49 | 64.66 | 64.84 | 31.56 | 39.59 | 40.20 | 42.10 | 65.82 | 65.82 | 57.91 | 57.91 | 57.91 |
| Movement LOS | C | E | E | C | D | D | D | E | E | E | E | E |
| d_A, Approach Delay [s/veh] | 61.26 | | | 39.06 | | | 56.32 | | | 57.91 | | |
| Approach LOS | E | | | D | | | E | | | E | | |
| d_I, Intersection Delay [s/veh] | 52.67 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.758 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 42: 40 - 19th Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 63.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.879 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 1 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 230.00 | 100.00 | 113.00 | 200.00 | 100.00 | 100.00 | 250.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Main Street | | | Main Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 122 | 629 | 107 | 129 | 499 | 307 | 371 | 601 | 31 | 175 | 754 | 190 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.60 | 0.40 | 0.00 | 0.00 | 1.40 | 1.30 | 1.60 | 0.80 | 0.00 | 0.00 | 0.80 | 0.50 |
| Growth Rate | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 | 1.41 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 172 | 887 | 151 | 182 | 704 | 433 | 523 | 847 | 44 | 247 | 1063 | 268 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 45 | 231 | 39 | 47 | 184 | 113 | 136 | 221 | 11 | 64 | 277 | 70 |
| Total Analysis Volume [veh/h] | 179 | 926 | 158 | 190 | 735 | 452 | 546 | 884 | 46 | 258 | 1109 | 280 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 180 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 0 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lag | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 27 | 54 | 54 | 24 | 51 | 51 | 38 | 24 | 0 | 78 | 64 | 64 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 3.00 | 5.00 | 3.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 1.00 | 3.00 | 0.00 | 1.00 | 3.00 | 0.00 | 1.00 | 3.00 | 3.00 | 1.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 24 | 49 | 70 | 21 | 46 | 112 | 36 | 78 | 78 | 16 | 58 | 123 |
| g / C, Green / Cycle | 0.13 | 0.27 | 0.39 | 0.12 | 0.26 | 0.62 | 0.20 | 0.43 | 0.43 | 0.09 | 0.32 | 0.68 |
| (v / s)_i Volume / Saturation Flow Rate | 0.13 | 0.26 | 0.10 | 0.11 | 0.21 | 0.28 | 0.20 | 0.25 | 0.25 | 0.07 | 0.31 | 0.17 |
| s, saturation flow rate [veh/h] | 1417 | 3603 | 1615 | 1810 | 3568 | 1594 | 2752 | 1885 | 1852 | 3514 | 3589 | 1607 |
| c, Capacity [veh/h] | 213 | 983 | 630 | 208 | 908 | 993 | 569 | 817 | 803 | 315 | 1154 | 1097 |
| d1, Uniform Delay [s] | 79.34 | 64.07 | 37.09 | 78.72 | 62.98 | 17.87 | 73.26 | 38.43 | 38.49 | 80.47 | 59.94 | 10.96 |
| k, delay calibration | 0.43 | 0.50 | 0.50 | 0.39 | 0.50 | 0.50 | 0.11 | 0.15 | 0.15 | 0.11 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 27.41 | 17.77 | 0.95 | 36.27 | 7.72 | 1.51 | 10.43 | 0.88 | 0.92 | 5.21 | 6.14 | 0.56 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

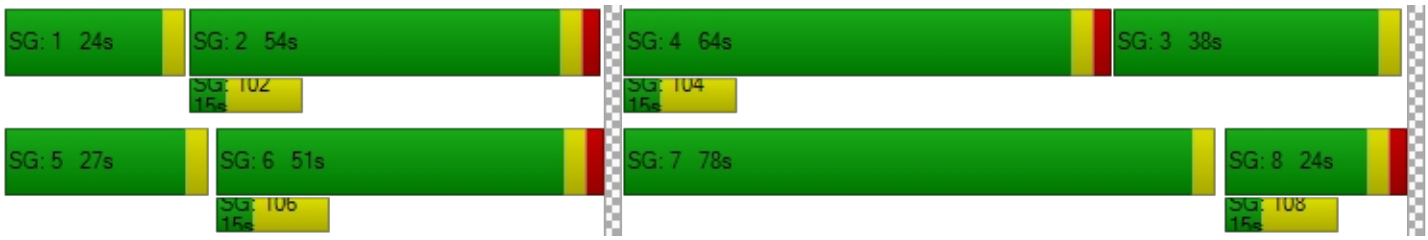
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.84 | 0.94 | 0.25 | 0.91 | 0.81 | 0.46 | 0.96 | 0.57 | 0.58 | 0.82 | 0.96 | 0.26 |
| d, Delay for Lane Group [s/veh] | 106.75 | 81.84 | 38.04 | 114.99 | 70.70 | 19.37 | 83.69 | 39.31 | 39.40 | 85.68 | 66.08 | 11.52 |
| Lane Group LOS | F | F | D | F | E | B | F | D | D | F | E | B |
| Critical Lane Group | No | Yes | No | Yes | No | Yes | No | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 10.02 | 23.27 | 5.00 | 10.88 | 16.88 | 10.49 | 13.61 | 16.05 | 15.88 | 6.16 | 25.89 | 4.58 |
| 50th-Percentile Queue Length [ft] | 250.60 | 581.85 | 124.92 | 271.98 | 421.98 | 262.31 | 340.16 | 401.32 | 397.00 | 154.06 | 647.20 | 114.44 |
| 95th-Percentile Queue Length [veh] | 15.22 | 31.19 | 8.66 | 16.29 | 23.62 | 15.80 | 19.66 | 22.62 | 22.42 | 10.23 | 34.23 | 8.09 |
| 95th-Percentile Queue Length [ft] | 380.41 | 779.65 | 216.57 | 407.21 | 590.42 | 395.12 | 491.40 | 565.59 | 560.39 | 255.84 | 855.81 | 202.15 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 106.75 | 81.84 | 38.04 | 114.99 | 70.70 | 19.37 | 83.69 | 39.35 | 39.40 | 85.68 | 66.08 | 11.52 |
| Movement LOS | F | F | D | F | E | B | F | D | D | F | E | B |
| d_A, Approach Delay [s/veh] | 79.89 | | | 59.96 | | | 55.75 | | | 59.88 | | |
| Approach LOS | E | | | E | | | E | | | E | | |
| d_I, Intersection Delay [s/veh] | 63.23 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.879 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 43: 41 - 7th Avenue / Main Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 19.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.608 |

**Intersection Setup**

| Name | 7th Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | Yes | |

**volumes**

| Name | 7th Avenue | | Main Street | | Main Street | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 219 | 286 | 328 | 333 | 407 | 141 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.50 | 2.40 | 0.60 | 1.50 | 1.70 | 0.00 |
| Growth Rate | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 293 | 383 | 440 | 446 | 545 | 189 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 | 0.9300 |
| Total 15-Minute Volume [veh/h] | 74 | 97 | 111 | 113 | 138 | 48 |
| Total Analysis Volume [veh/h] | 296 | 387 | 445 | 451 | 551 | 191 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Overlap | ProtectedPermissi | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 6 | 3 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | 3,6 | | | | |
| Lead / Lag | Lead | - | Lead | - | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 30 | 30 | 10 | 60 | 50 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | |
| Maximum Recall | No | No | No | No | No | |
| Pedestrian Recall | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | L | C | C | C | C |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 0.00 | 0.00 | 0.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 23 | 35 | 57 | 57 | 57 | 45 | 45 |
| g / C, Green / Cycle | 0.26 | 0.39 | 0.63 | 0.63 | 0.63 | 0.50 | 0.50 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.27 | 0.16 | 0.49 | 0.29 | 0.22 | 0.24 |
| s, saturation flow rate [veh/h] | 1620 | 1419 | 818 | 665 | 1533 | 1681 | 1541 |
| c, Capacity [veh/h] | 415 | 549 | 532 | 462 | 970 | 844 | 774 |
| d1, Uniform Delay [s] | 30.46 | 23.25 | 8.00 | 9.72 | 8.49 | 14.33 | 14.71 |
| k, delay calibration | 0.18 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.70 | 7.40 | 1.14 | 8.63 | 1.51 | 1.66 | 2.13 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

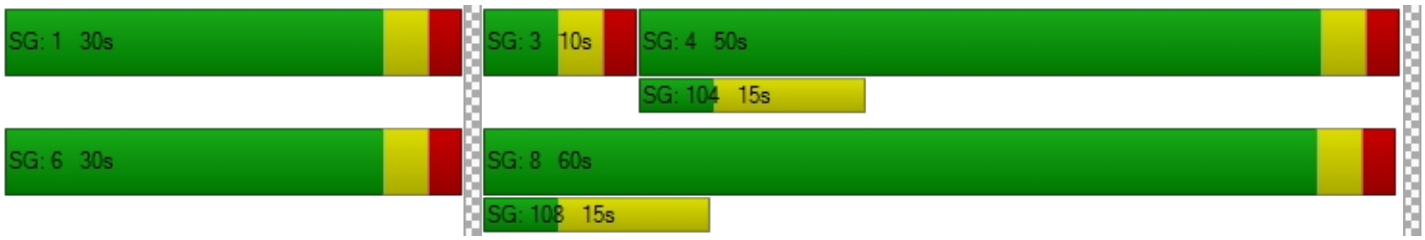
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.71 | 0.70 | 0.25 | 0.70 | 0.45 | 0.44 | 0.48 |
| d, Delay for Lane Group [s/veh] | 34.16 | 30.65 | 9.14 | 18.35 | 10.00 | 15.99 | 16.83 |
| Lane Group LOS | C | C | A | B | B | B | B |
| Critical Lane Group | No | Yes | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 6.12 | 7.74 | 1.09 | 3.66 | 4.25 | 4.95 | 5.14 |
| 50th-Percentile Queue Length [ft] | 153.00 | 193.53 | 27.29 | 91.52 | 106.30 | 123.78 | 128.46 |
| 95th-Percentile Queue Length [veh] | 10.18 | 12.30 | 1.97 | 6.59 | 7.63 | 8.60 | 8.86 |
| 95th-Percentile Queue Length [ft] | 254.43 | 307.60 | 49.13 | 164.74 | 190.85 | 215.01 | 221.40 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 34.16 | 30.65 | 14.13 | 10.26 | 16.26 | 16.83 |
| Movement LOS | C | C | B | B | B | B |
| d_A, Approach Delay [s/veh] | 32.17 | | 12.89 | | 16.41 | |
| Approach LOS | C | | B | | B | |
| d_I, Intersection Delay [s/veh] | 19.69 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.608 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | - | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 44: 42 - 19th Avenue / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 35.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.542 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 30 | 781 | 35 | 0 | 595 | 51 | 18 | 59 | 44 | 24 | 27 | 56 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.60 | 2.90 | 2.00 | 1.00 | 0.00 | 0.00 | 1.70 | 0.00 | 0.00 | 0.00 | 1.80 |
| Growth Rate | 1.57 | 1.57 | 1.57 | 1.00 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 | 1.57 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 47 | 1226 | 55 | 0 | 934 | 80 | 28 | 93 | 69 | 38 | 42 | 88 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 12 | 323 | 14 | 0 | 246 | 21 | 7 | 25 | 18 | 10 | 11 | 23 |
| Total Analysis Volume [veh/h] | 50 | 1293 | 58 | 0 | 985 | 84 | 30 | 98 | 73 | 40 | 44 | 93 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 180 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 102 | 0 | 0 | 102 | 0 | 0 | 78 | 0 | 0 | 78 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | C | C | C | C |
|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 97 | 97 | 97 | 97 | 97 | 73 | 73 |
| g / C, Green / Cycle | 0.54 | 0.54 | 0.54 | 0.54 | 0.54 | 0.41 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.10 | 0.40 | 0.40 | 0.32 | 0.32 | 0.14 | 0.13 |
| s, saturation flow rate [veh/h] | 483 | 1683 | 1658 | 1693 | 1647 | 1471 | 1356 |
| c, Capacity [veh/h] | 188 | 907 | 893 | 912 | 888 | 620 | 575 |
| d1, Uniform Delay [s] | 48.31 | 32.10 | 32.16 | 27.96 | 28.33 | 36.53 | 36.55 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 3.44 | 5.65 | 5.79 | 2.75 | 3.02 | 1.39 | 1.39 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

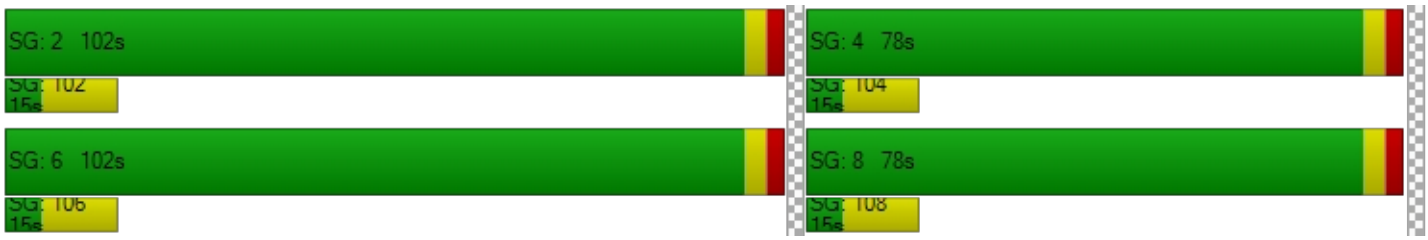
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.27 | 0.75 | 0.75 | 0.59 | 0.60 | 0.32 | 0.31 |
| d, Delay for Lane Group [s/veh] | 51.76 | 37.75 | 37.95 | 30.71 | 31.34 | 37.92 | 37.93 |
| Lane Group LOS | D | D | D | C | C | D | D |
| Critical Lane Group | No | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 1.95 | 24.42 | 24.20 | 16.45 | 16.70 | 6.46 | 5.76 |
| 50th-Percentile Queue Length [ft] | 48.83 | 610.43 | 604.93 | 411.31 | 417.60 | 161.49 | 144.04 |
| 95th-Percentile Queue Length [veh] | 3.52 | 32.52 | 32.26 | 23.10 | 23.41 | 10.63 | 9.70 |
| 95th-Percentile Queue Length [ft] | 87.90 | 813.03 | 806.62 | 577.62 | 585.16 | 265.69 | 242.45 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 51.76 | 37.84 | 37.95 | 0.00 | 31.00 | 31.34 | 37.92 | 37.92 | 37.92 | 37.93 | 37.93 | 37.93 |
| Movement LOS | D | D | D | | C | C | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 38.35 | | | 31.03 | | | 37.92 | | | 37.93 | | |
| Approach LOS | D | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 35.54 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.542 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 45: 43 - 19th Avenue / Koch Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.627 |

**Intersection Setup**

| Name | | | | 19th Avenue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 160.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | | | | 19th Avenue | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 55 | 805 | 52 | 57 | 563 | 22 | 29 | 53 | 79 | 34 | 76 | 50 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.80 | 0.50 | 3.80 | 0.00 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 |
| Growth Rate | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 | 1.59 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 87 | 1280 | 83 | 91 | 895 | 35 | 46 | 84 | 126 | 54 | 121 | 80 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 23 | 337 | 22 | 24 | 236 | 9 | 13 | 23 | 34 | 14 | 32 | 21 |
| Total Analysis Volume [veh/h] | 92 | 1350 | 88 | 96 | 944 | 37 | 50 | 91 | 137 | 57 | 128 | 84 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 90 | 0 | 0 | 90 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 58 | 0 | 0 | 58 | 0 | 0 | 32 | 0 | 0 | 32 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | C | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 2.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 60 | 60 | 60 | 60 | 60 | 60 | 20 | 20 |
| g / C, Green / Cycle | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.67 | 0.22 | 0.22 |
| (v / s)_i Volume / Saturation Flow Rate | 0.18 | 0.43 | 0.43 | 0.28 | 0.29 | 0.29 | 0.20 | 0.20 |
| s, saturation flow rate [veh/h] | 515 | 1701 | 1665 | 340 | 1695 | 1672 | 1407 | 1359 |
| c, Capacity [veh/h] | 319 | 1135 | 1111 | 195 | 1131 | 1116 | 359 | 350 |
| d1, Uniform Delay [s] | 15.71 | 8.68 | 8.72 | 27.43 | 7.03 | 7.03 | 33.77 | 33.78 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.18 | 0.18 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.27 | 2.75 | 2.86 | 8.62 | 1.23 | 1.24 | 5.88 | 5.90 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

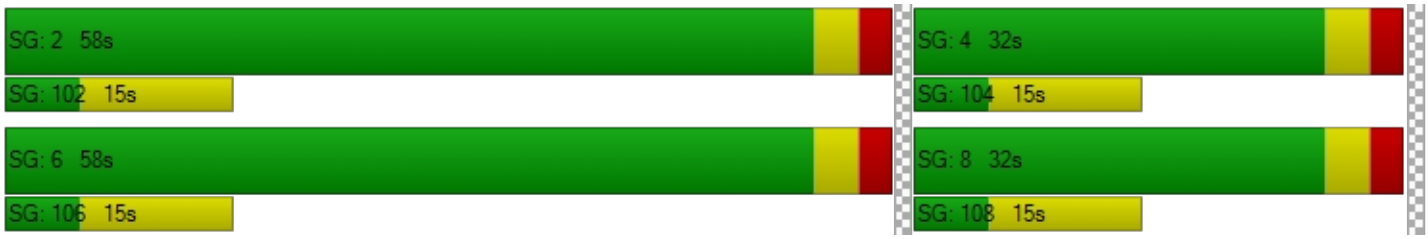
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.29 | 0.64 | 0.64 | 0.49 | 0.44 | 0.44 | 0.77 | 0.77 |
| d, Delay for Lane Group [s/veh] | 17.98 | 11.42 | 11.58 | 36.05 | 8.26 | 8.28 | 39.65 | 39.68 |
| Lane Group LOS | B | B | B | D | A | A | D | D |
| Critical Lane Group | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.38 | 7.70 | 7.65 | 2.29 | 4.16 | 4.11 | 6.34 | 6.16 |
| 50th-Percentile Queue Length [ft] | 34.40 | 192.54 | 191.36 | 57.29 | 104.06 | 102.83 | 158.55 | 154.09 |
| 95th-Percentile Queue Length [veh] | 2.48 | 12.25 | 12.19 | 4.12 | 7.49 | 7.40 | 10.47 | 10.24 |
| 95th-Percentile Queue Length [ft] | 61.92 | 306.32 | 304.80 | 103.12 | 187.30 | 185.10 | 261.80 | 255.88 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 17.98 | 11.50 | 11.58 | 36.05 | 8.27 | 8.28 | 39.65 | 39.65 | 39.65 | 39.68 | 39.68 | 39.68 |
| Movement LOS | B | B | B | D | A | A | D | D | D | D | D | D |
| d_A, Approach Delay [s/veh] | 11.89 | | | 10.75 | | | 39.65 | | | 39.68 | | |
| Approach LOS | B | | | B | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 16.32 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.627 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 46: 44 - 19th Avenue / College Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 37.8 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.768 |

**Intersection Setup**

| Name | 19th Avenue | | | | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 450.00 | 100.00 | 100.00 | 330.00 | 100.00 | 100.00 | 300.00 | 100.00 | 300.00 | 175.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | | | | College Street | | | College Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 289 | 548 | 70 | 106 | 550 | 52 | 76 | 247 | 147 | 108 | 337 | 113 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.60 | 0.00 | 0.00 | 0.40 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.00 | 0.90 |
| Growth Rate | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 | 1.54 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 445 | 844 | 108 | 163 | 847 | 80 | 117 | 380 | 226 | 166 | 519 | 174 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 |
| Total 15-Minute Volume [veh/h] | 117 | 222 | 28 | 43 | 223 | 21 | 31 | 100 | 60 | 44 | 137 | 46 |
| Total Analysis Volume [veh/h] | 469 | 890 | 114 | 172 | 893 | 84 | 123 | 401 | 238 | 175 | 547 | 183 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 95 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 30 | 0 | 5 | 30 | 0 | 5 | 15 | 15 | 5 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 0 | 25 | 90 | 0 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 19 | 42 | 0 | 12 | 35 | 0 | 8 | 33 | 33 | 8 | 33 | 33 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | No | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 49 | 37 | 37 | 49 | 30 | 30 | 36 | 28 | 49 | 36 | 28 | 42 |
| g / C, Green / Cycle | 0.52 | 0.39 | 0.39 | 0.52 | 0.32 | 0.32 | 0.38 | 0.29 | 0.52 | 0.38 | 0.29 | 0.44 |
| (v / s)_i Volume / Saturation Flow Rate | 0.46 | 0.27 | 0.28 | 0.21 | 0.26 | 0.26 | 0.12 | 0.21 | 0.15 | 0.15 | 0.29 | 0.11 |
| s, saturation flow rate [veh/h] | 1010 | 1870 | 1797 | 819 | 1892 | 1836 | 1030 | 1900 | 1604 | 1134 | 1900 | 1601 |
| c, Capacity [veh/h] | 495 | 731 | 703 | 407 | 598 | 580 | 255 | 560 | 827 | 355 | 560 | 705 |
| d1, Uniform Delay [s] | 24.11 | 24.21 | 24.30 | 15.81 | 30.13 | 30.14 | 24.08 | 29.95 | 13.08 | 23.01 | 33.18 | 16.79 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.22 | 0.37 | 0.11 | 0.41 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 29.46 | 5.43 | 5.83 | 3.20 | 12.58 | 12.98 | 6.40 | 3.52 | 0.64 | 1.06 | 29.12 | 0.89 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.95 | 0.70 | 0.70 | 0.42 | 0.83 | 0.83 | 0.48 | 0.72 | 0.29 | 0.49 | 0.98 | 0.26 |
| d, Delay for Lane Group [s/veh] | 53.57 | 29.64 | 30.13 | 19.01 | 42.71 | 43.12 | 30.48 | 33.47 | 13.72 | 24.07 | 62.30 | 17.68 |
| Lane Group LOS | D | C | C | B | D | D | C | C | B | C | E | B |
| Critical Lane Group | Yes | No | No | No | No | Yes | Yes | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 10.31 | 10.33 | 10.13 | 2.24 | 12.28 | 11.99 | 2.24 | 8.54 | 2.91 | 2.72 | 16.61 | 2.63 |
| 50th-Percentile Queue Length [ft] | 257.77 | 258.26 | 253.30 | 56.05 | 306.93 | 299.69 | 55.90 | 213.53 | 72.82 | 68.02 | 415.25 | 65.77 |
| 95th-Percentile Queue Length [veh] | 15.58 | 15.60 | 15.35 | 4.04 | 18.02 | 17.67 | 4.02 | 13.33 | 5.24 | 4.90 | 23.29 | 4.74 |
| 95th-Percentile Queue Length [ft] | 389.43 | 390.04 | 383.81 | 100.89 | 450.59 | 441.64 | 100.61 | 333.35 | 131.07 | 122.43 | 582.35 | 118.38 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 53.57 | 29.85 | 30.13 | 19.01 | 42.89 | 43.12 | 30.48 | 33.47 | 13.72 | 24.07 | 62.30 | 17.68 |
| Movement LOS | D | C | C | B | D | D | C | C | B | C | E | B |
| d_A, Approach Delay [s/veh] | 37.42 | | | 39.33 | | | 26.82 | | | 45.88 | | |
| Approach LOS | D | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 37.84 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.768 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 47: 45 - 19th Avenue / Graf Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.708 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Graf Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 400.00 | 380.00 | 100.00 | 100.00 | 175.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | No | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Graf Street | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 15 | 249 | 290 | 152 | 448 | 54 | 29 | 23 | 11 | 265 | 40 | 160 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.60 | 2.00 | 2.00 | 0.60 | 0.00 | 3.40 | 2.00 | 0.00 | 2.00 | 2.00 | 2.00 |
| Growth Rate | 1.79 | 1.79 | 1.00 | 1.00 | 1.79 | 1.79 | 1.79 | 1.00 | 1.79 | 1.00 | 1.00 | 1.00 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 27 | 446 | 290 | 152 | 802 | 97 | 52 | 23 | 20 | 265 | 40 | 160 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 7 | 118 | 79 | 41 | 211 | 26 | 14 | 6 | 5 | 72 | 11 | 43 |
| Total Analysis Volume [veh/h] | 28 | 470 | 315 | 165 | 846 | 102 | 57 | 25 | 22 | 288 | 43 | 174 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 70 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 47 | 0 | 8 | 55 | 0 | 0 | 15 | 0 | 0 | 15 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | No | No | | | No | | | No | |
| Maximum Recall | | No | | No | No | | | No | | | No | |
| Pedestrian Recall | | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | R | L | C | L | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 34 | 34 | 42 | 42 | 42 | 18 | 18 | 18 | 18 |
| g / C, Green / Cycle | 0.48 | 0.48 | 0.59 | 0.59 | 0.59 | 0.26 | 0.26 | 0.26 | 0.26 |
| (v / s)_i Volume / Saturation Flow Rate | 0.04 | 0.45 | 0.20 | 0.45 | 0.06 | 0.05 | 0.03 | 0.21 | 0.13 |
| s, saturation flow rate [veh/h] | 661 | 1746 | 839 | 1889 | 1615 | 1144 | 1721 | 1353 | 1632 |
| c, Capacity [veh/h] | 214 | 842 | 400 | 1121 | 959 | 221 | 453 | 369 | 430 |
| d1, Uniform Delay [s] | 25.25 | 17.06 | 12.57 | 10.46 | 6.17 | 29.63 | 19.52 | 28.64 | 21.90 |
| k, delay calibration | 0.11 | 0.26 | 0.50 | 0.18 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.27 | 11.31 | 3.13 | 1.75 | 0.05 | 2.81 | 0.46 | 15.07 | 4.19 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.13 | 0.93 | 0.41 | 0.75 | 0.11 | 0.26 | 0.10 | 0.78 | 0.50 |
| d, Delay for Lane Group [s/veh] | 25.52 | 28.37 | 15.70 | 12.21 | 6.21 | 32.44 | 19.98 | 43.71 | 26.09 |
| Lane Group LOS | C | C | B | B | A | C | B | D | C |
| Critical Lane Group | No | Yes | Yes | No | No | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 0.40 | 12.90 | 1.26 | 8.24 | 0.56 | 1.05 | 0.61 | 6.20 | 3.36 |
| 50th-Percentile Queue Length [ft] | 10.11 | 322.50 | 31.52 | 206.00 | 13.99 | 26.13 | 15.25 | 155.04 | 84.04 |
| 95th-Percentile Queue Length [veh] | 0.73 | 18.79 | 2.27 | 12.95 | 1.01 | 1.88 | 1.10 | 10.29 | 6.05 |
| 95th-Percentile Queue Length [ft] | 18.20 | 469.75 | 56.74 | 323.70 | 25.18 | 47.04 | 27.46 | 257.14 | 151.27 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 25.52 | 28.37 | 28.37 | 15.70 | 12.21 | 6.21 | 32.44 | 19.98 | 19.98 | 43.71 | 26.09 | 26.09 |
| Movement LOS | C | C | C | B | B | A | C | B | B | D | C | C |
| d_A, Approach Delay [s/veh] | 28.27 | | | 12.18 | | | 26.81 | | | 36.14 | | |
| Approach LOS | C | | | B | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 22.71 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.708 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 49: 47 - Flanders Mill Road / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 31.6 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.417 |

**Intersection Setup**

| Name | Flanders Mill Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | No | | No | | No | |

**volumes**

| Name | Flanders Mill Road | | Baxter Lane | | Baxter Lane | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 69 | 100 | 161 | 53 | 105 | 161 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.60 |
| Growth Rate | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 104 | 150 | 242 | 80 | 158 | 242 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 28 | 41 | 63 | 21 | 41 | 63 |
| Total Analysis Volume [veh/h] | 113 | 163 | 253 | 83 | 165 | 253 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.42 | 0.22 | 0.00 | 0.00 | 0.13 | 0.00 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 31.65 | 23.17 | 0.00 | 0.00 | 8.37 | 0.00 |
| Movement LOS | D | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 4.30 | 4.30 | 0.00 | 0.00 | 1.51 | 1.51 |
| 95th-Percentile Queue Length [ft] | 107.39 | 107.39 | 0.00 | 0.00 | 37.83 | 37.83 |
| d_A, Approach Delay [s/veh] | 26.64 | | 0.00 | | 3.30 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 8.48 | | | | | |
| Intersection LOS | D | | | | | |

**Intersection Level Of Service Report**
**Intersection 50: 48 - Davis Lane / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 14.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.399 |

**Intersection Setup**

| Name | Davis Lane | | | Davis Lane | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | Yes | | | No | | |

**volumes**

| Name | Davis Lane | | | Davis Lane | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 81 | 160 | 30 | 20 | 186 | 71 | 81 | 209 | 58 | 47 | 230 | 47 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 122 | 242 | 45 | 30 | 281 | 107 | 122 | 316 | 88 | 71 | 347 | 71 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0900 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 36 | 72 | 13 | 9 | 83 | 32 | 33 | 86 | 24 | 19 | 94 | 19 |
| Total Analysis Volume [veh/h] | 145 | 287 | 53 | 36 | 333 | 127 | 133 | 343 | 96 | 77 | 377 | 77 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 60 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 38 | 0 | 0 | 38 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 26 | 26 | 26 | 26 | 26 | 26 | 24 | 24 | 24 | 24 | 24 |
| g / C, Green / Cycle | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.08 | 0.03 | 0.03 | 0.13 | 0.13 | 0.14 | 0.18 | 0.06 | 0.07 | 0.25 |
| s, saturation flow rate [veh/h] | 947 | 3618 | 1615 | 1109 | 1900 | 1725 | 952 | 1900 | 1615 | 1054 | 1845 |
| c, Capacity [veh/h] | 406 | 1541 | 688 | 495 | 809 | 735 | 299 | 774 | 658 | 384 | 752 |
| d1, Uniform Delay [s] | 17.26 | 10.74 | 10.22 | 13.60 | 11.31 | 11.35 | 22.97 | 12.85 | 11.20 | 18.19 | 13.97 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.11 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 2.44 | 0.27 | 0.22 | 0.29 | 0.93 | 1.05 | 1.04 | 0.40 | 0.10 | 0.25 | 0.79 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

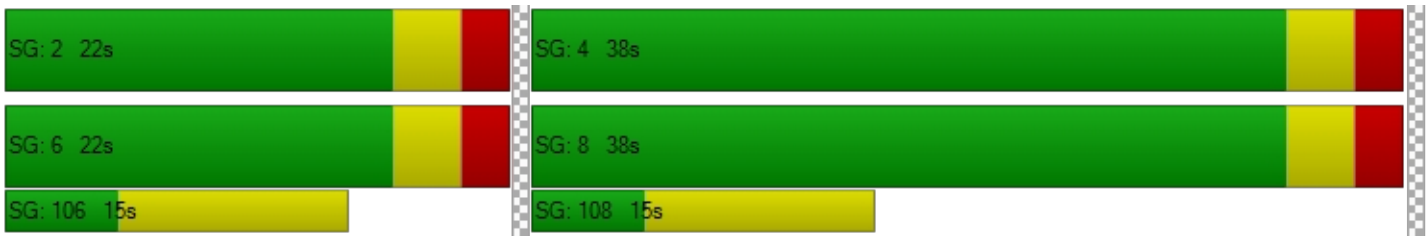
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.36 | 0.19 | 0.08 | 0.07 | 0.29 | 0.30 | 0.44 | 0.44 | 0.15 | 0.20 | 0.60 |
| d, Delay for Lane Group [s/veh] | 19.70 | 11.01 | 10.44 | 13.89 | 12.24 | 12.40 | 24.01 | 13.25 | 11.30 | 18.45 | 14.76 |
| Lane Group LOS | B | B | B | B | B | B | C | B | B | B | B |
| Critical Lane Group | Yes | No | No | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 1.77 | 1.10 | 0.41 | 0.34 | 2.03 | 1.91 | 1.73 | 3.02 | 0.73 | 0.83 | 4.39 |
| 50th-Percentile Queue Length [ft] | 44.26 | 27.41 | 10.18 | 8.55 | 50.67 | 47.73 | 43.36 | 75.49 | 18.35 | 20.68 | 109.63 |
| 95th-Percentile Queue Length [veh] | 3.19 | 1.97 | 0.73 | 0.62 | 3.65 | 3.44 | 3.12 | 5.44 | 1.32 | 1.49 | 7.82 |
| 95th-Percentile Queue Length [ft] | 79.67 | 49.33 | 18.32 | 15.39 | 91.20 | 85.91 | 78.05 | 135.89 | 33.02 | 37.22 | 195.49 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 19.70 | 11.01 | 10.44 | 13.89 | 12.28 | 12.40 | 24.01 | 13.25 | 11.30 | 18.45 | 14.76 | 14.76 |
| Movement LOS | B | B | B | B | B | B | C | B | B | B | B | B |
| d_A, Approach Delay [s/veh] | 13.55 | | | 12.43 | | | 15.43 | | | 15.29 | | |
| Approach LOS | B | | | B | | | B | | | B | | |
| d_I, Intersection Delay [s/veh] | 14.24 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.399 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 51: 49 - Laurel Parkway / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 13.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.539 |

**Intersection Setup**

| Name | Laurel Parkway | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Southbound | | Eastbound | | Westbound | |
| Lane Configuration |  | |  | |  | |
| Turning Movement | Left | Right | Left | Thru | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 35.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Laurel Parkway | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 111 | 14 | 12 | 229 | 251 | 144 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.90 | 0.00 | 0.00 | 0.90 | 0.00 | 1.40 |
| Growth Rate | 1.81 | 1.81 | 1.81 | 1.81 | 1.81 | 1.81 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 201 | 25 | 22 | 414 | 454 | 261 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 55 | 7 | 6 | 108 | 118 | 68 |
| Total Analysis Volume [veh/h] | 218 | 27 | 23 | 432 | 474 | 272 |
| Presence of On-Street Parking | No | No | No | No | No | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |
| Bicycle Volume [bicycles/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fixed time |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permissive | Permissive | Permissive | Permissive | Permissive | Permissive |
|---|---|---|---|---|---|---|
| Signal group | 1 | 0 | 0 | 8 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | |
| Lead / Lag | Lead | - | - | - | - | - |
| Minimum Green [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 0 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| Split [s] | 23 | 0 | 0 | 67 | 67 | 0 |
| Vehicle Extension [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 5 | 0 | 0 | 5 | 5 | 0 |
| Pedestrian Clearance [s] | 10 | 0 | 0 | 10 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Minimum Recall | No | | | No | No | |
| Maximum Recall | No | | | No | No | |
| Pedestrian Recall | No | | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | R | C | C |
|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 18 | 18 | 62 | 62 |
| g / C, Green / Cycle | 0.20 | 0.20 | 0.69 | 0.69 |
| (v / s)_i Volume / Saturation Flow Rate | 0.12 | 0.02 | 0.25 | 0.42 |
| s, saturation flow rate [veh/h] | 1793 | 1615 | 1810 | 1785 |
| c, Capacity [veh/h] | 359 | 323 | 1289 | 1230 |
| d1, Uniform Delay [s] | 32.79 | 29.29 | 5.74 | 7.48 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.46 | 0.51 | 0.76 | 2.23 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | |
|---|---|---|---|---|
| X, volume / capacity | 0.61 | 0.08 | 0.35 | 0.61 |
| d, Delay for Lane Group [s/veh] | 40.25 | 29.80 | 6.50 | 9.71 |
| Lane Group LOS | D | C | A | A |
| Critical Lane Group | Yes | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 4.99 | 0.52 | 3.21 | 7.03 |
| 50th-Percentile Queue Length [ft] | 124.77 | 12.89 | 80.20 | 175.82 |
| 95th-Percentile Queue Length [veh] | 8.65 | 0.93 | 5.77 | 11.38 |
| 95th-Percentile Queue Length [ft] | 216.37 | 23.20 | 144.37 | 284.55 |

**Movement, Approach, & Intersection Results**

| | | | | | | |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 40.25 | 29.80 | 6.50 | 6.50 | 9.71 | 9.71 |
| Movement LOS | D | C | A | A | A | A |
| d_A, Approach Delay [s/veh] | 39.10 | | 6.50 | | 9.71 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 13.68 | | | | | |
| Intersection LOS | B | | | | | |
| Intersection V/C | 0.539 | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 52: 50 - Cottonwood Road / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 70.2 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.730 |

**Intersection Setup**

| Name | Cottonwood Road | | | Cottonwood Road | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | Yes | | | No | | | Yes | | |

**volumes**

| Name | Cottonwood Road | | | Cottonwood Road | | | Durston Road | | | Durston Road | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 94 | 16 | 165 | 12 | 12 | 4 | 5 | 251 | 86 | 174 | 312 | 25 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 2.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 0.60 | 0.00 |
| Growth Rate | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 362 | 62 | 635 | 46 | 46 | 15 | 19 | 966 | 331 | 670 | 1201 | 96 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 98 | 17 | 173 | 13 | 13 | 4 | 5 | 252 | 86 | 175 | 313 | 25 |
| Total Analysis Volume [veh/h] | 393 | 67 | 690 | 50 | 50 | 16 | 20 | 1008 | 345 | 699 | 1253 | 100 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Fully actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 0 | 3 | 8 | 8 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | 2,7 | | | | | | 5,8 | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 5 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 30 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 13 | 20 | 20 | 8 | 15 | 0 | 64 | 66 | 66 | 26 | 28 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | | No | No | No | No | No | |
| Maximum Recall | No | No | No | No | No | | No | No | No | No | No | |
| Pedestrian Recall | No | No | No | No | No | | No | No | No | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 23 | 16 | 44 | 23 | 10 | 10 | 87 | 61 | 76 | 87 | 82 |
| g / C, Green / Cycle | 0.19 | 0.13 | 0.37 | 0.19 | 0.08 | 0.08 | 0.72 | 0.51 | 0.63 | 0.72 | 0.68 |
| (v / s)_i Volume / Saturation Flow Rate | 0.26 | 0.02 | 0.43 | 0.03 | 0.02 | 0.02 | 0.04 | 0.53 | 0.21 | 0.49 | 0.73 |
| s, saturation flow rate [veh/h] | 1540 | 3618 | 1615 | 1455 | 1900 | 1749 | 465 | 1900 | 1615 | 1439 | 1864 |
| c, Capacity [veh/h] | 367 | 484 | 593 | 390 | 160 | 147 | 150 | 964 | 1021 | 973 | 1265 |
| d1, Uniform Delay [s] | 60.24 | 45.87 | 37.97 | 40.25 | 51.21 | 51.27 | 33.15 | 29.56 | 10.31 | 19.40 | 19.28 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.25 | 0.11 | 0.50 | 0.11 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 67.32 | 0.60 | 91.07 | 0.35 | 0.64 | 3.44 | 0.40 | 41.57 | 0.90 | 4.56 | 46.07 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.07 | 0.14 | 1.16 | 0.13 | 0.21 | 0.22 | 0.13 | 1.05 | 0.34 | 0.72 | 1.07 |
| d, Delay for Lane Group [s/veh] | 127.56 | 46.46 | 129.04 | 40.59 | 51.84 | 54.71 | 33.55 | 71.13 | 11.21 | 23.97 | 65.36 |
| Lane Group LOS | F | D | F | D | D | D | C | F | B | C | F |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | Yes | No | No | No |
| 50th-Percentile Queue Length [veh] | 17.98 | 0.93 | 32.08 | 1.27 | 0.97 | 1.06 | 0.14 | 37.58 | 4.36 | 8.44 | 46.94 |
| 50th-Percentile Queue Length [ft] | 449.46 | 23.19 | 802.00 | 31.84 | 24.15 | 26.55 | 3.60 | 939.60 | 108.96 | 210.89 | 1173.57 |
| 95th-Percentile Queue Length [veh] | 25.87 | 1.67 | 45.71 | 2.29 | 1.74 | 1.91 | 0.26 | 49.41 | 7.78 | 13.20 | 61.80 |
| 95th-Percentile Queue Length [ft] | 646.78 | 41.75 | 1142.82 | 57.32 | 43.48 | 47.79 | 6.48 | 1235.36 | 194.56 | 329.98 | 1544.88 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 127.56 | 46.46 | 129.04 | 40.59 | 52.80 | 54.71 | 33.55 | 71.13 | 11.21 | 23.97 | 65.36 | 65.36 |
| Movement LOS | F | D | F | D | D | D | C | F | B | C | E | E |
| d_A, Approach Delay [s/veh] | 123.72 | | | 47.80 | | | 55.53 | | | 51.26 | | |
| Approach LOS | F | | | D | | | E | | | D | | |
| d_I, Intersection Delay [s/veh] | 70.19 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.730 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 55: 53 - Fowler Avenue / Durston Road**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 43.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.071 |

**Intersection Setup**

| Name | Fowler Avenue | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Approach | Northbound | | Eastbound | | Westbound | |
| Lane Configuration | | | | | | |
| Turning Movement | Left | Right | Thru | Right | Left | Thru |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | 30.00 | | 30.00 | |
| Grade [%] | 0.00 | | 0.00 | | 0.00 | |
| Crosswalk | Yes | | No | | No | |

**volumes**

| Name | Fowler Avenue | | Durston Road | | Durston Road | |
|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 3 | 6 | 381 | 7 | 19 | 456 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.85 | 1.85 | 1.85 | 1.85 | 1.85 | 1.85 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 6 | 11 | 705 | 13 | 35 | 844 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 2 | 3 | 184 | 3 | 9 | 220 |
| Total Analysis Volume [veh/h] | 7 | 12 | 736 | 14 | 37 | 881 |
| Pedestrian Volume [ped/h] | 0 | | 0 | | 0 | |

**Intersection Settings**

| Priority Scheme | Stop | Free | Free |
|---|---|---|---|
| Flared Lane | No | | |
| Storage Area [veh] | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | No | | |
| Number of Storage Spaces in Median | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 0.07 | 0.03 | 0.01 | 0.00 | 0.04 | 0.01 |
|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 43.71 | 15.69 | 0.00 | 0.00 | 9.33 | 0.00 |
| Movement LOS | E | C | A | A | A | A |
| 95th-Percentile Queue Length [veh] | 0.33 | 0.33 | 0.00 | 0.00 | 0.13 | 0.00 |
| 95th-Percentile Queue Length [ft] | 8.20 | 8.20 | 0.00 | 0.00 | 3.33 | 0.00 |
| d_A, Approach Delay [s/veh] | 26.02 | | 0.00 | | 0.38 | |
| Approach LOS | D | | A | | A | |
| d_I, Intersection Delay [s/veh] | 0.50 | | | | | |
| Intersection LOS | E | | | | | |

**Intersection Level Of Service Report**
**Intersection 56: 54 - Cottonwood Road / Babcock Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 52.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.960 |

**Intersection Setup**

| Name | Cottonwood Road | | | Cottonwood Road | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 265.00 | 100.00 | 100.00 | 210.00 | 100.00 | 210.00 | 100.00 | 100.00 | 100.00 | 50.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Cottonwood Road | | | Cottonwood Road | | | Babcock Street | | | Babcock Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 8 | 353 | 76 | 23 | 282 | 11 | 22 | 14 | 7 | 26 | 11 | 24 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.60 | 0.00 | 0.00 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 | 5.66 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 45 | 1998 | 430 | 130 | 1596 | 62 | 125 | 79 | 40 | 147 | 62 | 136 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 12 | 543 | 117 | 35 | 434 | 17 | 34 | 21 | 11 | 40 | 17 | 37 |
| Total Analysis Volume [veh/h] | 49 | 2172 | 467 | 141 | 1735 | 67 | 136 | 86 | 43 | 160 | 67 | 148 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 115 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 8 | 81 | 0 | 8 | 81 | 0 | 0 | 26 | 0 | 0 | 26 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | |
| Maximum Recall | No | No | | No | No | | | No | | | No | |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | L | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 84 | 76 | 76 | 84 | 77 | 77 | 21 | 21 | 21 | 21 |
| g / C, Green / Cycle | 0.73 | 0.66 | 0.66 | 0.73 | 0.67 | 0.67 | 0.18 | 0.18 | 0.18 | 0.18 |
| (v / s)_i Volume / Saturation Flow Rate | 0.14 | 0.70 | 0.74 | 0.59 | 0.48 | 0.48 | 0.11 | 0.07 | 0.12 | 0.13 |
| s, saturation flow rate [veh/h] | 359 | 1889 | 1778 | 237 | 1885 | 1861 | 1185 | 1794 | 1281 | 1694 |
| c, Capacity [veh/h] | 273 | 1248 | 1175 | 192 | 1261 | 1244 | 121 | 328 | 195 | 309 |
| d1, Uniform Delay [s] | 11.24 | 19.50 | 19.50 | 38.22 | 12.08 | 12.23 | 56.12 | 41.39 | 52.57 | 44.00 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.15 | 0.11 | 0.19 | 0.19 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 1.44 | 42.04 | 66.99 | 21.95 | 3.48 | 3.69 | 81.62 | 0.77 | 13.35 | 4.93 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.18 | 1.06 | 1.12 | 0.73 | 0.71 | 0.72 | 1.12 | 0.39 | 0.82 | 0.69 |
| d, Delay for Lane Group [s/veh] | 12.68 | 61.54 | 86.49 | 60.17 | 15.56 | 15.91 | 137.75 | 42.16 | 65.92 | 48.93 |
| Lane Group LOS | B | F | F | E | B | B | F | D | E | D |
| Critical Lane Group | Yes | No | No | Yes | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.40 | 43.83 | 49.40 | 2.05 | 14.47 | 14.69 | 6.27 | 3.30 | 5.37 | 6.14 |
| 50th-Percentile Queue Length [ft] | 9.94 | 1095.80 | 1234.95 | 51.15 | 361.79 | 367.13 | 156.86 | 82.46 | 134.33 | 153.59 |
| 95th-Percentile Queue Length [veh] | 0.72 | 57.48 | 67.28 | 3.68 | 20.71 | 20.97 | 10.90 | 5.94 | 9.17 | 10.21 |
| 95th-Percentile Queue Length [ft] | 17.88 | 1436.99 | 1682.03 | 92.06 | 517.76 | 524.25 | 272.59 | 148.42 | 229.37 | 255.21 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 12.68 | 71.33 | 86.49 | 60.17 | 15.73 | 15.91 | 137.75 | 42.16 | 42.16 | 65.92 | 48.93 | 48.93 |
| Movement LOS | B | E | F | E | B | B | F | D | D | E | D | D |
| d_A, Approach Delay [s/veh] | 72.90 | | | 18.96 | | | 91.22 | | | 56.18 | | |
| Approach LOS | E | | | B | | | F | | | E | | |
| d_I, Intersection Delay [s/veh] | 52.75 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.960 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 58: 55 - 19th Avenue / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 69.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | E |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.999 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| Pocket Length [ft] | 325.00 | 100.00 | 100.00 | 300.00 | 100.00 | 100.00 | 245.00 | 100.00 | 100.00 | 150.00 | 100.00 | 175.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Baxter Lane | | | Baxter Lane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 110 | 1053 | 126 | 137 | 850 | 128 | 79 | 175 | 101 | 88 | 226 | 172 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 1.00 | 2.70 | 2.20 | 1.10 | 1.60 | 1.30 | 4.60 | 1.00 | 3.40 | 1.80 | 0.60 |
| Growth Rate | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 | 1.64 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 180 | 1727 | 207 | 225 | 1394 | 210 | 130 | 287 | 166 | 144 | 371 | 282 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 47 | 455 | 55 | 59 | 367 | 55 | 34 | 75 | 43 | 38 | 97 | 74 |
| Total Analysis Volume [veh/h] | 190 | 1821 | 218 | 237 | 1470 | 221 | 136 | 299 | 173 | 150 | 387 | 294 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 1 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 140 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 8 | 0 | 7 | 4 | 1 |
| Auxiliary Signal Groups | | | | | | | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 0 | 30 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 15 | 78 | 0 | 13 | 76 | 0 | 13 | 41 | 0 | 8 | 36 | 13 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 1.0 |
| Minimum Recall | No | No | | No | No | | No | No | | No | No | No |
| Maximum Recall | No | No | | No | No | | No | No | | No | No | No |
| Pedestrian Recall | No | No | | No | No | | No | No | | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | C | L | C | C | L | C | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 86 | 73 | 73 | 86 | 73 | 73 | 44 | 36 | 44 | 31 | 46 |
| g / C, Green / Cycle | 0.61 | 0.52 | 0.52 | 0.61 | 0.52 | 0.52 | 0.31 | 0.26 | 0.31 | 0.22 | 0.33 |
| (v / s)_i Volume / Saturation Flow Rate | 0.39 | 0.54 | 0.56 | 0.58 | 0.45 | 0.47 | 0.11 | 0.28 | 0.15 | 0.21 | 0.18 |
| s, saturation flow rate [veh/h] | 490 | 1881 | 1812 | 406 | 1879 | 1796 | 1194 | 1706 | 1021 | 1866 | 1605 |
| c, Capacity [veh/h] | 254 | 981 | 945 | 220 | 980 | 936 | 249 | 439 | 176 | 415 | 529 |
| d1, Uniform Delay [s] | 35.57 | 33.50 | 33.50 | 58.69 | 29.19 | 30.29 | 38.99 | 52.00 | 49.20 | 53.43 | 38.55 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.49 | 0.19 | 0.38 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 18.24 | 39.46 | 52.94 | 82.70 | 10.02 | 13.56 | 8.39 | 64.58 | 17.94 | 25.32 | 4.18 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.75 | 1.04 | 1.08 | 1.08 | 0.86 | 0.90 | 0.55 | 1.08 | 0.85 | 0.93 | 0.56 |
| d, Delay for Lane Group [s/veh] | 53.81 | 72.96 | 86.44 | 141.39 | 39.21 | 43.84 | 47.37 | 116.58 | 67.14 | 78.75 | 42.73 |
| Lane Group LOS | D | F | F | F | D | D | D | F | E | E | D |
| Critical Lane Group | Yes | No | No | Yes | No | No | No | Yes | Yes | No | No |
| 50th-Percentile Queue Length [veh] | 3.86 | 42.99 | 44.95 | 8.10 | 26.91 | 28.58 | 4.08 | 23.23 | 4.78 | 16.27 | 8.96 |
| 50th-Percentile Queue Length [ft] | 96.43 | 1074.64 | 1123.78 | 202.45 | 672.68 | 714.44 | 102.01 | 580.68 | 119.41 | 406.86 | 224.03 |
| 95th-Percentile Queue Length [veh] | 6.94 | 55.51 | 59.52 | 13.43 | 35.41 | 37.34 | 7.34 | 32.54 | 8.36 | 22.89 | 13.87 |
| 95th-Percentile Queue Length [ft] | 173.57 | 1387.78 | 1487.98 | 335.79 | 885.36 | 933.61 | 183.62 | 813.57 | 209.02 | 572.26 | 346.77 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 53.81 | 78.89 | 86.44 | 141.39 | 41.17 | 43.84 | 47.37 | 116.58 | 116.58 | 67.14 | 78.75 | 42.73 |
| Movement LOS | D | E | F | F | D | D | D | F | F | E | E | D |
| d_A, Approach Delay [s/veh] | 77.49 | | | 53.80 | | | 101.10 | | | 63.91 | | |
| Approach LOS | E | | | D | | | F | | | E | | |
| d_I, Intersection Delay [s/veh] | 69.88 | | | | | | | | | | | |
| Intersection LOS | E | | | | | | | | | | | |
| Intersection V/C | 0.999 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 59: 56 - 7th Avenue / Baxter Lane**

| | | | |
|---|---|---|---|
| Control Type: | Two-way stop | Delay (sec / veh): | 206.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 1.350 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Baxter Lane | | | Driveway | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 80.00 | 100.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | No | | | No | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Baxter Lane | | | Driveway | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 292 | 799 | 45 | 100 | 812 | 191 | 0 | 0 | 308 | 0 | 0 | 188 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.00 | 1.60 | 0.00 | 0.00 | 0.80 | 2.10 | 2.00 | 2.00 | 1.60 | 2.00 | 2.00 | 0.00 |
| Growth Rate | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.45 | 1.00 | 1.00 | 1.45 | 1.00 | 1.00 | 1.45 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 423 | 1159 | 65 | 145 | 1177 | 277 | 0 | 0 | 447 | 0 | 0 | 273 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 1.0000 | 1.0000 | 0.9200 | 1.0000 | 1.0000 | 0.9200 |
| Other Adjustment Factor | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 0.9700 | 1.0000 | 1.0000 | 0.9600 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 111 | 305 | 17 | 38 | 310 | 73 | 0 | 0 | 117 | 0 | 0 | 74 |
| Total Analysis Volume [veh/h] | 446 | 1222 | 69 | 153 | 1241 | 292 | 0 | 0 | 466 | 0 | 0 | 297 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 1 | | | 0 | | |

**Intersection Settings**

| Priority Scheme | Free | Free | Stop | Stop |
|---|---|---|---|---|
| Flared Lane | | | | |
| Storage Area [veh] | 0 | 0 | 0 | 0 |
| Two-Stage Gap Acceptance | | | No | No |
| Number of Storage Spaces in Median | 0 | 0 | 0 | 0 |

**Movement, Approach, & Intersection Results**

| V/C, Movement V/C Ratio | 1.03 | 0.01 | 0.00 | 0.28 | 0.01 | 0.00 | 0.00 | 0.00 | 1.35 | 0.00 | 0.00 | 0.71 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 81.67 | 0.00 | 0.00 | 14.19 | 0.00 | 0.00 | 0.00 | 0.00 | 206.28 | 0.00 | 0.00 | 31.86 |
| Movement LOS | F | A | A | B | A | A | | | F | | | D |
| 95th-Percentile Queue Length [veh] | 13.70 | 0.00 | 0.00 | 1.15 | 0.00 | 0.00 | 0.00 | 0.00 | 22.78 | 0.00 | 0.00 | 5.38 |
| 95th-Percentile Queue Length [ft] | 342.40 | 0.00 | 0.00 | 28.69 | 0.00 | 0.00 | 0.00 | 0.00 | 569.56 | 0.00 | 0.00 | 134.60 |
| d_A, Approach Delay [s/veh] | 20.97 | | | 1.29 | | | 206.28 | | | 31.86 | | |
| Approach LOS | C | | | A | | | F | | | D | | |
| d_I, Intersection Delay [s/veh] | 34.44 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |

**Intersection Level Of Service Report**
**Intersection 60: 57 - 7th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 39.7 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.851 |

**Intersection Setup**

| Name | 7th Avenue | | | 7th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 150.00 | 100.00 | 150.00 | 100.00 | 100.00 | 100.00 | 160.00 | 100.00 | 100.00 | 215.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 7th Avenue | | | 7th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 186 | 765 | 132 | 184 | 621 | 351 | 232 | 227 | 156 | 126 | 321 | 197 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 5.30 | 21.70 | 3.70 | 5.20 | 17.60 | 10.00 | 6.60 | 6.40 | 4.40 | 3.60 | 9.10 | 5.60 |
| Growth Rate | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 | 1.43 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 266 | 1094 | 189 | 263 | 888 | 502 | 332 | 325 | 223 | 180 | 459 | 282 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 1.0300 | 0.9800 | 0.9800 | 0.9800 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 74 | 306 | 53 | 74 | 249 | 141 | 88 | 87 | 59 | 49 | 125 | 77 |
| Total Analysis Volume [veh/h] | 298 | 1225 | 212 | 294 | 994 | 562 | 354 | 346 | 238 | 196 | 499 | 307 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 120 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 2 | 1 | 6 | 6 | 3 | 8 | 8 | 7 | 4 | 4 |
| Auxiliary Signal Groups | | | 2,7 | | | 3,6 | | | 5,8 | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 10 | 30 | 30 | 10 | 30 | 30 | 8 | 15 | 15 | 8 | 15 | 15 |
| Maximum Green [s] | 25 | 90 | 90 | 25 | 90 | 90 | 25 | 45 | 45 | 25 | 45 | 45 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 19 | 59 | 59 | 16 | 56 | 56 | 21 | 30 | 30 | 15 | 24 | 24 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Maximum Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Pedestrian Recall | No | No | No | No | No | No | No | No | No | No | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 70 | 54 | 71 | 70 | 51 | 74 | 40 | 25 | 46 | 40 | 19 | 37 |
| g / C, Green / Cycle | 0.58 | 0.45 | 0.59 | 0.58 | 0.43 | 0.62 | 0.33 | 0.21 | 0.38 | 0.33 | 0.16 | 0.31 |
| (v / s)_i Volume / Saturation Flow Rate | 0.36 | 0.41 | 0.14 | 0.42 | 0.32 | 0.38 | 0.28 | 0.10 | 0.15 | 0.16 | 0.15 | 0.20 |
| s, saturation flow rate [veh/h] | 826 | 2973 | 1557 | 696 | 3076 | 1468 | 1256 | 3400 | 1547 | 1253 | 3316 | 1529 |
| c, Capacity [veh/h] | 424 | 1338 | 921 | 331 | 1315 | 909 | 381 | 708 | 589 | 417 | 525 | 472 |
| d1, Uniform Delay [s] | 21.02 | 30.87 | 11.58 | 32.38 | 29.04 | 14.09 | 37.33 | 41.86 | 27.19 | 30.62 | 50.03 | 35.91 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.50 | 0.39 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 9.38 | 11.28 | 0.58 | 27.96 | 4.08 | 3.15 | 31.49 | 0.52 | 2.06 | 2.92 | 9.85 | 6.83 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

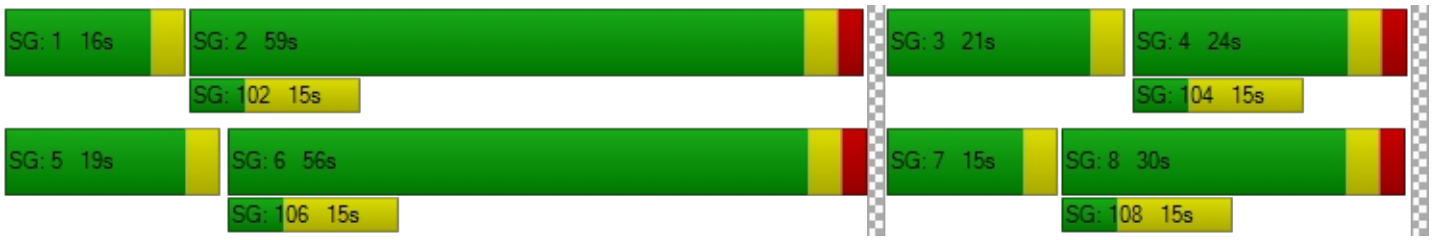
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.70 | 0.92 | 0.23 | 0.89 | 0.76 | 0.62 | 0.93 | 0.49 | 0.40 | 0.47 | 0.95 | 0.65 |
| d, Delay for Lane Group [s/veh] | 30.41 | 42.15 | 12.16 | 60.34 | 33.12 | 17.24 | 68.82 | 42.39 | 29.25 | 33.55 | 59.89 | 42.74 |
| Lane Group LOS | C | D | B | E | C | B | E | D | C | C | E | D |
| Critical Lane Group | No | Yes | No | Yes | No | No | Yes | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 5.07 | 18.19 | 2.78 | 6.47 | 12.63 | 9.71 | 11.98 | 4.58 | 5.33 | 4.61 | 8.11 | 8.64 |
| 50th-Percentile Queue Length [ft] | 126.81 | 454.77 | 69.54 | 161.77 | 315.72 | 242.85 | 299.45 | 114.46 | 133.37 | 115.19 | 202.78 | 216.05 |
| 95th-Percentile Queue Length [veh] | 8.77 | 25.19 | 5.01 | 10.64 | 18.46 | 14.83 | 17.65 | 8.09 | 9.12 | 8.13 | 12.78 | 13.46 |
| 95th-Percentile Queue Length [ft] | 219.15 | 629.64 | 125.17 | 266.07 | 461.42 | 370.63 | 441.35 | 202.19 | 228.06 | 203.20 | 319.55 | 336.58 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 30.41 | 42.15 | 12.16 | 60.34 | 33.12 | 17.24 | 68.82 | 42.39 | 29.25 | 33.55 | 59.89 | 42.74 |
| Movement LOS | C | D | B | E | C | B | E | D | C | C | E | D |
| d_A, Approach Delay [s/veh] | 36.47 | | | 32.62 | | | 49.03 | | | 49.48 | | |
| Approach LOS | D | | | C | | | D | | | D | | |
| d_I, Intersection Delay [s/veh] | 39.67 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.851 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 61: 58 - 15th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 22.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.698 |

**Intersection Setup**

| Name | 15th Avenue | | | 15th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 105.00 | 100.00 | 100.00 | 120.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 15th Avenue | | | 15th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 197 | 11 | 85 | 9 | 8 | 11 | 8 | 527 | 76 | 51 | 768 | 5 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.00 | 0.00 | 2.40 | 11.10 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 0.00 | 1.30 | 20.00 |
| Growth Rate | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 | 1.86 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 366 | 20 | 158 | 17 | 15 | 20 | 15 | 980 | 141 | 95 | 1428 | 9 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 |
| Total 15-Minute Volume [veh/h] | 99 | 5 | 43 | 5 | 4 | 5 | 4 | 261 | 38 | 25 | 380 | 2 |
| Total Analysis Volume [veh/h] | 398 | 22 | 172 | 18 | 16 | 22 | 16 | 1044 | 150 | 101 | 1521 | 10 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 38 | 0 | 0 | 38 | 0 | 0 | 52 | 0 | 0 | 52 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | L | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 34 | 34 | 34 | 34 | 46 | 46 | 46 | 46 | 46 | 46 |
| g / C, Green / Cycle | 0.38 | 0.38 | 0.38 | 0.38 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 |
| (v / s)_i Volume / Saturation Flow Rate | 0.29 | 0.12 | 0.02 | 0.02 | 0.05 | 0.33 | 0.33 | 0.21 | 0.41 | 0.41 |
| s, saturation flow rate [veh/h] | 1378 | 1643 | 1087 | 1724 | 345 | 1861 | 1780 | 476 | 1876 | 1871 |
| c, Capacity [veh/h] | 557 | 624 | 382 | 655 | 129 | 947 | 906 | 195 | 955 | 953 |
| d1, Uniform Delay [s] | 27.04 | 19.62 | 23.85 | 17.70 | 34.79 | 16.13 | 16.15 | 32.80 | 18.34 | 18.35 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.18 | 0.18 | 0.11 | 0.29 | 0.29 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.63 | 1.30 | 0.23 | 0.17 | 0.43 | 1.21 | 1.28 | 2.11 | 4.27 | 4.31 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

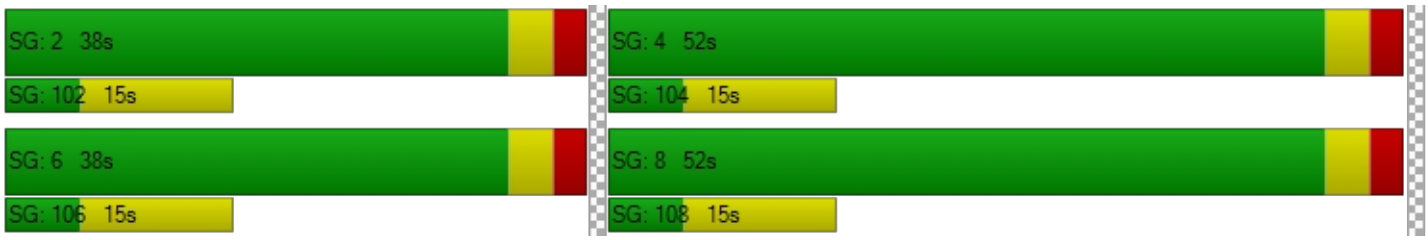
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.71 | 0.31 | 0.05 | 0.06 | 0.12 | 0.64 | 0.65 | 0.52 | 0.80 | 0.80 |
| d, Delay for Lane Group [s/veh] | 34.67 | 20.92 | 24.09 | 17.86 | 35.22 | 17.34 | 17.44 | 34.91 | 22.60 | 22.66 |
| Lane Group LOS | C | C | C | B | D | B | B | C | C | C |
| Critical Lane Group | Yes | No | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 8.72 | 3.01 | 0.30 | 0.52 | 0.33 | 8.81 | 8.48 | 2.17 | 13.26 | 13.26 |
| 50th-Percentile Queue Length [ft] | 218.11 | 75.13 | 7.57 | 13.05 | 8.17 | 220.23 | 211.93 | 54.27 | 331.55 | 331.58 |
| 95th-Percentile Queue Length [veh] | 13.57 | 5.41 | 0.54 | 0.94 | 0.59 | 13.68 | 13.25 | 3.91 | 19.23 | 19.24 |
| 95th-Percentile Queue Length [ft] | 339.21 | 135.24 | 13.62 | 23.49 | 14.70 | 341.92 | 331.30 | 97.68 | 480.85 | 480.90 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 34.67 | 20.92 | 20.92 | 24.09 | 17.86 | 17.86 | 35.22 | 17.38 | 17.44 | 34.91 | 22.63 | 22.66 |
| Movement LOS | C | C | C | C | B | B | D | B | B | C | C | C |
| d_A, Approach Delay [s/veh] | 30.16 | | | 19.86 | | | 17.62 | | | 23.39 | | |
| Approach LOS | C | | | B | | | B | | | C | | |
| d_I, Intersection Delay [s/veh] | 22.48 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.698 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 62: 59 - 27th Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 321.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | F |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 65.597 |

**Intersection Setup**

| Name | 27th Avenue | | | 27th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pocket Length [ft] | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | No | | | Yes | | | No | | |

**volumes**

| Name | 27th Avenue | | | 27th Avenue | | | Oak Street | | | Oak Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 3 | 34 | 38 | 15 | 51 | 52 | 24 | 237 | 16 | 79 | 412 | 55 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 2.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 1.30 | 0.00 | 0.00 |
| Growth Rate | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 | 5.62 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 17 | 191 | 214 | 84 | 287 | 292 | 135 | 1332 | 90 | 444 | 2315 | 309 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 5 | 52 | 58 | 23 | 78 | 79 | 37 | 362 | 24 | 121 | 629 | 84 |
| Total Analysis Volume [veh/h] | 18 | 208 | 233 | 91 | 312 | 317 | 147 | 1448 | 98 | 483 | 2516 | 336 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 0 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 0 | 7 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | | | | |
| Lead / Lag | - | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Maximum Green [s] | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 0 |
| Amber [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 70 | 0 | 0 | 70 | 0 |
| Vehicle Extension [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | | No | | | No | | | No | | | No | |
| Maximum Recall | | No | | | No | | | No | | | No | |
| Pedestrian Recall | | No | | | No | | | No | | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | C | R | C | R | C | C | L | C | C |
|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| g_i, Effective Green Time [s] | 15 | 15 | 15 | 15 | 65 | 65 | 65 | 65 | 65 |
| g / C, Green / Cycle | 0.17 | 0.17 | 0.17 | 0.17 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 |
| (v / s)_i Volume / Saturation Flow Rate | 0.27 | 0.14 | 1.47 | 0.20 | 64.13 | 0.91 | 1.44 | 0.75 | 0.78 |
| s, saturation flow rate [veh/h] | 851 | 1615 | 274 | 1615 | 2 | 1696 | 336 | 1900 | 1824 |
| c, Capacity [veh/h] | 185 | 269 | 95 | 269 | 82 | 1225 | 102 | 1372 | 1317 |
| d1, Uniform Delay [s] | 36.15 | 36.52 | 40.05 | 37.50 | 44.98 | 12.50 | 44.36 | 12.50 | 12.50 |
| k, delay calibration | 0.50 | 0.28 | 0.50 | 0.49 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 138.30 | 18.56 | 1489.42 | 110.97 | 404.28 | 124.57 | 1702.00 | 35.11 | 50.31 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

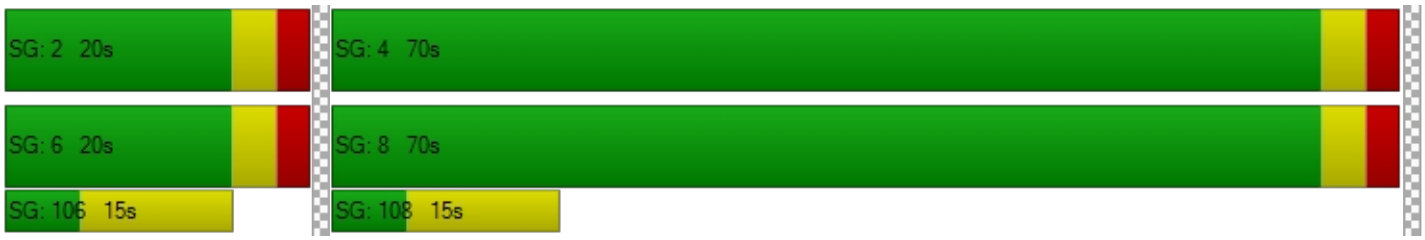
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 1.22 | 0.87 | 4.26 | 1.18 | 1.80 | 1.26 | 4.73 | 1.04 | 1.08 |
| d, Delay for Lane Group [s/veh] | 174.45 | 55.08 | 1529.47 | 148.47 | 449.27 | 137.07 | 1746.37 | 47.61 | 62.81 |
| Lane Group LOS | F | E | F | F | F | F | F | F | F |
| Critical Lane Group | No | No | Yes | No | Yes | No | No | No | No |
| 50th-Percentile Queue Length [veh] | 11.20 | 6.28 | 41.27 | 14.09 | 10.98 | 60.30 | 50.50 | 33.44 | 37.67 |
| 50th-Percentile Queue Length [ft] | 280.01 | 156.88 | 1031.87 | 352.37 | 274.40 | 1507.46 | 1262.55 | 836.00 | 941.69 |
| 95th-Percentile Queue Length [veh] | 18.19 | 10.38 | 67.23 | 21.83 | 19.76 | 87.95 | 90.90 | 44.45 | 51.21 |
| 95th-Percentile Queue Length [ft] | 454.69 | 259.58 | 1680.66 | 545.73 | 493.91 | 2198.85 | 2272.58 | 1111.33 | 1280.15 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 174.45 | 174.45 | 55.08 | 1529.47 | 1529.47 | 148.47 | 449.27 | 137.07 | 137.07 | 1746.37 | 54.19 | 62.81 |
| Movement LOS | F | F | E | F | F | F | F | F | F | F | D | E |
| d_A, Approach Delay [s/veh] | 113.85 | | | 921.45 | | | 164.17 | | | 300.13 | | |
| Approach LOS | F | | | F | | | F | | | F | | |
| d_I, Intersection Delay [s/veh] | 321.35 | | | | | | | | | | | |
| Intersection LOS | F | | | | | | | | | | | |
| Intersection V/C | 65.597 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 2 | - | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 6 | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 64: 61 - Rouse Avenue / Oak Street**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 16.9 |
| Analysis Method: | HCM 2010 | Level Of Service: | B |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.649 |

**Intersection Setup**

| Name | Rouse Avenue | | | Rouse Avenue | | | Oak Street | | | Birch Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| Pocket Length [ft] | 210.00 | 100.00 | 100.00 | 90.00 | 100.00 | 100.00 | 100.00 | 100.00 | 190.00 | 100.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Rouse Avenue | | | Rouse Avenue | | | Oak Street | | | Birch Street | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 218 | 341 | 0 | 1 | 418 | 171 | 117 | 0 | 159 | 0 | 0 | 1 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.50 | 1.20 | 0.00 | 0.00 | 1.20 | 0.00 | 1.70 | 0.00 | 6.30 | 0.00 | 0.00 | 0.00 |
| Growth Rate | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 | 1.51 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 329 | 515 | 0 | 2 | 631 | 258 | 177 | 0 | 240 | 0 | 0 | 2 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Total 15-Minute Volume [veh/h] | 88 | 137 | 0 | 1 | 168 | 69 | 48 | 0 | 65 | 0 | 0 | 1 |
| Total Analysis Volume [veh/h] | 350 | 549 | 0 | 2 | 672 | 275 | 192 | 0 | 261 | 0 | 0 | 2 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | Yes |
| Signal Coordination Group | - |
| Cycle Length [s] | 90 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap | Permiss | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 0 | 6 | 0 | 0 | 8 | 8 | 0 | 4 | 0 |
| Auxiliary Signal Groups | | | | | | | | | 5,8 | | | |
| Lead / Lag | Lead | - | - | - | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 30 | 0 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 12 | 70 | 0 | 0 | 58 | 0 | 0 | 20 | 20 | 0 | 20 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 | 0.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | | | No | | | No | No | | No | |
| Maximum Recall | No | No | | | No | | | No | No | | No | |
| Pedestrian Recall | No | No | | | No | | | No | No | | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | L | C | R | C | R | C |
|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 65 | 65 | 53 | 53 | 53 | 15 | 29 | 15 |
| g / C, Green / Cycle | 0.72 | 0.72 | 0.59 | 0.59 | 0.59 | 0.17 | 0.32 | 0.17 |
| (v / s)_i Volume / Saturation Flow Rate | 0.42 | 0.32 | 0.00 | 0.40 | 0.19 | 0.13 | 0.19 | 0.00 |
| s, saturation flow rate [veh/h] | 839 | 1690 | 785 | 1690 | 1454 | 1531 | 1367 | 1367 |
| c, Capacity [veh/h] | 533 | 1220 | 420 | 995 | 856 | 335 | 441 | 268 |
| d1, Uniform Delay [s] | 11.07 | 5.14 | 14.49 | 12.63 | 9.38 | 35.22 | 25.55 | 31.30 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.21 | 0.50 | 0.11 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 6.21 | 1.20 | 0.02 | 3.67 | 0.99 | 2.95 | 5.76 | 0.01 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.66 | 0.45 | 0.00 | 0.68 | 0.32 | 0.57 | 0.59 | 0.01 |
| d, Delay for Lane Group [s/veh] | 17.28 | 6.34 | 14.51 | 16.30 | 10.37 | 38.16 | 31.31 | 31.31 |
| Lane Group LOS | B | A | B | B | B | D | C | C |
| Critical Lane Group | Yes | No | No | Yes | No | No | Yes | No |
| 50th-Percentile Queue Length [veh] | 2.73 | 3.71 | 0.03 | 9.26 | 2.74 | 4.16 | 5.24 | 0.04 |
| 50th-Percentile Queue Length [ft] | 68.30 | 92.72 | 0.63 | 231.59 | 68.59 | 103.91 | 131.00 | 0.92 |
| 95th-Percentile Queue Length [veh] | 4.92 | 6.68 | 0.05 | 14.26 | 4.94 | 7.48 | 8.99 | 0.07 |
| 95th-Percentile Queue Length [ft] | 122.94 | 166.89 | 1.13 | 356.38 | 123.46 | 187.04 | 224.85 | 1.65 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 17.28 | 6.34 | 6.34 | 14.51 | 16.30 | 10.37 | 38.16 | 38.16 | 31.31 | 31.31 | 31.31 | 31.31 |
| Movement LOS | B | A | A | B | B | B | D | D | C | C | C | C |
| d_A, Approach Delay [s/veh] | 10.60 | | | 14.58 | | | 34.21 | | | 31.31 | | |
| Approach LOS | B | | | B | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 16.90 | | | | | | | | | | | |
| Intersection LOS | B | | | | | | | | | | | |
| Intersection V/C | 0.649 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | - | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 65: 62 - 19th Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 42.5 |
| Analysis Method: | HCM 2010 | Level Of Service: | D |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.915 |

**Intersection Setup**

| Name | 19th Avenue | | | 19th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| Pocket Length [ft] | 350.00 | 100.00 | 300.00 | 350.00 | 100.00 | 100.00 | 150.00 | 100.00 | 150.00 | 135.00 | 100.00 | 135.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | 19th Avenue | | | 19th Avenue | | | Kagy Boulevard | | | Kagy Boulevard | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 6 | 270 | 231 | 309 | 313 | 8 | 53 | 23 | 24 | 279 | 16 | 461 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 0.00 | 0.70 | 1.30 | 6.50 | 1.00 | 0.00 | 0.00 | 4.30 | 0.00 | 1.10 | 0.00 | 0.70 |
| Growth Rate | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 | 1.78 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 11 | 481 | 411 | 550 | 557 | 14 | 94 | 41 | 43 | 497 | 28 | 821 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 0.9600 | 1.0000 | 1.0000 | 1.0000 | 0.9600 | 0.9600 | 0.9600 |
| Total 15-Minute Volume [veh/h] | 3 | 125 | 107 | 143 | 145 | 4 | 26 | 11 | 12 | 130 | 7 | 214 |
| Total Analysis Volume [veh/h] | 11 | 502 | 429 | 574 | 581 | 15 | 102 | 45 | 47 | 519 | 29 | 857 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | 2 - 19th Coordination |
| Cycle Length [s] | 140 |
| Coordination Type | Time of Day Pattern Isolated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Permiss | Overlap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 5 | 2 | 0 | 1 | 6 | 0 | 0 | 8 | 0 | 0 | 4 | 4 |
| Auxiliary Signal Groups | | | | | | | | | | | | 1,4 |
| Lead / Lag | Lead | - | - | Lead | - | - | - | - | - | - | - | - |
| Minimum Green [s] | 5 | 5 | 0 | 5 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Maximum Green [s] | 30 | 30 | 0 | 30 | 30 | 0 | 0 | 30 | 0 | 0 | 30 | 30 |
| Amber [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| All red [s] | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| Split [s] | 8 | 46 | 0 | 33 | 71 | 0 | 0 | 61 | 0 | 0 | 61 | 61 |
| Vehicle Extension [s] | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Walk [s] | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 5 |
| Pedestrian Clearance [s] | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 10 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 2.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 | 0.0 | 3.0 | 0.0 | 0.0 | 3.0 | 3.0 |
| Minimum Recall | No | No | | No | No | | | No | | | No | No |
| Maximum Recall | No | No | | No | No | | | No | | | No | No |
| Pedestrian Recall | No | No | | No | No | | | No | | | No | No |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | C | L | C | R | L | C | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 3.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 0.00 |
| g_i, Effective Green Time [s] | 74 | 41 | 41 | 74 | 69 | 69 | 56 | 56 | 56 | 56 | 56 | 91 |
| g / C, Green / Cycle | 0.53 | 0.29 | 0.29 | 0.53 | 0.49 | 0.49 | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 | 0.65 |
| (v / s)_i Volume / Saturation Flow Rate | 0.01 | 0.14 | 0.27 | 0.47 | 0.16 | 0.16 | 0.07 | 0.02 | 0.03 | 0.38 | 0.02 | 0.53 |
| s, saturation flow rate [veh/h] | 872 | 3592 | 1594 | 1209 | 1881 | 1865 | 1403 | 1822 | 1615 | 1368 | 1900 | 1604 |
| c, Capacity [veh/h] | 456 | 1052 | 467 | 616 | 929 | 921 | 579 | 729 | 646 | 558 | 760 | 1042 |
| d1, Uniform Delay [s] | 16.34 | 40.69 | 47.89 | 27.80 | 21.31 | 21.32 | 29.35 | 25.84 | 25.96 | 44.68 | 25.59 | 18.42 |
| k, delay calibration | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.11 | 0.11 | 0.11 | 0.42 | 0.11 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 0.10 | 1.55 | 25.64 | 22.79 | 0.92 | 0.93 | 0.14 | 0.04 | 0.05 | 21.47 | 0.02 | 7.31 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

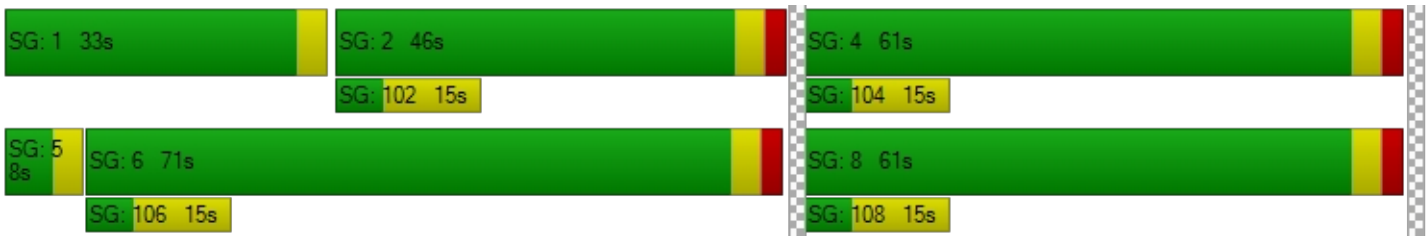
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.02 | 0.48 | 0.92 | 0.93 | 0.32 | 0.32 | 0.18 | 0.06 | 0.07 | 0.93 | 0.04 | 0.82 |
| d, Delay for Lane Group [s/veh] | 16.43 | 42.24 | 73.53 | 50.60 | 22.23 | 22.24 | 29.50 | 25.87 | 26.00 | 66.15 | 25.61 | 25.73 |
| Lane Group LOS | B | D | E | D | C | C | C | C | C | E | C | C |
| Critical Lane Group | No | No | Yes | Yes | No | No | No | No | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 0.18 | 7.41 | 17.77 | 17.29 | 6.21 | 6.16 | 2.37 | 0.95 | 1.00 | 21.39 | 0.61 | 21.86 |
| 50th-Percentile Queue Length [ft] | 4.58 | 185.22 | 444.34 | 432.36 | 155.21 | 153.96 | 59.33 | 23.77 | 24.96 | 534.81 | 15.16 | 546.50 |
| 95th-Percentile Queue Length [veh] | 0.33 | 11.87 | 24.69 | 24.11 | 10.29 | 10.23 | 4.27 | 1.71 | 1.80 | 28.98 | 1.09 | 29.53 |
| 95th-Percentile Queue Length [ft] | 8.25 | 296.82 | 617.19 | 602.87 | 257.37 | 255.71 | 106.80 | 42.78 | 44.93 | 724.44 | 27.29 | 738.20 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 16.43 | 42.24 | 73.53 | 50.60 | 22.24 | 22.24 | 29.50 | 25.87 | 26.00 | 66.15 | 25.61 | 25.73 |
| Movement LOS | B | D | E | D | C | C | C | C | C | E | C | C |
| d_A, Approach Delay [s/veh] | 56.19 | | | 36.15 | | | 27.81 | | | 40.66 | | |
| Approach LOS | E | | | D | | | C | | | D | | |
| d_I, Intersection Delay [s/veh] | 42.51 | | | | | | | | | | | |
| Intersection LOS | D | | | | | | | | | | | |
| Intersection V/C | 0.915 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 4 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



**Intersection Level Of Service Report**
**Intersection 66: 63 - Willson Avenue / Kagy Boulevard**

| | | | |
|---|---|---|---|
| Control Type: | Signalized | Delay (sec / veh): | 30.3 |
| Analysis Method: | HCM 2010 | Level Of Service: | C |
| Analysis Period: | 15 minutes | Volume to Capacity (v/c): | 0.564 |

**Intersection Setup**

| Name | Kagy Boulevard | | | Kagy Boulevard | | | 3rd Avenue | | | Willson Avenue | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | Eastbound | | | Westbound | | | Northeastbound | | | Southwestbound | | |
| Lane Configuration | | | | | | | | | | | | |
| Turning Movement | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Lane Width [ft] | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| No. of Lanes in Pocket | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Pocket Length [ft] | 170.00 | 100.00 | 100.00 | 325.00 | 100.00 | 100.00 | 350.00 | 100.00 | 110.00 | 160.00 | 100.00 | 100.00 |
| Speed [mph] | 30.00 | | | 30.00 | | | 30.00 | | | 30.00 | | |
| Grade [%] | 0.00 | | | 0.00 | | | 0.00 | | | 0.00 | | |
| Crosswalk | Yes | | | Yes | | | Yes | | | Yes | | |

**volumes**

| Name | Kagy Boulevard | | | Kagy Boulevard | | | 3rd Avenue | | | Willson Avenue | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Volume Input [veh/h] | 155 | 162 | 69 | 141 | 228 | 77 | 136 | 418 | 259 | 122 | 364 | 115 |
| Base Volume Adjustment Factor | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |
| Heavy Vehicles Percentage [%] | 1.30 | 0.60 | 0.00 | 3.50 | 0.40 | 0.00 | 0.00 | 0.20 | 0.40 | 0.00 | 0.30 | 0.00 |
| Growth Rate | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 |
| In-Process Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Site-Generated Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diverted Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pass-by Trips [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Existing Site Adjustment Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Right-Turn on Red Volume [veh/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Hourly Volume [veh/h] | 175 | 183 | 78 | 159 | 258 | 87 | 154 | 472 | 293 | 138 | 411 | 130 |
| Peak Hour Factor | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 | 0.9200 |
| Other Adjustment Factor | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 | 0.9800 |
| Total 15-Minute Volume [veh/h] | 47 | 49 | 21 | 42 | 69 | 23 | 41 | 126 | 78 | 37 | 109 | 35 |
| Total Analysis Volume [veh/h] | 186 | 195 | 83 | 169 | 275 | 93 | 164 | 503 | 312 | 147 | 438 | 138 |
| Presence of On-Street Parking | No | | No | No | | No | No | | No | No | | No |
| On-Street Parking Maneuver Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Local Bus Stopping Rate [/h] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrian Volume [ped/h] | 0 | | | 0 | | | 0 | | | 0 | | |
| Bicycle Volume [bicycles/h] | 0 | | | 0 | | | 0 | | | 0 | | |

**Intersection Settings**

| | |
|---|---|
| Located in CBD | No |
| Signal Coordination Group | - |
| Cycle Length [s] | 145 |
| Coordination Type | Time of Day Pattern Coordinated |
| Actuation Type | Semi-actuated |
| Offset [s] | 0.0 |
| Offset Reference | LeadGreen |
| Permissive Mode | SingleBand |
| Lost time [s] | 0.00 |

**Phasing & Timing**

| Control Type | Protecte | Permiss | Overlap | Protecte | Permiss | Overlap | Protecte | Permiss | Permiss | Protecte | Permiss | Permiss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Signal group | 3 | 8 | 8 | 7 | 4 | 1 | 5 | 2 | 0 | 1 | 6 | 0 |
| Auxiliary Signal Groups | | | 5,8 | | | 1,4 | | | | | | |
| Lead / Lag | Lead | - | - | Lead | - | - | Lead | - | - | Lead | - | - |
| Minimum Green [s] | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | 5 | 5 | 0 |
| Maximum Green [s] | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 0 | 30 | 30 | 0 |
| Amber [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| All red [s] | 0.0 | 2.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| Split [s] | 9 | 93 | 93 | 14 | 98 | 11 | 8 | 27 | 0 | 11 | 30 | 0 |
| Vehicle Extension [s] | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 3.0 | 3.0 | 0.0 |
| Walk [s] | 0 | 5 | 5 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 5 | 0 |
| Pedestrian Clearance [s] | 0 | 10 | 10 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 10 | 0 |
| I1, Start-Up Lost Time [s] | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 0.0 | 2.0 | 2.0 | 0.0 |
| I2, Clearance Lost Time [s] | 1.0 | 3.0 | 3.0 | 1.0 | 3.0 | 1.0 | 1.0 | 3.0 | 0.0 | 1.0 | 3.0 | 0.0 |
| Minimum Recall | No | No | No | No | No | No | No | No | | No | No | |
| Maximum Recall | No | No | No | No | No | No | No | No | | No | No | |
| Pedestrian Recall | No | No | No | No | No | No | No | No | | No | No | |
| Detector Location [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector Length [ft] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Exclusive Pedestrian Phase**

| | |
|---|---|
| Pedestrian Signal Group | 0 |
| Pedestrian Walk [s] | 0 |
| Pedestrian Clearance [s] | 0 |

**Lane Group Calculations**

| Lane Group | L | C | R | L | C | R | L | C | R | L | C |
|---|---|---|---|---|---|---|---|---|---|---|---|
| L, Total Lost Time per Cycle [s] | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 3.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| l1_p, Permitted Start-Up Lost Time [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| l2, Clearance Lost Time [s] | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 3.00 |
| g_i, Effective Green Time [s] | 47 | 33 | 43 | 47 | 38 | 50 | 88 | 78 | 78 | 88 | 80 |
| g / C, Green / Cycle | 0.32 | 0.23 | 0.30 | 0.32 | 0.26 | 0.35 | 0.61 | 0.53 | 0.53 | 0.61 | 0.55 |
| (v / s)_i Volume / Saturation Flow Rate | 0.15 | 0.10 | 0.05 | 0.13 | 0.15 | 0.06 | 0.18 | 0.27 | 0.19 | 0.15 | 0.32 |
| s, saturation flow rate [veh/h] | 1209 | 1889 | 1615 | 1315 | 1892 | 1615 | 916 | 1896 | 1609 | 998 | 1817 |
| c, Capacity [veh/h] | 324 | 427 | 477 | 393 | 493 | 562 | 457 | 1014 | 861 | 530 | 1005 |
| d1, Uniform Delay [s] | 44.73 | 48.40 | 37.96 | 37.50 | 46.36 | 32.73 | 16.04 | 21.34 | 19.45 | 14.51 | 21.20 |
| k, delay calibration | 0.50 | 0.11 | 0.50 | 0.11 | 0.11 | 0.44 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| I, Upstream Filtering Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| d2, Incremental Delay [s] | 7.21 | 0.76 | 0.79 | 0.74 | 0.99 | 0.56 | 2.19 | 1.73 | 1.18 | 1.30 | 2.37 |
| d3, Initial Queue Delay [s] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Rp, platoon ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| PF, progression factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Lane Group Results**

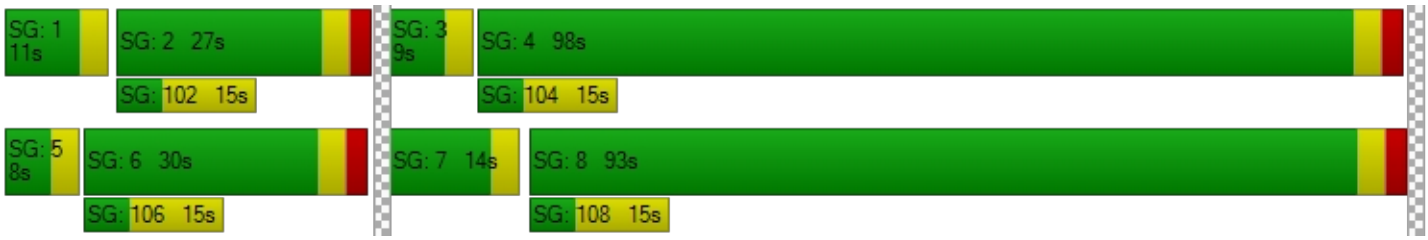
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| X, volume / capacity | 0.57 | 0.46 | 0.17 | 0.43 | 0.56 | 0.17 | 0.36 | 0.50 | 0.36 | 0.28 | 0.57 |
| d, Delay for Lane Group [s/veh] | 51.94 | 49.17 | 38.76 | 38.24 | 47.35 | 33.29 | 18.23 | 23.07 | 20.63 | 15.81 | 23.57 |
| Lane Group LOS | D | D | D | D | D | C | B | C | C | B | C |
| Critical Lane Group | Yes | No | No | No | Yes | No | Yes | No | No | No | Yes |
| 50th-Percentile Queue Length [veh] | 5.71 | 6.24 | 2.34 | 4.64 | 8.79 | 2.40 | 2.60 | 11.34 | 6.42 | 2.26 | 13.42 |
| 50th-Percentile Queue Length [ft] | 142.80 | 155.97 | 58.40 | 116.09 | 219.65 | 59.88 | 65.12 | 283.47 | 160.46 | 56.38 | 335.38 |
| 95th-Percentile Queue Length [veh] | 9.63 | 10.34 | 4.20 | 8.18 | 13.65 | 4.31 | 4.69 | 16.86 | 10.57 | 4.06 | 19.42 |
| 95th-Percentile Queue Length [ft] | 240.79 | 258.38 | 105.12 | 204.44 | 341.18 | 107.79 | 117.21 | 421.53 | 264.33 | 101.49 | 485.55 |

**Movement, Approach, & Intersection Results**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| d_M, Delay for Movement [s/veh] | 51.94 | 49.17 | 38.76 | 38.24 | 47.35 | 33.29 | 18.23 | 23.07 | 20.63 | 15.81 | 23.57 | 23.57 |
| Movement LOS | D | D | D | D | D | C | B | C | C | B | C | C |
| d_A, Approach Delay [s/veh] | 48.41 | | | 42.05 | | | 21.48 | | | 21.99 | | |
| Approach LOS | D | | | D | | | C | | | C | | |
| d_I, Intersection Delay [s/veh] | 30.33 | | | | | | | | | | | |
| Intersection LOS | C | | | | | | | | | | | |
| Intersection V/C | 0.564 | | | | | | | | | | | |

## Sequence

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ring 1 | 1 | 2 | 3 | 4 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 2 | 5 | 6 | 7 | 8 | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Ring 4 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |



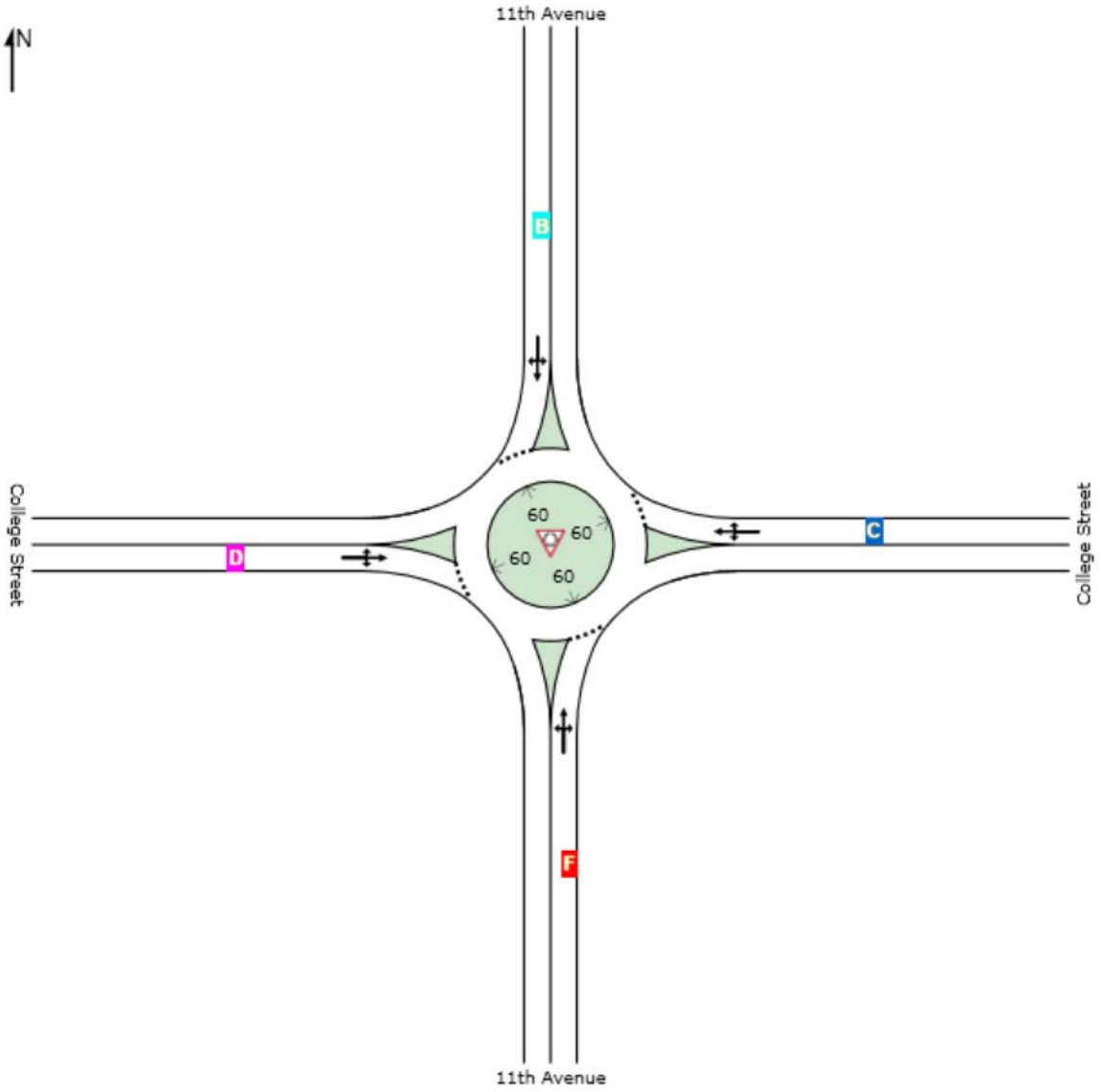
# LEVEL OF SERVICE

## Site: 11th Avenue/College Street - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | South | East | North | West | Intersection |
|---|---|---|---|---|---|
| LOS | F | C | B | D | F |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

# MOVEMENT SUMMARY

## Site: 11th Avenue/College Street - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: 11th Avenue | | | | | | | | | | | |
| 3 | L2 | 245 | 1.2 | 1.383 | 198.5 | LOS F | 99.5 | 2506.4 | 1.00 | 6.38 | 7.8 |
| 8 | T1 | 407 | 0.7 | 1.383 | 198.5 | LOS F | 99.5 | 2506.4 | 1.00 | 6.38 | 7.8 |
| 18 | R2 | 358 | 1.2 | 1.383 | 198.5 | LOS F | 99.5 | 2506.4 | 1.00 | 6.38 | 7.7 |
| Approach | | 1010 | 1.0 | 1.383 | 198.5 | LOS F | 99.5 | 2506.4 | 1.00 | 6.38 | 7.8 |
| East: College Street | | | | | | | | | | | |
| 1 | L2 | 131 | 0.0 | 0.699 | 17.7 | LOS C | 4.9 | 122.2 | 0.76 | 0.91 | 21.1 |
| 6 | T1 | 310 | 0.0 | 0.699 | 17.7 | LOS C | 4.9 | 122.2 | 0.76 | 0.91 | 20.9 |
| 16 | R2 | 122 | 0.0 | 0.699 | 17.7 | LOS C | 4.9 | 122.2 | 0.76 | 0.91 | 20.6 |
| Approach | | 563 | 0.0 | 0.699 | 17.7 | LOS C | 4.9 | 122.2 | 0.76 | 0.91 | 20.9 |
| North: 11th Avenue | | | | | | | | | | | |
| 7 | L2 | 114 | 0.0 | 0.565 | 13.1 | LOS B | 3.0 | 76.3 | 0.67 | 0.75 | 22.0 |
| 4 | T1 | 227 | 0.0 | 0.565 | 13.1 | LOS B | 3.0 | 76.3 | 0.67 | 0.75 | 21.8 |
| 14 | R2 | 105 | 1.4 | 0.565 | 13.1 | LOS B | 3.0 | 76.3 | 0.67 | 0.75 | 21.4 |
| Approach | | 447 | 0.3 | 0.565 | 13.1 | LOS B | 3.0 | 76.3 | 0.67 | 0.75 | 21.8 |
| West: College Street | | | | | | | | | | | |
| 5 | L2 | 126 | 0.0 | 0.894 | 31.7 | LOS D | 12.1 | 304.0 | 0.99 | 1.36 | 18.7 |
| 2 | T1 | 468 | 1.3 | 0.894 | 31.7 | LOS D | 12.1 | 304.0 | 0.99 | 1.36 | 18.6 |
| 12 | R2 | 196 | 0.0 | 0.894 | 31.7 | LOS D | 12.1 | 304.0 | 0.99 | 1.36 | 18.3 |
| Approach | | 790 | 0.8 | 0.894 | 31.7 | LOS D | 12.1 | 304.0 | 0.99 | 1.36 | 18.5 |
| All Vehicles | | 2810 | 0.6 | 1.383 | 85.9 | LOS F | 99.5 | 2506.4 | 0.90 | 2.98 | 12.8 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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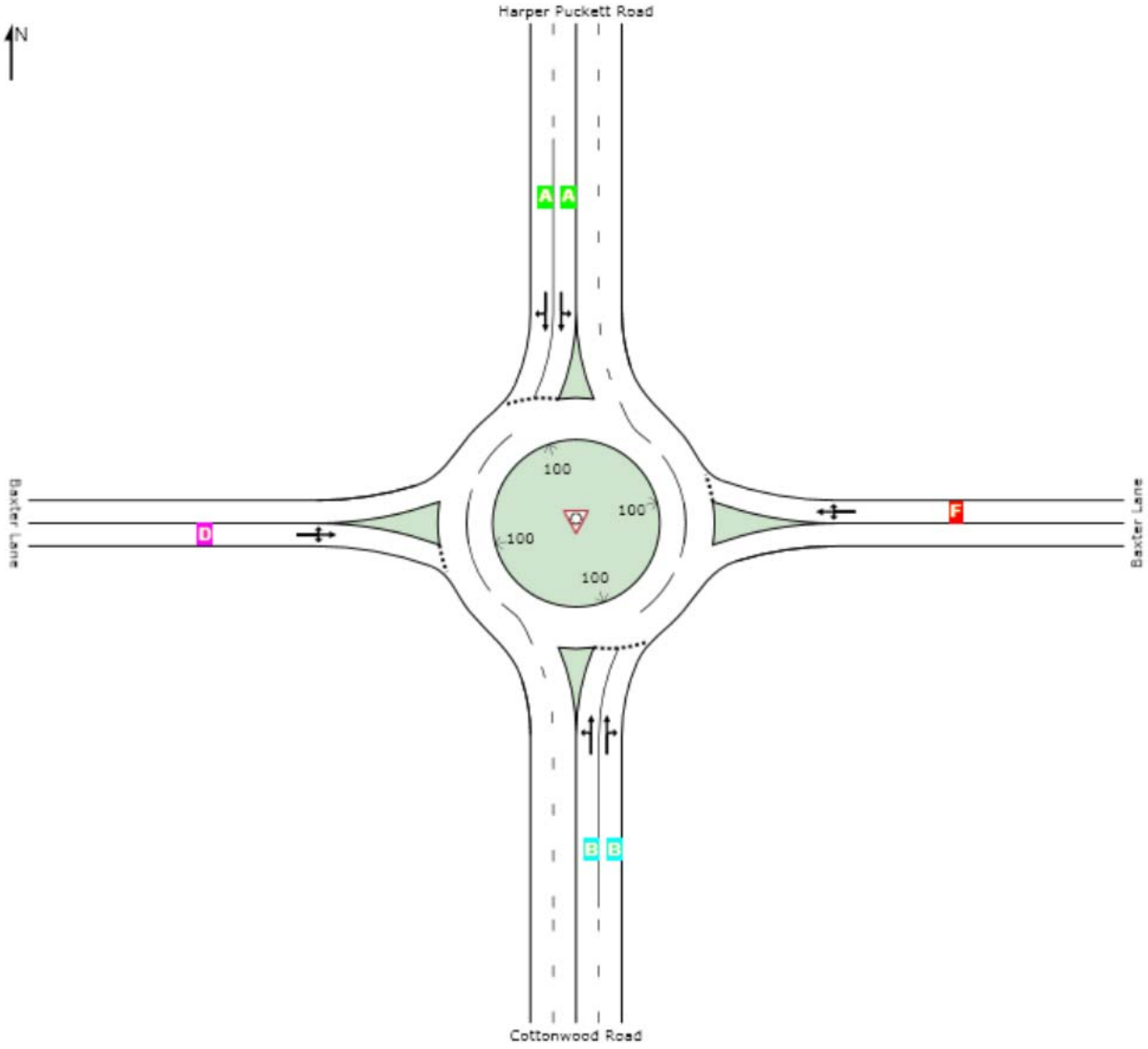
# LEVEL OF SERVICE

## Site: Harper Puckett Road/Baxter Lane - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | South | East | North | West | Intersection |
|---|---|---|---|---|---|
| LOS | B | F | A | D | E |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

# MOVEMENT SUMMARY

## Site: Harper Puckett Road/Baxter Lane - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Cottonwood Road | | | | | | | | | | | |
| 3 | L2 | 267 | 0.0 | 0.531 | 13.4 | LOS B | 2.6 | 64.4 | 0.68 | 0.74 | 29.8 |
| 8 | T1 | 130 | 0.0 | 0.531 | 13.4 | LOS B | 2.6 | 64.4 | 0.68 | 0.74 | 30.0 |
| 18 | R2 | 347 | 0.0 | 0.531 | 13.4 | LOS B | 2.6 | 64.4 | 0.68 | 0.74 | 30.2 |
| Approach | | 745 | 0.0 | 0.531 | 13.4 | LOS B | 2.6 | 64.4 | 0.68 | 0.74 | 30.0 |
| East: Baxter Lane | | | | | | | | | | | |
| 1 | L2 | 239 | 0.0 | 1.080 | 74.6 | LOS F | 40.9 | 1050.7 | 1.00 | 2.27 | 16.9 |
| 6 | T1 | 516 | 3.7 | 1.080 | 74.6 | LOS F | 40.9 | 1050.7 | 1.00 | 2.27 | 16.8 |
| 16 | R2 | 217 | 7.1 | 1.080 | 74.6 | LOS F | 40.9 | 1050.7 | 1.00 | 2.27 | 16.6 |
| Approach | | 972 | 3.6 | 1.080 | 74.6 | LOS F | 40.9 | 1050.7 | 1.00 | 2.27 | 16.8 |
| North: Harper Puckett Road | | | | | | | | | | | |
| 7 | L2 | 150 | 5.3 | 0.263 | 9.9 | LOS A | 0.8 | 21.4 | 0.61 | 0.61 | 30.5 |
| 4 | T1 | 57 | 0.0 | 0.146 | 7.8 | LOS A | 0.5 | 11.3 | 0.57 | 0.57 | 33.8 |
| 14 | R2 | 31 | 0.0 | 0.146 | 7.8 | LOS A | 0.5 | 11.3 | 0.57 | 0.57 | 32.8 |
| Approach | | 237 | 3.3 | 0.263 | 9.1 | LOS A | 0.8 | 21.4 | 0.59 | 0.60 | 31.5 |
| West: Baxter Lane | | | | | | | | | | | |
| 5 | L2 | 48 | 0.0 | 0.874 | 28.2 | LOS D | 10.7 | 269.2 | 0.94 | 1.13 | 26.0 |
| 2 | T1 | 564 | 1.7 | 0.874 | 28.2 | LOS D | 10.7 | 269.2 | 0.94 | 1.13 | 25.9 |
| 12 | R2 | 200 | 0.0 | 0.874 | 28.2 | LOS D | 10.7 | 269.2 | 0.94 | 1.13 | 25.3 |
| Approach | | 812 | 1.2 | 0.874 | 28.2 | LOS D | 10.7 | 269.2 | 0.94 | 1.13 | 25.7 |
| All Vehicles | | 2765 | 1.9 | 1.080 | 38.9 | LOS E | 40.9 | 1050.7 | 0.86 | 1.38 | 22.7 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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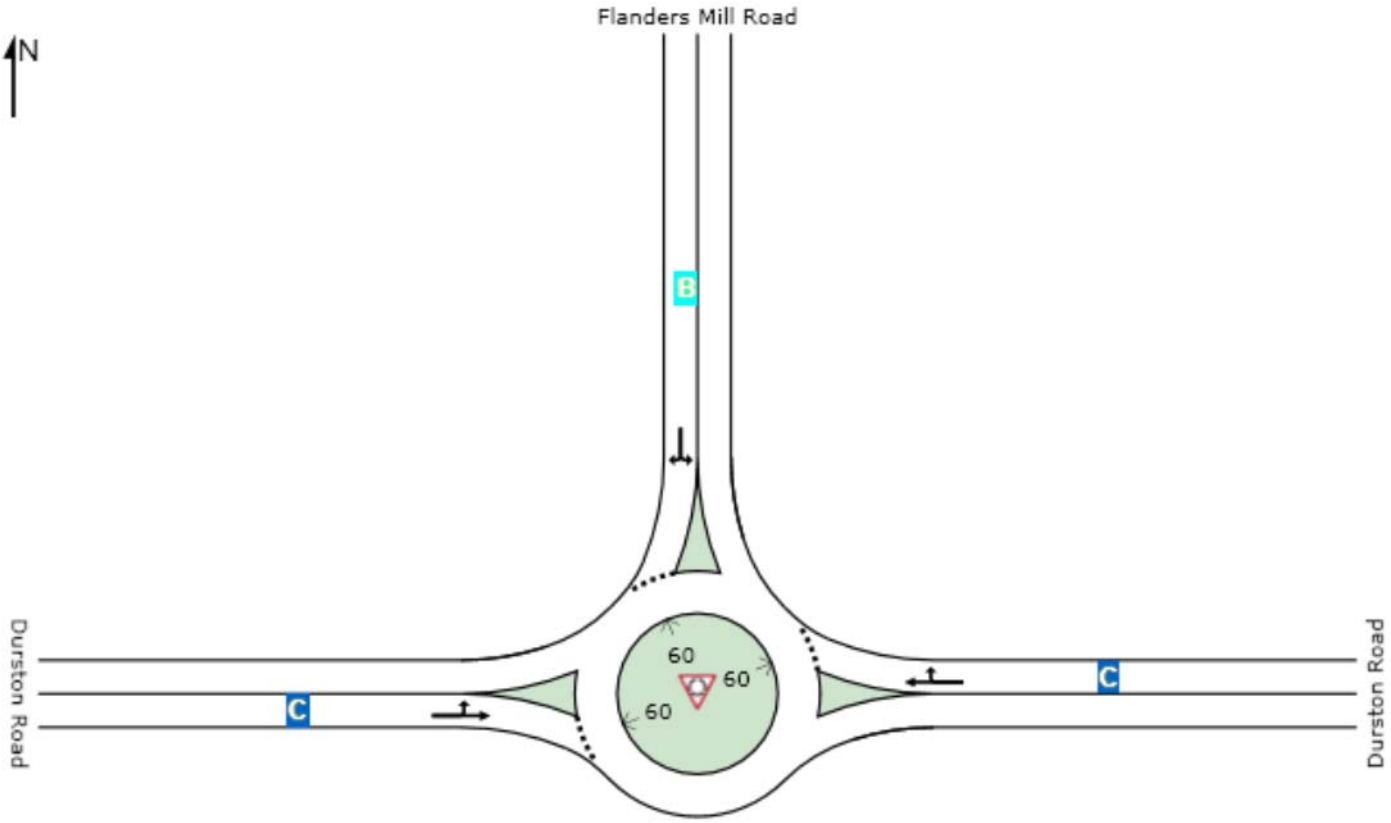
# LEVEL OF SERVICE

## Site: Flanders Mill Road/Durston Road - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | East | North | West | Intersection |
|---|---|---|---|---|
| LOS | C | B | C | C |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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# MOVEMENT SUMMARY

## Site: Flanders Mill Road/Durston Road - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Durston Road | | | | | | | | | | | |
| 6 | T1 | 778 | 0.6 | 0.799 | 18.7 | LOS C | 9.3 | 235.0 | 0.74 | 0.62 | 20.9 |
| 16 | R2 | 107 | 1.6 | 0.799 | 18.7 | LOS C | 9.3 | 235.0 | 0.74 | 0.62 | 20.6 |
| Approach | | 886 | 0.7 | 0.799 | 18.7 | LOS C | 9.3 | 235.0 | 0.74 | 0.62 | 20.9 |
| North: Flanders Mill Road | | | | | | | | | | | |
| 7 | L2 | 72 | 0.0 | 0.389 | 10.3 | LOS B | 1.6 | 38.8 | 0.61 | 0.65 | 22.5 |
| 14 | R2 | 200 | 0.0 | 0.389 | 10.3 | LOS B | 1.6 | 38.8 | 0.61 | 0.65 | 22.0 |
| Approach | | 272 | 0.0 | 0.389 | 10.3 | LOS B | 1.6 | 38.8 | 0.61 | 0.65 | 22.1 |
| West: Durston Road | | | | | | | | | | | |
| 5 | L2 | 182 | 0.0 | 0.760 | 15.5 | LOS C | 7.9 | 199.0 | 0.48 | 0.25 | 21.6 |
| 2 | T1 | 739 | 0.5 | 0.760 | 15.5 | LOS C | 7.9 | 199.0 | 0.48 | 0.25 | 21.4 |
| Approach | | 920 | 0.4 | 0.760 | 15.5 | LOS C | 7.9 | 199.0 | 0.48 | 0.25 | 21.5 |
| All Vehicles | | 2078 | 0.5 | 0.799 | 16.2 | LOS C | 9.3 | 235.0 | 0.61 | 0.46 | 21.3 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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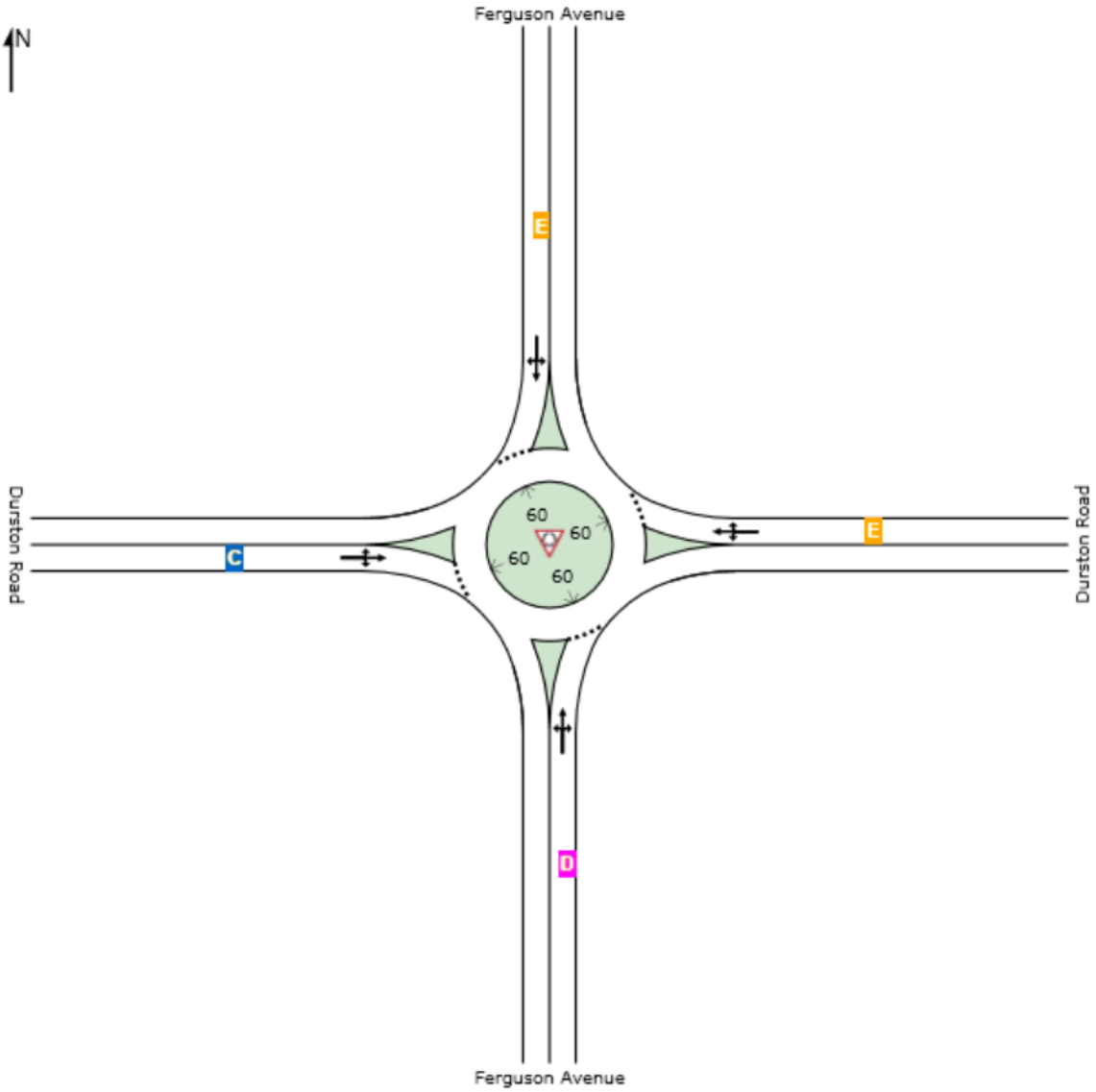
# LEVEL OF SERVICE

## Site: Ferguson Avenue/Durston Road - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | South | East | North | West | Intersection |
|---|---|---|---|---|---|
| LOS | D | E | E | C | E |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

# MOVEMENT SUMMARY

## Site: Ferguson Avenue/Durston Road - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Ferguson Avenue | | | | | | | | | | | |
| 3 | L2 | 250 | 0.8 | 0.876 | 30.7 | LOS D | 10.2 | 257.3 | 0.95 | 1.22 | 22.7 |
| 8 | T1 | 336 | 1.8 | 0.876 | 30.7 | LOS D | 10.2 | 257.3 | 0.95 | 1.22 | 22.7 |
| 18 | R2 | 141 | 0.0 | 0.876 | 30.7 | LOS D | 10.2 | 257.3 | 0.95 | 1.22 | 22.3 |
| Approach | | 727 | 1.1 | 0.876 | 30.7 | LOS D | 10.2 | 257.3 | 0.95 | 1.22 | 22.6 |
| East: Durston Road | | | | | | | | | | | |
| 1 | L2 | 160 | 0.0 | 0.945 | 48.4 | LOS E | 11.9 | 297.3 | 0.96 | 1.50 | 19.3 |
| 6 | T1 | 428 | 0.5 | 0.945 | 48.4 | LOS E | 11.9 | 297.3 | 0.96 | 1.50 | 19.3 |
| 16 | R2 | 18 | 0.0 | 0.945 | 48.4 | LOS E | 11.9 | 297.3 | 0.96 | 1.50 | 19.1 |
| Approach | | 606 | 0.4 | 0.945 | 48.4 | LOS E | 11.9 | 297.3 | 0.96 | 1.50 | 19.3 |
| North: Ferguson Avenue | | | | | | | | | | | |
| 7 | L2 | 6 | 0.0 | 0.956 | 49.7 | LOS E | 13.1 | 329.8 | 0.98 | 1.56 | 19.2 |
| 4 | T1 | 313 | 0.6 | 0.956 | 49.7 | LOS E | 13.1 | 329.8 | 0.98 | 1.56 | 19.2 |
| 14 | R2 | 315 | 0.6 | 0.956 | 49.7 | LOS E | 13.1 | 329.8 | 0.98 | 1.56 | 18.9 |
| Approach | | 635 | 0.6 | 0.956 | 49.7 | LOS E | 13.1 | 329.8 | 0.98 | 1.56 | 19.1 |
| West: Durston Road | | | | | | | | | | | |
| 5 | L2 | 293 | 1.3 | 0.824 | 24.2 | LOS C | 8.5 | 214.0 | 0.89 | 1.06 | 24.2 |
| 2 | T1 | 246 | 0.0 | 0.824 | 24.2 | LOS C | 8.5 | 214.0 | 0.89 | 1.06 | 24.2 |
| 12 | R2 | 186 | 0.0 | 0.824 | 24.2 | LOS C | 8.5 | 214.0 | 0.89 | 1.06 | 23.8 |
| Approach | | 725 | 0.5 | 0.824 | 24.2 | LOS C | 8.5 | 214.0 | 0.89 | 1.06 | 24.1 |
| All Vehicles | | 2692 | 0.7 | 0.956 | 37.4 | LOS E | 13.1 | 329.8 | 0.94 | 1.32 | 21.2 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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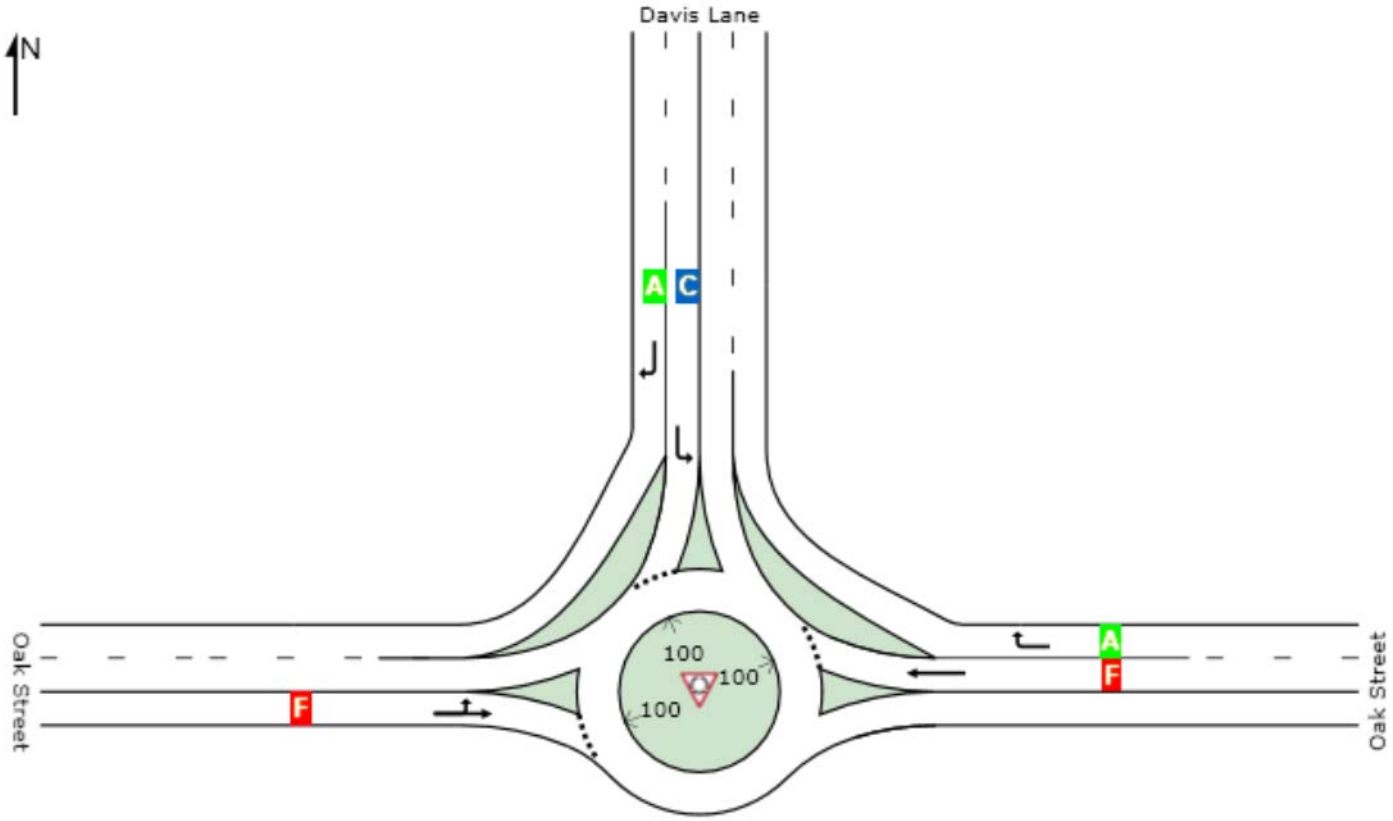
# LEVEL OF SERVICE

## Site: Davis Lane / Oak Street - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**All Movement Classes**

| | East | North | West | Intersection |
|---|---|---|---|---|
| LOS | F | A | F | F |




Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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# MOVEMENT SUMMARY

## Site: Davis Lane / Oak Street - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance ft | Prop. Queued | Effective Stop Rate per veh | Average Speed mph |
|---|---|---|---|---|---|---|---|---|---|---|---|
| East: Oak Street | | | | | | | | | | | |
| 6 | T1 | 1500 | 0.0 | 1.661 | 316.2 | LOS F | 205.2 | 5129.9 | 1.00 | 6.70 | 6.0 |
| 16 | R2 | 466 | 0.3 | 0.279 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 33.7 |
| Approach | | 1967 | 0.1 | 1.661 | 241.2 | LOS F | 205.2 | 5129.9 | 0.76 | 5.11 | 7.4 |
| North: Davis Lane | | | | | | | | | | | |
| 7 | L2 | 356 | 0.0 | 0.559 | 15.4 | LOS C | 2.7 | 67.6 | 0.71 | 0.79 | 26.7 |
| 14 | R2 | 856 | 1.1 | 0.517 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 33.7 |
| Approach | | 1212 | 0.8 | 0.559 | 4.6 | LOS A | 2.7 | 67.6 | 0.21 | 0.23 | 31.2 |
| West: Oak Street | | | | | | | | | | | |
| 5 | L2 | 779 | 4.9 | 1.800 | 377.0 | LOS F | 260.3 | 6652.6 | 1.00 | 7.12 | 5.2 |
| 2 | T1 | 928 | 1.0 | 1.800 | 377.0 | LOS F | 260.3 | 6652.6 | 1.00 | 7.12 | 5.2 |
| Approach | | 1707 | 2.8 | 1.800 | 377.0 | LOS F | 260.3 | 6652.6 | 1.00 | 7.12 | 5.2 |
| All Vehicles | | 4886 | 1.2 | 1.800 | 230.0 | LOS F | 260.3 | 6652.6 | 0.71 | 4.60 | 7.7 |

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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